DETERMINATION REPORT

Modernization of Heat and Power Plant-Steam Airblast Station to increase Power Generation by Utilization of Blast Furnace Gas at CJSC "Donetsksteel-Metallurgical Plant" in Ukraine

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DETERMINATION REPORT

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Summary:

Project Name: Modernization of Heat and Power Plant-Steam Airblast Station to increase Power Generation by Utilization of Blast Furnace Gas at CJSC "Donetsksteel-Metallurgical Plant"

Country: Ukraine

Methodology: ☐ **CDM Methodology:**, **Version:** ☒ **JI specific approach**

GHG reducing Measure/Technology: Modernization of heat and power generation technology

ER estimate: 82 189 tCO_2e per year (average)

Size

☒ Large Scale
☐ Small Scale

Determination Phases:

☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Determination Status

☐ Corrective Actions Requested
☐ Clarifications Requested
☒ Full Approval and final determination
☐ Rejected

In summary, it is DNV's opinion that the project activity "Modernization of Heat and Power Plant-Steam Airblast Station to increase Power Generation by Utilization of Blast Furnace Gas at CJSC "Donetsksteel-Metallurgical Plant" in Ukraine, as described in the PDD, version 3.7 of 1 June 2011, meets all relevant UNFCCC requirements for the JI and correctly applies a JI specific approach for baseline setting and monitoring in accordance with the Guidance on criteria for baseline setting and monitoring (version 02).. However, prior to the submission of the determination report to the JI Supervisory Committee, DNV will have to receive the written approval of voluntary participation and approval from the focal points of Ukraine and the Netherlands.

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2011-9081	Environment

Report title:
Modernization of Heat and Power Plant-Steam Airblast Station to increase Power Generation by Utilization of Blast Furnace Gas at CJSC "Donetsksteel-Metallurgical Plant" in Ukraine

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Abbreviations

BAT	Best Available technology
BFG	Blast Furnace Gas
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CH_4	Methane
CHP-SAS	Combined heat and power generation-steam-air blast station
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COG	Coke Oven Gas
DNV	Det Norske Veritas
DFP	Designated Focal Point
ERU	Emission reduction units
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IFI	The InnerChange Freedom Ininitiative
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
LoA	Letter of approval
NG	Natural Gas
PDD	Project Design Document
tCO_2e	Tonnes of CO_2 equivalents
UNFCCC	United Nations Framework Convention on Climate Change

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1 EXECUTIVE SUMMARY – DETERMINATION OPINION

DNV Climate Change Services AS (DNV) has performed a determination of the project activity Modernization of Heat and Power Plant-Steam Airblast Station to increase Power Generation by Utilization of Blast Furnace Gas at CJSC "Donetsksteel-Metallurgical Plant" in Ukraine. The determination was performed on the basis of UNFCCC criteria for the Joint Implementation as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The host Party is Ukraine and the sponsor Party is Netherlands. Both Parties fulfil the participation criteria, but have not yet issued Letters of Approval (LoAs) authorising "Donetsksteel" – Iron and Steel Works" and Global Carbon BV as a project participants.

By modernization of boiler and reconstruction of turbine generator to reduce specific energy consumption for using higher quantity of blast furnace gas instead of passively venting it, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project 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.

The total emission reductions from the project are estimated to be on the average 82 189 tCO_2e per annum during the period 2008 - 2012. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is DNV's opinion that the project activity Modernization of Heat and Power Plant-Steam Airblast Station to increase Power Generation by Utilization of Blast Furnace Gas at CJSC "Donetsksteel-Metallurgical Plant" in Ukraine, as described in the PDD of 1 June 2011, meets all relevant UNFCCC requirements for the JI and correctly applies a JI specific approach for baseline setting and monitoring in accordance with the Guidance on criteria for baseline setting and monitoring (version 02). However, prior to the submission of the determination report to the JI Supervisory Committee, DNV will have to receive the written approval of voluntary participation and approval from the focal points of Ukraine and the Netherlands.

Prague and Oslo, 8 July 2011

Mario Vöröš
JI Determiner
DNV Prague, Czech Republic

Michael Lehmann
Director of Services and Technoloigis
DNV Climate Change Services AS

2 INTRODUCTION

Global Carbon BV has commissioned DNV Climate Change Services AS (DNV) to perform a determination of the Modernization of Heat and Power Plant-Steam Airblast Station to increase Power Generation by Utilization of Blast Furnace Gas at CJSC "Donetsksteel-Metallurgical Plant" project in Ukraine (hereafter called "the project"). This report summarises the findings of the determination of the project, performed 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 Guidelines for the implementation of Article 6 of the Kyoto Protocol and the subsequent decisions by the JI Supervisory Committee.

2.1 Objective

The purpose of a determination is to have an Accredited Independent Entity (IE) review the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Determination is a requirement for all JI projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).

DNV is an Independent Entity accredited by the Joint Implementation Supervisory Committee (JISC) for all sectoral scopes.

2.2 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, JI modalities and procedures and guidance by the JI Supervisory Committee (JISC) including the Guidance on criteria for baseline setting and monitoring /6/ and the Determination and verification manual /5/.

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 METHODOLOGY

The determination consisted of the following three phases:

I a desk review of the project design documents

II follow-up interviews with project stakeholders

III the resolution of outstanding issues and the issuance of the final determination report and opinion.

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the determination:

/1/ Global Carbon BV, PDD – Modernization of Heat and Power Plant-Steam Airblast Station to increase Power Generation by Utilization of Blast Furnace Gas at CJSC "Donetsksteel-Metallurgical Plant" , Version 3.7 dated 1 June 2011 (previous version: Version 3.3 dated 18 April 2011, Version 3.2, dated 13 April 2011, Version 3.1, dated 8 April 2011 and Version 3, dated 3 December 2010)

/2/ Global Carbon BV, NPV calculation: 20101203_Donetsksteel_CF_3.1_en.xls, 8 April 2011 (previous version from 3 March 2011)

/3/ Global Carbon BV, ER calculation: 20101203_Donetsksteel_ER_3.1_en.xls, 8 April 2011 (previous version from 3 March 2011)

/4/ Global Carbon BV, Leakage calculation, dated 8 April 2011

/5/ JI Supervisory Committee, Determination and verification manual, version 01 adopted at JISC 19

/6/ JI Supervisory Committee, Guidance on criteria for baseline setting and monitoring, version 02 adopted at JISC18

/7/ JI Supervisory Committee, Guidelines for the implementation of Article 6 of the Kyoto protocol with Annexes, 30 November 2005

/8/ CDM Executive Board: Tool for the demonstration and assessment of additionality, Version 5.2

/9/ Environmental Permit No. 1410 137 700 – 43, valid from 3 June 2009 to 3 June 2014

/10/ Passports for flow meters with calibration records for BFG, COG and NG , latest calibration in July 2010 (calibration every 2 years)

/11/ Calibration records for electricity meters – last calibration on 24 November 2009 (calibration every 3 years)

/12/ Calibration records for main electricity meter – last calibration 28 April 2010 (calibration every 6 years)

/13/ TÜV Nord: certificate for management system according to ISO 14001:2009 valid until 27 March 2013

/14/ Ministry of ferrous metallurgy of SSSR: Instruction for accounting of gaseous fuel in SSSR from 1986

/15/ Donetsksteel: Order for storage of data on JI project, dated 8 August 2008

/16/ Ministry of environmental protection: National Inventory Report of Ukraine 1990-2008

/17/ Conclusion of Technical Expertise and Act on Acceptance of Equipment after Modernization and Repair proving that turbo generator No 1, dated 12 April 2002

/18/ Commissioning act for turbo generator No 1 dated 12 March 2007

/19/ Technical expertise of boiler No. 5 dated 2000 (for 65 000 hours) and 22 March 2006 (valid till 22 March 2012)

/20/ Resolution of Collegium of State Housing Committee of Ukraine #15 , 25.03.2005 "On performance results of housing companies in 2004 and priority tasks for governmental organizations on sectoral policy reformation" http://www.uazakon.com/document/fpart50/idx50295.htm

/21/ Orders (issued in June and November 2008 and internal invoices for individual technological parts of reconstruction (dated in June and November 2008), Primary budget for individual years 2003 - 2007

/22/ Primary data for consumption of NG, BFG and COG in individual months and years (2002 – 2009)

/23/ Excel sheet for total consumption of NG, BFG and CO for 2002 – 2009

/24/ Contract for reconstruction of boiler No.5 and turbo generator #, dated 2 August 2004

/25/ IPCC: Revised IPCC 2006 Guidelines for National Greenhouse Gas Inventories

/26/ Data from CHP-SAS for technical water parameters

/27/ Ukrainian Fifth National Communication on Climate Change http://unfccc.int/resource/docs/natc/ukr_nc5rev.pdf

/28/ State program of industry development for 2003-2011 http://industry.kmu.gov.ua/control/uk/publish/article?art_id=36412&cat_id=36198

/29/ State Program for Reforming and Development of Mining and Metallurgical Complex for the Period until 2011 http://uazakon.com/document/fpart66/idx66602.htm

/30/ Ukrainian National Bank Bulletin #2/2004 http://www.bank.gov.ua/Publication/econom/Buleten/2004/Bull-2_04.pdf

/31/ Present prices of electricity and for natural gas: http://www.nerc.gov.ua/control/uk/publish/article?showHidden=1&art_id=110475&cat_id=34446 http://www.gasukraine.com.ua/clients/gasukraine/gasukraine.nsf/%28documents%29/61E09AF58A676A76C225789500595F88?OpenDocument&lid1=26C6B7390820040DC2257457004C45AB&lid2=487F1941F87BC8BDC2257457004DC270&

/32/ Donetsksteel: Protocol from Technical meeting for utilization of BFG dated 12 January 2004 – decision to use mechanisms of Kyoto protocol for financial support for the project

Main changes between the versions published for the 30 days stakeholder commenting period and the final version:

- *Data for baseline setting*

- *Actions included as JI project activity – excluded pipeline installation as it was installed prior to project starting as part of other project*

- *Estimated emission reduction – calculation was changed in accordance with original historical data*

- *Investment analysis data – used data at the time of decision instead real investment*

- Monitoring plan – changed periodicity and type of measurement

- Environmental impacts – better explanation of real situation

- Stakeholdes comment – as previous point

3.2 Follow-up Interviews with Project Stakeholders

On 3 and 4 March 2011, Ms. Zuzana Andrtová of DNV visited the site of Donetsksteel-Metalurgical Plant and performed interviews with the representatives of project owner (Donetsksteel-Metalurgical Plant) and project consultant (Global Carbon B.V.) to confirm selected information and to resolve issues identified in the document review of the proposed project.

The main topics of the interview are summarised in table below.

	Date	Name	Organization	Topic
/33/	3 – 4 March 2011	Dorofeyev Oleksandr Viktorovych	Donetsksteel-Metalurgical Plant	• Project description • Legal requirements • Data for baseline • Monitoring procedures and equipment • Calibration procedures • Review of technology, operational data • Maintenance procedures • Data handling, archiving and securing • Personnel training
/34/	3 – 4 March 2011	Komkov Dmytro Vyacheslavovych	Donetsksteel-Metalurgical Plant	
/35/	3 March 2011	Semko Larysa Genadiyivna	Donetsksteel-Metalurgical Plant	
/36/	3 – 4 March 2011	Doroshenko Geniadiy Leonidovych	Donetsksteel-Metalurgical Plant	
/37/	3 – 4 March 2011	Akoltsev Oleksandr Olehovych	Donetsksteel-Metalurgical Plant	
/38/	3 – 4 March 2011	Broninov Igor Anatolievych	Donetsksteel-Metalurgical Plant	
/39/	3 – 4 March 2011	Anna Vilde	Global Carbon BV	• JI specific approach for baseline and monitoring • Additionality • Legal requirements • Data for baseline • Monitoring procedures and equipment • Calibration procedures • Emission reduction calculation (baseline emission, project emission and leakage) • QA/QC of the project
/40/	3 – 4 March 2011	Keteryna	Global Carbon	• translation

Hrechko BV

3.3 Resolution of Outstanding Issues

The objective of this phase of the determination is to resolve any outstanding issues which needed be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a determination protocol was customised for the project. The protocol shows in a transparent manner the 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 by documenting how a particular requirement has been validated and the result of the determination.

The determination protocol consists of four tables. The different columns in these tables are described in the figure below. The completed determination protocol for the project activity "Modernization of Heat and Power Plant-Steam Airblast Station to increase Power Generation by Utilization of Blast Furnace Gas at CJSC "Donetsksteel-Metallurgical Plant"" in Ukraine is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

(a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

(b) The JI requirements have not been met;

(c) There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable JI requirements have been met.

A forward action request (FAR) is raised during determination to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the JI requirements for final determination.

Determination Protocol Table 1: Mandatory Requirements for JI Project Activities		
Requirement	***Reference***	***Conclusion***
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)** if a requirement is not met.*

Determination Protocol Table 2: Requirement Checklist *This table documents the findings from the desk review of the initial version of the PDD and the follow-up interviews with project stakeholders. For ensuring a transparent determination process, this table is not updated in case the PDD is revised during the process of the determination.*				
Checklist question	***Reference***	***Means of verification (MoV)***	***Assessment by DNV***	***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 different sections, following the logic of the JI-PDD	*Gives reference to documents where the answer to the checklist question or item is found.*	*Means of verification (MoV) are **document review (DR)**, **interview (I)** or any other follow-up actions (e.g., on site visit and telephone or email interviews) and **cross-checking (CC)** with available information relating to projects or technologies similar to the proposed JI project activity under determination.*	*The discussion on how the conclusion is arrived at and the conclusion on the compliance with the checklist question so far.*	*OK is used if the information and evidence provided is adequate to demonstrate compliance with JI requirements. A c**orrective action request (CAR)** is raised when project participants have made mistakes, the JI requirements have not been met or there is a risk that emission reductions cannot be monitored or calculated. A **clarification request (CL)** is raised if information is insufficient or not clear enough to determine whether the applicable JI requirements have been met. A **forward action request (FAR)** during determination is raised to highlight issues related to project implementation that require review during the first verification of the project activity.*

Determination Protocol Table 3: Resolution of Corrective Action and Clarification Requests *This table lists the corrective action requests and clarification requests indentified in Table 2 and documents how these issues raised were resolved. All the issues raised shall be closed before finalising the determination.*			
Corrective action and/ or clarification requests	***Ref. to checklist question in table 2***	***Response by project participants***	***Determination conclusion***
*The **CARs** and/ or **CLs** raised in Table 2 are repeated here.*	*Reference to the checklist question number in Table 2 where the CAR or CL is explained.*	*The responses given by the project participants to address the CARs and/or CLs.*	*The determination team's assessment and final conclusions of the CARs and/or CLs.*

Determination Protocol Table 4: Forward Action Requests		
Forward action request	***Ref. to checklist question in table 2***	***Response by project participants***
The FARs raised in Table 2 are repeated here.	*Reference to the checklist question number in Table 2 where the FAR is explained.*	*Response by project participants on how forward action request will be addressed prior to first verification.*

Figure 1 Determination protocol tables

3.4 Internal Quality Control

The final determination report underwent a technical review before being forwarded to the Supervisory Committee. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for JI determination and verification.

3.5 Determination Team

				Type of involvement							
Role	***Last Name***	***First Name***	***Country***	Desk review	Site visit / Interviews	Reporting	Supervision of work	Technical review	TA1.1 competence	TA4.3 competence	Financial expertise
Team leader (Determiner)	Voros	Mario	Czech Republic	✓		✓	✓				
Assessor under training	Andrtová	Zuzana	Czech Republic	✓	✓	✓					
Assessor under training	Němeček	Lumír	Czech Republic	✓		✓			✓		
Expert	Pales	Bruce	Czech Republic								✓
Expert	Van Evercooren	Jan	Belgium	✓		✓				✓	
Technical reviewer	Kakaraparthi	Venkata Raman	India					✓	✓		

4 DETERMINATION FINDINGS

The findings of the determination are stated in the following sections. The determination criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the determination protocol in Appendix A.
The final determination findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

4.1 Participation Requirements

The project participants are CJSC "Donetsksteel" – Iron and Steel Works" representing Ukraine as host Party and Global Carbon BV represents the Netherlands as sponsor Party.

Ukraine as well as the Netherlands have designated a focal point and has submitted its national guidelines and procedures for the approval of JI projects, and thus meets the participation requirements (Marrakech Accords, JI Modalities, §20). The focal points of both Parties have not yet issued Letters of Approval (LoAs) authorising "Donetsksteel" – Iron and Steel Works" and Global Carbon BV as a project participants.

Prior to the submission of the determination report to the JI Supervisory Committee, DNV will have to receive the written approval of voluntary participation and approval from the focal points of Ukraine and the Netherlands.

The project does not involve public funding, and the validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Ukraine.

4.2 Project Design

The project is implemented at CJSC "Donetsksteel" – Metallurgical Plant" in Donetsk, Donetsk oblast of Ukraine (47°58'52'' N and 37°48'44" E).

The project involves the modernization of high pressure boiler No. 5 and reconstruction of turbine generator unit TG No.1. The boiler type is TGM-159SO (high pressure boiler) manufactured by Krasiy Kotelschik, Taganrog in 1981 and turbine generator type is PT-25-90/10M (condensing turbine with operational and heating steam discharge) manufactured by Kaluga Turbine Plant in 1987.

The boiler was modernized to ensure combustion of increased volume of blast furnace gas (BFG) The reconstruction of turbine generator ensured reduction of its specific energy consumption. Prior situation was generation of electricity by one condensing turbine with installed capacity 25 MW with supplying of steam by high pressure boiler combusting mixture of BFG, natural gas (NG) and cooking gas (COG). The rest of available BFG was flared.

The project starting date is 2 August 2004, when the contract for reconstruction and modernization was signed /24/. The project participants also provided documentation showing that JI was considered for this project as early as in January 2004 /32/.

The starting date of the crediting period is 1 January 2008. The lifetime of the project is 20 years. DNV received the evidences /17//18//19/, that the lifetime of main technology parts exceeds the crediting period as minimum.

4.3 Baseline Determination

The baseline determination is set as continuation of the current situation, i.e. utilization of lower part BFG with the rest flared. The electricity generation is on the same level as prior realization of this project.

The baseline was justified based on Appendix B to JI Guidelines /7/ and the Guidance of the criteria for baseline and monitoring /6/.

The key factors, which were taken into account, are follows:

- Sectoral reform policies and legislation – main policy of the sector is The State program of industry for 2003 – 2011 /28/, which is followed by State Program for Reforming and Development of Mining and Metallurgical Complex for the Period until 2011 /29/. Both of the programs don't have any provisions or restrictions related to BFG utilization
- Economic situation/growth and socio-demographic factors in relevant sector as well as resulting predicted demand. Suppressed and/or increasing demand that will be met by the project can be considered in the baseline appropriate (e.g. by assuming that same level of service as in the project scenario would be offered in the baseline scenario) – the assumption is that the project does not influence steel and iron production and demand level. This assumption was found as correct because the energy is consumed by this production and the demand will be sourced from other alternatives in the same volume in the absence of the project activity.
- Availability of capital (including investment barriers) – there are financial barriers due to high interest rates, focus on large scale project in IFI's investment, evaluation of investment climate in Ukraine is considered risky etc.
- Local availability of technologies/techniques, skills and know-how and availability of the BATs in the future – all of mentioned is available in Ukraine and region as Donetsk is an industrial region with long history in the mentioned area. Local suppliers and technology are available as well as experienced staff.
- Fuel prices and availability – electricity and natural gas are generally available in Ukraine, and there are development of networks for both of them. No problem to reach required fuels and energy.

The plausible scenarios identified were as follows:

For increased volume of BFG:

G1: BFG flaring at stand – it is continuation of current situation and it is plausible and realistic. The situation was confirmed from Environmental permit /9/.

G2: BFG utilization to generate additional electricity – this option requires additional investment and is environmentally beneficial. The investment cost was presented by project owner as evidence /21/.

G3: BFG utilization to generate additional heat – as the plant internal demand of heat is not expected to increase, it would be necessary to find customers for produced hot water. The potential can be nearest plants or district heating system. The nearest plants are Donetsk Confectionery Plant "AVK" and Donetsk Coke-Chemical Plant and both of them have own boiler houses, which covers their demand. Investment to district heating

is possible but risky, because the payment for heat energy is low in Donetsk area as verified from the reference /20/. Thus this option is not reasonable.

G4: BFG sale – historically, BFG was sold to neighbouring unit of Donetsk Coke-Chemical Plant (DCCP). However, this pipeline was dismantled in 1990's. This option is no longer feasible due to local municipality and environment protection office restrictions. BFG transportation for long distances is risk due to leakages and accidents.

For electricity:

P1: Stop electricity generation and cover all of the demand by purchasing electricity from national power grid – it is not technically feasible because primarily because iron and steel industry is a critical industry which requires uninterrupted power supply for safety of the critical equipment and manpower. The scenario will also increase pollution in region due to increasing of flaring BFG and COG as well as pollution from grid demand increasing

P2: Maintain the same level of on-site electricity generation at the existing generating capacity and cover the rest of the demand by importing electricity from national power grid – it is continuation of current practice and it is reasonable

P3: Increase on-site electricity generation at the existing plant and reduce the amount of imported electricity – This is the project scenario. It is best scenario for environment but the scenario request additional investment cost for reconstruction

P4: Increase on site electricity generation to fully cover the Plant's demand to exclude import – this scenario request construction of new CHP about 50 MW to satisfy all plant power requirement, which means high investment cost and this value was not found acceptable by plant management (explained by management of department /33//34//35//36//37/).

Finally two plausible scenarios remain:

Alternative 1: G1+P1 – Maintain on-site electricity generation, cover the rest of the demand by purchasing electricity from the grid and flare excess BFG (current situation).

Alternative 2: G2+P3 – Increase on-site electricity generation by utilization of excess BFG at CHP-SAS and reduce the amount of purchased electricity (project scenario without JI incentive).

lternative 1 is baseline scenario, as it is demonstrated in the additionality section that the alternative 2, faces investment analysis barrier.

Identified gases for baseline and project scenarios as well as leakage are included in the table below:

	GHGs involved	*Description*
Baseline emissions	*CO_2*	*Main source of emission from grid electricity consumption and from natural gas consumption from co-firing with BFG and COG*
Project emissions	*CO_2*	*Main source of emission from natural gas consumption from co-firing with BFG and COG*
Leakage		*Excluded due to big uncertainty - the*

		calculation for leakage shows that leakage emissions increases the amount of emissions, which represents 0.003% of fugitive methane emissions due extraction, transportation, distribution and consumption of natural gas in Ukraine /4/. As the data for calculation are sourced from National Inventory report /16/ and IPCC /25/. The uncertainty of the data is higher than this percentage and neglecting this emission source is thus in DNV's opinion justified.

4.4 Additionality

The additionality of the project was demonstrated by using the latest version of "Tool for the demonstration and assessment of additionality"/8/.

4.4.1 Alternatives consistent with legislation

Alternatives for the project activity are listed in previous section on baseline determination. The two alternatives found as realistic and consistent with mandatory laws and regulation are as follows:

Alternative 1: Maintain on-site electricity generation, cover the rest of the demand by purchasing electricity from the grid and flare excess BFG (current situation)

Alternative 2: Increase on-site electricity generation by utilization of excess BFG at CHP-SAS and reduce the amount of purchased electricity (project scenario without JI incentive)

4.4.2 Investment analysis

Choice of approach

Since the proposed project generates financial and economic benefits and the alternative does not involve any investment, a benchmark analysis (Option III) is applicable.

Benchmark selection

NPV was chosen as appropriate financial indicator. The discount rate used in the calculation was 9% calculated based on commercial lending rate (17.7%) adjusted for the customer price index (8%). Both of parameters were sourced from Ukrainian National Bank Bulletin #2/2004 /30/.

Input parameters

All parameters used in the calculation are sourced from plant records and "orders" /21/ for investment of the projects. All information are dated 2004, which is the year of starting date of project activity.

The investment costs /21/ were compared with real costs in invoices /21/. However, the actual investment was lower than proposed investment in orders. If applying the actual values to the NPV calculation, the NPV remains negative. Thus the investment is reasonable.

The price of electricity and natural gas /22/ were provided by the plant's Department of Energy Supply and cost value of technical and chemically treated water /26/ were provided by CHP-SAS. These records are primary records of plant available at time of the project start

thus DNV deemed them as realistic. All information are dated 2004, which is the year of starting date of project activity.

Calculation and conclusion

The NPV value of the project activity without JI incentives is - 16 521 885 in provided calculation /2/, which is below chosen benchmark. DNV has verified the provided calculation to be correct and input values as reasonable.

Therefore the project NPV analysis is considered correct.

Sensitivity analysis

The project participant provided calculation of sensitivity analysis as part of investment analysis /2/. The main parameters were evaluated in range ± 10% and they are listed below:

- electricity price
- natural gas price
- investment

Grid electricity price

The NPV of the project varies between -16 528 610 to -16 515 159 for chosen variation of ± 10%. As the prices should increase in hundreds of percent to reach 0, it is clear that the price of electricity cannot reach this value. The present value tariff is 0.8237 UAH/MWh /31/. Applying this value would result in a NPV of -16175158. Further the price of electricity is based on information from Plant's Department of Energy supply, and it is the more accurate information in the time of decision. DNV found the arguments reasonable.

Natural gas price

This parameter varies from -16 519 919 to -16 523 850 for chosen variation of ± 10%. Significant change of the NPV only occur in case the price changes in range of hundred %. Further if the current price, which is 2 553.20 UAH per 1 000 m^3, is applied to NPV calculation, the result is -16 692 865, which indicates the project to be non-viable. DNV found the arguments reasonable.

Investment

The total value of investment at 18 013 374 UAH applied in NPV calculation /2/ is based on contracted orders of individual technology parts. However this total sum applied in NPV calculation is higher than estimated investment of 15 011 145 UAH. It is observed that when applying a variation of ± 10%., the result of NPV calculation is still negative, i.e. -14 896 001 to -18 174 769 and the NPV value reaches -13767078 when the actual investment value is applied.

Hence, DNV is able to confirm that the presented arguments of sensitivity analysis clearly demonstrate that parameters used in NPV /3/ calculation and represents more than 20% to revenue or cost, are not possible to change in extent, which can change the additionality of the project.

In conclusion, it is DNV's opinion that it has been correctly demonstrated that the project activity is not financially attractive. Hence, the emission reductions achieved by the project are additional to any that would have happened in absence of the project.

4.5 Monitoring

The project applied JI specific approach for monitoring in accordance with Guidance on criteria for baseline setting and monitoring /6/.

The monitoring plan is included in PDD /1/ and contains principles and concepts on which it is based, operational and monitoring obligations of the project owner like resources involved in the monitoring process, training, support activities, calibration and collection data, quality assurance procedures, data management, electronic support tools.

The monitoring plan will give opportunity for real measurements of achieved emission reductions.

4.5.1 Parameters determined ex-ante

The parameters determined ex-ante are based on historic operational data of plant (net electricity generated by turbine #1 /22/, amounts of combusted NG, BFG and COG /22/) or they are sourced from National Inventory in Ukraine /16/ and IPCC /25/

The values are presented in table below:

	Units	2002	2003	2004	source
Net electricity generation	MWh	61284	79348	76261	Project operational data /22//23/
NG consumption for electricity generation	thousand. m3	5606,7	5456	5345	
BFG consumption for electricity generation	thousand. m3	399677	641774	646358	
COG consumption for electricity generation	thousand. m3	299,8	1787,1	82,6	
Net calorific value of NG	GJ/th. m3	33,94			Ukrainian National Inventory Report for 1990-2008 /16/
Net calorific value of BFG	GJ/t	2,47			2006 IPCC /25/
Net calorific value of COG	GJ/th. m3	16,7472			Ukrainian National Inventory Report for 1990-2008 /16/

4.5.2 Parameters to be monitored ex-post

The data monitored for the baseline emission determination covers a) gross power generation and b) power consumption by turbo generator (auxiliary). The measured devices are electricity meters, which will be calibrated in accordance with local legislation: two electricity meters SAZU-I670 are calibrated every 3 years (for consumption of the turbo generator) and one ABB A2R-4-OL-C25-T every 6 years for gross electricity production. The accuracy is 2% for all of them.

The data monitored for the project emission are a) combusted natural gas and b) its net calorific value. Combusted natural gas is measured by flow meter type Safir – M 5420 with accuracy 0.25% and calibration every 2 years.

The NCV will be calculated as average based on sampling monitoring, which is provided by supplier.

4.6 Estimate of GHG Emissions

The project emission reduction is calculated as difference between baseline emissions and project emissions. The leakage is neglected because calculated leakage resulted small number in comparison with total emissions resulted due extraction, transportation, distribution and consumption on Ukraine and calculation is based on sources from national reports /16/.

Baseline

The baseline emissions cover emissions from natural gas consumption for on-site electricity generation and emissions from grid electricity consumption.

The baseline is calculated as follow:

$$BE_y = BE_{GE,y} + BE_{NG,y}$$

$$BE_{GE,y} = (EG_{PL,y} - EG_{BL,y}) \times EF_{EG}$$

$$BE_{NG,y} = FC_{BL,y} \times NCV_{NG,y} \times EF_{NG}$$

Where:

BE_y – baseline emission in the year y

$BE_{GE,y}$ – emissions due to grid power consumption in the baseline scenario in the year y

$BE_{NG,y}$ – emissions due to natural gas combustion in the baseline scenario in year y

$EG_{PL,y}$ – power output in the project scenario (difference between gross power generation by turbo generator # 1 in year y and power consumption by turbo generator #1 in year y)

$EG_{BL,y}$ – power output in the baseline scenario (used historical data for 2002 – 2004)

EF_{EG} – emission factor for national grid

$FC_{BL,y}$ – baseline consumption of natural gas co-fired with BFG and COG in year y (used historical data for 2002 – 2004)

$NCV_{NG,y}$ – net calorific value of natural gas in baseline

EF_{NG} – emission factor due to burning of natural gas

Project emission

The project emissions cover emissions due to natural gas consumption.

It is calculated as follow:

$$PE_y = PE_{NG,y}$$

$$PE_{NG,y} = FC_{PL,y} \times NCV_{NG,y} \times EF_{NG}$$

where:

$PE_{NG,y}$ – project emission due to natural gas consumption in year y

$FC_{PL,y}$ – project consumption of natural gas co-fired with BFG and COG

Leakage

The leakage is calculated as sum of emission from NG production, transmission and distribution. Data for calculation /4/ is sourced from Ukrainian National Inventory Report 1990-2008 /16/ (i.e. CH_4 and CO_2 emission factors for individual activity) and from original primary data from production (for natural gas consumption). The result is 661 tCO_2e/year, which correspond cca 0.003% of national emissions from production, transmission and distribution.

Thus the leakage is neglected and is reasonable.

The emission reduction calculation for period 2008 till 2012 was provided in excel sheet /3/. The average of baseline emissions for this period is 100 148 tCO_2 and average project emissions for the same is 17 959 tCO_2, which represents average year emissions reductions of 82 189 tCO_2 for the period 2008 – 2012.

4.7 Environmental Impacts

It was confirmed during the site visit that the project has only positive influence on environment because project decrease air pollution of limited gases from Environmental permit, however these pollutants were under limit during the baseline scenario too.

The voluntary EIA assessment for this modernization was realized as improvement under Donetsksteel's environmental management system (the project is certified according to ISO 14001:2004) and it was presented to DNV.

DNV found this process as sufficient.

4.8 Comments by Local Stakeholders

The Ukrainian legislation does not require stakeholder comment for JI projects. As the EIA process was realized voluntary, no stakeholders' comments were invited. However the information on the modernization and project activity was presented on Donetsksteel official web pages. DNV found this process as sufficient.

4.9 Global stakeholders consultation

The PDD of 3 December 2010 was made publicly available on JI website (http://ji.unfccc.int/JI_Projects/DB/6NQNJ4LGHLFHW6MU49GGXCJ4HNEAR9/PublicPDD/XYZL9PAIATWN4OI5GBJ1FCWCWMGKS2/view.html) and Parties, stakeholders and observers were through the JI website invited to provide comments during a 30 days period from 22 February 2011 to 23 March 2011

No comment was received.

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APPENDIX A

JI DETERMINATION PROTOCOL

Table 1 Mandatory requirements for Joint Implementation (JI) project activities

Requirement	Reference	Conclusion
1. The project shall have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a)	CAR1
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)	CAR3 OK
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 (c)	OK
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
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	OK
6. The host Party shall be a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24	OK
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	OK
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	OK
9. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination	Marrakech Accords, JI Modalities, §31	OK
10. The project 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	OK
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	Marrakech Accords, JI Modalities, §33(d)	CL8 OK

Requirement	Reference	Conclusion
Party shall be carried out		
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	CAR2 OK
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	CAR2 OK
14. The baseline methodology shall exclude to earn emission reductions for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, JI Modalities, Appendix B	OK
15. The project shall have an appropriate monitoring plan	Marrakech Accords, JI Modalities, §33(c)	CAR6 OK

Table 2 Requirements checklist

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A General description of project activity						
A.1 Project boundary *Project Boundaries are the limits and borders defining the GHG emission reduction project.*						
A.1.1	Are the project's spatial boundaries (geographical) clearly defined?	/1/	DR	Yes. The project is located in Donetsk, Donetsk oblast in Ukraine. The geographical coordinates are 47°58'52'' E and 37°48'44'' N		OK
A.1.2	Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	Yes, baseline and projects boundary are clearly limited as CO_2 resulted from grid electricity consumption and co-firing of NG with BFG and COG (baseline) and CO_2 from co-firing of NG with BFG and COG as project emissions. Leakage is neglected due to big uncertainty of small amount of value.	CL7	OK
A.2 Participation Requirements *Referring to Part A and Annex 1 of the PDD as well as the JI glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.*						
A.2.1	Which Parties and project participants are participating in the project?	/1/	DR	As host party is presented Ukraine and CJSC "Donetsksteel" – Iron and Steel Works". The second involved party is Netherlands represented by Global Carbon BV.		OK
A.2.2	Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/	DR	No, the LoAs were not provided yet.	CAR1	

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
A.3 Technology to be employed *Determination of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The AIE should ensure that environmentally safe and sound technology and know-how is used.*						
A.3.1	Does the project design engineering reflect current good practices?	/1/	DR	The engineering is limited reconstruction of originally installed technology but it should be assessed as current good practice. But evidence about lifetime of the technology is requested.	CL6	OK
A.3.2	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 used technology is from 1981 respective 1987 and the same is modernized respective reconstructed, which is commonly used procedure in Ukraine.		OK
A.3.3	Does the project make provisions for meeting training and maintenance needs?	/1/	DR	This information is not included in the PDD	CL1	OK
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.1.1	Does the project apply an approved CDM methodology and the correct version thereof? If yes, please proceed to section B.3. If a JI specific approach is applied, please complete section B.2.	/1/	DR	No, the specific JI approach was used.		OK
B.2 Baseline methodology (JI specific approach)						
B.2.1	Are the proposed applicability conditions appropriate and adequate?	/1/	DR	Yes, the PDD describe steps requested in the Guidelines for users of JI PDD Form, version 4 and identified the most plausible baseline scenario including assessing of impacts as legal		OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				requirements, sectoral policies, economic situation and socio-demographic factors as well as local availability of technologies, skills, kow-how and BATs, prices etc.		
B.2.2	Is the methodological basis for determining the baseline scenario described?	/1/	DR	Yes, the project assesses plausible scenarios for future and used barrier analysis for identification.		OK
B.2.3	Is the methodological basis for determining the baseline scenario, and whether the basis is appropriate and adequate?	/1/	DR	Yes, the methodological basis for determining of the baseline scenario is appropriate and adequate.		OK
B.2.4	Does the application of the methodology result in a baseline scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity?	/1/	DR	Yes, the application reasonably represents the anthropogenic emissions by source of GHG that would occur in the absence of the proposed project activity.		OK
B.2.5	Can it through the use of the methodology be demonstrated that a project activity is additional and, therefore, not the baseline scenario?	/1/	DR	Yes, after demonstration of evidences, that the statement for individual scenarios is valid and based on scientist and realistic premises.	CL4	OK
B.2.6	Is the methodology to calculate the baseline emissions and is the basis for calculating baseline emissions appropriate and adequate?	/1/	DR	The methodology seen to be adequate but several correction related to monitoring information as well as evidence related to neglecting of leakages are requested	CAR2 CL2 CL3	OK
B.2.7	Is the methodology to calculate project emissions appropriate and adequate?	/1/	DR	The methodology seen to be adequate but several correction related to neglecting of leakages are requested	CL2	OK
B.2.8	Is there any potential leakage due to the project activity?	/1/	DR	Yes, the potential leakage is proposed as fugitive emission of CH_4 from increasing natural gas consumption for electricity generation. It is proposed to neglect this leakage due to big uncertainty of data sourced in comparison of total calculated value. The evidence for this statement is requested.	CL2	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.2.9	Is it for all key data and parameters indicated which data sources or default values are used and how the data or the measurements are obtained (e.g. official statistics, expert judgment)?	/1/	DR	No, the most information is based on original data from Donetsk and only values are presented in the PDD without proper evidencing.	CL3	OK
B.2.10	Are the data sources and measurement procedures (if any) used adequate, consistent, accurate and reliable?	/1/	DR	As the description of measurement devices is not sufficient, it is not possible to assess it.	CL3	OK
B.2.11	Is the monitoring frequency for the data and parameters is appropriate?	/1/	DR	No, it stated in the PDD that Net Calorific Value will be measured continuously and simultaneously that will be use weighted average from natural gas suppliers' data.	CAR2	OK
B.2.12	Has the methodology been described in an adequate and transparent manner?	/1/	DR	No, clarifications and CAR are requested.	CAR2 CL2 CL3	OK
B.3	**Applicability of methodology** *To be completed in case an approved CDM methodology is applied. Insert a row for each applicability criteria of the applied methodology (and tools)*					
B.3.1	How was it validated that project complies with the following applicability criteria: insert applicability criteria 1?	/1/	DR	NA		
B.3.2	How was it validated that project complies with the following applicability criteria: insert applicability criteria 2?	/1/	DR	NA		
B.3.3	How was it validated that project complies with the following applicability criteria: insert applicability criteria 3?	/1/	DR	NA		
B.3.4	How was it validated that project complies with the following applicability criteria: insert applicability criteria 4?	/1/	DR	NA		
B.3.5	Is the selected baseline on of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/1/	DR	NA		

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
B.4	**Project boundary**					
B.4.1	What are the project's system boundaries (components and facilities used to mitigate GHGs)? Are they clearly defined and in accordance with the methodology?	/1/	DR	The boundaries are clearly defined as project location by geographical coordinates and the emission resources. I.e. CO_2 from consumption of national grid electricity and co-firing of NG with BFG and COG for baseline and CO_2 from co-firing of NG with BFG and COG for project emissions.		OK
B.4.2	Which GHG sources are identified for the project? Does the identified boundary cover all possible sources linked to the project activity? Give reference to documents considered to arrive at this conclusion.	/1/	DR	CO_2 from consumption of national grid electricity and co-firing of NG with BFG and COG for baseline and CO_2 from co-firing of NG with BFG and COG for project emissions. The fugitive CH_4 emissions are neglect due to uncertainty but evidence is requested for this premise.	~~CL2~~	OK
B.4.3	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute with more than 1% of the estimated emission reductions of the project?	/1/	DR	No, any other source then prior mentioned was not identified.		OK
B.5	**Baseline scenario determination**					
B.5.1	Which baseline scenarios have been identified? Is the list of baseline scenarios complete?	/1/	DR	For increased volume of BFG: G1: BFG flaring at stand – it is continuation of current situation and it is plausible and realistic. The situation was confirmed from Environmental permit. G2: BFG utilization to generate additional electricity – this option asked investment but it is environmentally beneficial	CL4 CAR3	OK

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Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			G3: BFG utilization to generate additional heat G:BFG sale – as the plant will not request more heat consumption than in current situation, new consumers should be find in this case. The close located plants own the boiler houses too, thus the municipal heat district system should be the connected in this case. As the situation in Donectsk is not prosperous in terms of heat prices, the investment return should have delay. Thus this option is not reasonable. For electricity: P1: Stop electricity generation and cover all of the demand by purchasing electricity from national power grid – it is not technically feasible because the situation will increase pollution in region due to increasing of flaring BFG and COG as well as pollution from grid demand increasing P2: Maintain the same level of on-site electricity generation at the existing generating capacity and cover the rest of the demand by importing electricity from national power grid - it is continuation of current practice and it is reasonable P3: Increase on-site electricity generation at the existing plant and reduce the amount of imported electricity – it is best scenario for environment but the scenario request additional investment cost for reconstruction P4: Increase on site electricity generation to fully cover the Plant's demand to exclude import – this scenario request construction of new CHP about 50 MW to satisfy all pant requests, which means high investment cost, which is not feasible. The		

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
				evidence about plant demand and investment cost is requested. Finally two plausible scenarios are as result: Alternative 1: G1+P1 – Maintain on-site electricity generation, cover the rest of the demand by purchasing electricity from the grid and flare excess BFG Alternative 2: G3+P3 – Increase on-site electricity generation by utilization of excess BFG at CHP-SAS and reduce the amount of purchased electricity It should be confirmed by NPV calculation that only Alternative 1 is feasible scenario. But the evidences of NPV calculation are requested.		
B.5.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/	DR	The scenarios were eliminated base on information about investment for individual scenarios and environmental impacts. But the evidences of NPV calculation are requested.	CAR3	OK
B.5.3	What is the baseline scenario?	/1/	DR	The baseline scenario is “Maintain on-site electricity generation, cover the rest of the demand by purchasing electricity from the grid and flare excess BFG”, which is continuation of current situation.		OK
B.5.4	Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/	DR	After confirmation of elimination process by evidences, it will be confirmed that it is in accordance with JI specific approach.	CL4 CAR3	OK
B.5.5	Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	After confirmation of elimination process by evidences, it will be confirmed that it is in accordance with JI specific approach.	CL4 CAR3	OK
B.5.6	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic	/1/	DR	Yes, it is confirmed, that emission from flaring are in compliance with current legislation.		OK

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	Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	trends and political aspirations?					
B.5.7	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	The evidences of NPV calculation are requested.	CAR3	OK
B.5.8	Is the baseline determination adequately documented in the PDD? • All assumptions and data used by the project participants are listed in the PDD and related document to be submitted for registration. The data are properly referenced. • All documentation is relevant as well as correctly quoted and interpreted. • Assumptions and data can be deemed reasonable • Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD. • The methodology has been correctly applied to identify what would occurred in the absence of the proposed CDM project activity	/1/	DR	The evidences of NPV calculation are requested.	CL4 CAR3	OK
B.6	**Additionality Determination** *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*					
B.6.1	What is the methodology selected to demonstrate additionality?	/1/	DR	The "Tool for demonstration and assessment of additionality", version 5.2 was used.		OK
B.6.2	Is the project additionality assessed according to the methodology?	/1/	DR	Yes, but open calculation of NPV calculation is missing.	CAR3	OK
B.6.3	Are all assumptions stated in a transparent and conservative manner?	/1/	DR	Except problems mentioned in CAR3 and CL4	CL4 CAR3	OK
B.6.4	Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	Except problems mentioned in CAR3, CL4 and CL5 evidences related to common practice.	CL4 CL5 CAR3	OK

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Checklist Question		Ref	MoV	Assessment by DNV	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 evidenced?	/1/	DR	As starting date was chosen 2 August 2004 and operational lifetime is supposed 20 years. Evidences for operational lifetime are requested as well as more details for prior consideration (it was mentioned first propose of it in 2000-2002)	CL6	OK
C.1.2	Is the start of the crediting period clearly defined and reasonable?	/1/	DR	Yes, the start of crediting period is 1 January 2008.		OK
D Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*						
D.1.1	Is the monitoring plan documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR	The project owner chose JI specific approach for monitoring plan setting with complete and transparent manner.		OK
D.1.2	Will all monitored data required for verification and issuance be kept for two years after the last issuance of ERUs, for this project activity, whichever occurs later?	/1/	DR	The archiving period is not mentioned in the PDD.	CAR4	OK
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 monitoring plan does not cover procedures related to archiving data. The responsibility for individual parameters monitoring are established.	CAR4	OK
D.2.2	Are the choices of project GHG indicators reasonable and	/1/	DR	Yes, CO_2 is GHG indicator for the project		OK

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	Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
	conservative?			emission. All data for this indicator are on a project specific basis.		
D.2.3	Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	/1/	DR	Yes. The measurement method stated clearly in the PDD but one assumptions seems to be incorrect. The measurement of NCV is not (the most probably) continual and monitoring will be probably provided by sampling. It is not included information about η in the section D.1.1.	CAR5	OK
D.2.4	Is the measurement equipment described and deemed appropriate?	/1/	DR	The information about flow meter is correct. The measurement of NCV by supplier is not correct	CAR5	OK
D.2.5	Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	The accuracy of flow meter is 0.25% and calibration will be every 2 years according to internal procedures. The NCV measurement will be provided by RDP "Donbastransgas" (NG supplier) according to supplier's internal procedures.		OK
D.2.6	Is the measurement interval identified and deemed appropriate?	/1/	DR	The measure interval is correct for flow meter – continuously but the same seems unrealistic for NCV.	CAR5	OK
D.2.7	Is the registration, monitoring, measurement and reporting procedure defined?	/1/	DR	No this procedures are not defined except brief responsibilities for data handling and information that employees were duly trained.	CAR6	OK
D.2.8	Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	No, information about maintenance and installation is not included in the PDD. The information about calibration intervals is included.	CAR6	OK
D.2.9	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	The same as previous procedures, the daily handling is not described in detail, information about responsibilities are included briefly only.	CAR6	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.3 Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*		/1/	DR			
D.3.1	Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	The monitoring plan does not cover procedures related to archiving data. The responsibility for individual parameters monitoring are established.	CAR4	OK
D.3.2	Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes, CO_2 is GHG indicator for the project emission. All data for this indicator are on a project specific basis.		OK
D.3.3	Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	Yes. The measurement method stated clearly in the PDD as measurement consumption of electricity by turbogenerator and gross power generation by turbogenerator. Both of them are measured by electricity meters and continuously.		OK
D.3.4	Is the measurement equipment described and deemed appropriate?	/1/	DR	Yes, they are used only one type of measurement equipment – electricity meters.		OK
D.3.5	Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	The uncertainty for electricity meters is 2% and calibration will be provided every 3 years according to plant's internal procedures.		OK
D.3.6	Is the measurement interval for baseline data identified and deemed appropriate?	/1/	DR	The measure interval is correct – it is continuously measurement		OK
D.3.7	Is the registration, monitoring, measurement and reporting procedure defined?	/1/	DR	No this procedures are not defined except brief responsibilities for data handling and information that employees were duly trained.	CAR6	OK
D.3.8	Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	No, information about maintenance and installation is not included in the PDD. The information about calibration intervals is included.	CAR6	OK
D.3.9	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	The same as previous procedures, the daily handling is not described in detail, information about responsibilities are included briefly only.	CAR6	OK

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Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
D.4 Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*						
D.4.1	Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	The leakage is neglected due to high uncertainty in determining of fugitive emissions from natural gas extraction, transportation, distribution and consumption. The evidences for this statement are requested.	CL7	OK
D.4.2	Are the choices of project leakage indicators reasonable and conservative?	/1/	DR	It will be assess after provision of evidences.	CL7	OK
D.4.3	Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/1/	DR	NA as the leakage is neglected.		
D.5 Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*						
D.5.1	Is the authority and responsibility of overall project management clearly described?	/1/	DR	It is only brief description, more details is requested.	CAR7	OK
D.5.2	Are procedures identified for training of monitoring personnel?	/1/	DR	No, it is not included in the PDD.	CAR7	OK
D.5.3	Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No, it is not included in the PDD.	CAR7	OK
D.5.4	Are procedures identified for review of reported results/data?	/1/	DR	No, it is not included in the PDD.	CAR7	OK
D.5.5	Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	No, it is not included in the PDD.	CAR7	OK

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
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 Calculation of GHG Emission Reductions – Project emissions *It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
E.1.1 Are the calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR	The specific JI approach was used for the calculation. The formulae described in the D.1.1.2. of the PDD are reasonable and fulfil requirements of this approach.		OK
E.1.2 Have conservative assumptions been used when calculating the project emissions?	/1/	DR	Yes it is in line with the JI specific approach.		OK
E.1.3 Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Yes. The accuracy of the measurement devices is clearly stated in the PDD and seems as sufficient.		OK
E.2 Calculation of GHG Emission Reductions – Baseline emissions *It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
E.2.1 Are the calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR	The specific JI approach was used for the calculation. The formulae described in the D.1.1.2. of the PDD are reasonable and fulfil		OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question	Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
			requirements of this approach.		
E.2.2 Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	Yes it is in line with the JI specific approach.		OK
E.2.3 Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	Yes. The accuracy of the measurement devices is clearly stated in the PDD and seems as sufficient.		OK
E.3 Calculation of GHG Emission Reductions – Leakage *It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
E.3.1 Are the leakage calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR	The evidences for assumption to neglect the leakage are requested	CL7	OK
E.3.2 Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	The evidences for assumption to neglect the leakage are requested	CL7	OK
E.3.3 Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	The evidences for assumption to neglect the leakage are requested	CL7	OK
E.4 Emission Reductions *The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.*					
E.4.1 Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	Yes, the emission reductions are real, measurable and give long-term benefits related to the mitigation of climate change. The implemented monitoring methodology and measurement system allow for calculation of real project specific emissions reduction.		OK

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
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 AIE.*						
F.1.1	Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	The EIA is request according to Host party requirements. The evidences about the process are requested.	CL8	OK
F.1.2	Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	Yes, the EIA is requested in host party legislation. The evidence about approval is requested.	CL8	OK
F.1.3	Will the project create any adverse environmental effects?	/1/	DR	Main impact is emission of NO_2, CO, SO_2 gases into air but the project's impact to air is lower in comparison with baseline scenario. Evidence is requested.	CL8	OK
F.1.4	Are transboundary environmental impacts considered in the analysis?	/1/	DR	It is supposed as transboundary impact to reduce long distance transportation of air pollutants. Evidence is requested.	CL8	OK
F.1.5	Have identified environmental impacts been addressed in the project design?	/1/	DR	NA, the air pollution is lower but still monitored as in baseline scenario. Evidence is requested.	CL8	OK
F.1.6	Does the project comply with environmental legislation in the host country?	/1/	DR	Evidence is requested.	CL8	OK
G Stakeholder Comments *If required by the host country, the AIE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*						
G.1.1	Have relevant stakeholders been consulted?	/1/	DR	This section should be revised according to reality.	CL9	OK

MoV = Means of Verification, DR= Document Review, I= Interview, CC= Cross-Checking

Checklist Question		Ref	MoV	Assessment by DNV	Draft Concl.	Final Concl.
G.1.2	Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	This section should be revised according to reality.	CL9	OK
G.1.3	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	This section should be revised according to reality.	CL9	OK
G.1.4	Is a summary of the stakeholder comments received provided?	/1/	DR	This section should be revised according to reality.	CL9	OK
G.1.5	Has due account been taken of any stakeholder comments received?	/1/	DR	This section should be revised according to reality.	CL9	OK

Table 3 Resolution of Corrective Action and Clarification Requests

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
CAR1 The LoAs were not provided yet.	A.2.2	The company has LoE: National Environmental Investment Agency of Ukraine: No. 1608/23/7 from 14 October 2010. According to Ukrainian JI procedure positive determination report is required for application for LoA. Therefore, it cannot be provided on the determination stage.	The CAR will be open, but this status is acceptable for JI project prior registration.
CAR2 It stated in the PDD that Net Calorific Value will be measured continuously and simultaneously that will be use weighted average from natural gas suppliers' data. The correct information should be included to the table. (NCV – supplier data, not information about laboratory; NCV for BFG and COG is from local data, BFG – local lab. – daily, weighted average; COG – supplied by closed plant, used constant – i.e. correct description in the PDD and evidences are requested).	B.2.6 B.2.11 B.2.12	Due to the fact that no verifiable evidence proving the historic data on NCV of gas fuel combusted by boiler No 5 at Donetsksteel CHP-SAS was found at the Plant, it was decided to use default values for emissions calculations. Country specific NCV of natural gas and coke oven gases are used in accordance with Ukrainian Fifth National Communication on Climate Change (page 258); for blast furnace gas IPCC default value is applied for its NCV. This approach is taken with intention to reduce uncertainty of the data used and increase transparency of calculation. Data in summary tables of Section B (pages 16-19) and in Annex 2 (pages 47-49) were corrected; emission reductions were recalculated accordingly. In section D 1.1 it is stated that source of data for NCV of NG is "natural gas supplier". The footnote with the following text was added to PDD version 3.2: "Measurement is not performed by project	The using of national data for baseline calculation is acceptable as well as information from supplier for NCV of natural gas for monitoring. CAR is closed

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		participants and conducted by the supplier of natural gas on sampling basis"	
CAR3 The calculation of NPV is provided but evidencing of individual inputs is not sufficient (table of information from Donetsksteel)	B.5.1 B.5.3 B.5.4 B.5.5 B.5.7 B.5.8 B.6.3 B.6.4	Documents proving budgeted costs were provided to the AIE to prove the figures used for calculation of NPV. The calculation file was corrected to reflect the costs according to the documentation provided. Information in Section B (pages 20-21) of PDD version 3.1 was changed accordingly. The information about other parameters used for investment analysis such as prices for electricity, NG and resources used for calculation of electricity production costs was provided by the responsible Divisions of the Plant: Department of Energy Supply sent prices for electricity and NG; CHP-SAS sent cost value of technical and chemically treated water. The copies of these documents were provided to the AIE. The Plant price data is the most accurate as it reflects the actual costs to the Plant including general tariff and transportation costs which are specific for each enterprise in Ukraine. The information provided by the Plant's Department of Energy Supply can be cross-checked. Electricity price for Donetsksteel in January 2004 was 0.134 th UAH/MWh, while electricity tariff in Donetsk oblast then was also 0.134 (value for "ООО "Сервис-Инвест" (Донецкая обл.)") UAH/MWh; price for NG, provided	The investment costs as well as other provided prices are verified. The calculation provided by project participant is deemed correct in version 3.1 dated 8 April 2011. Further NPV calculation is robust for changes in investment as well as prices of individual outputs. The assumption of electricity production are based on verified data for baseline as well as compared with real data for project electricity production in available years. However the excepted values are higher than real, the sensitivity of this parameters was found as robust too. The CAR is closed

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		by the Plant is 0,261 th UAH/th m^3 while tariff approved by National Electricity Regulatory Comission of Ukraine Resolution No 158 from 18.02.2004 (the earliest publicly available evidence) is 0,284 th UAH/th m^3. When inserted to investment analysis model these prices change the project's NPV from -16 521 885 UAH to -16 523 661 UAH which make the project even less financially attractive. Price information provided by Donetsksteel CHP-SAS cannot be cross-checked with publicly available sources as it is a unique data specific to the Donetsksteel production process. However, even if these costs are neglected in the investment analysis it improves NPV only for 0,2% (from -16 521 885 UAH to -16 481 237 UAH) which do not compromise the statement about additionality of the project.	
CAR4 The archiving period should be mentioned in the PDD.	D.1.2 D.2.1 D.3.1	All the data used for baseline and project emission calculations as well as the monitoring data is to be stored at least till 31st of December 2014 in accordance with the Donetsksteel Order for storage of data on JI project. The copy of the Order was provided to the AIE. The relevant changes were made in Section D (page 26) of PDD version 3.1	The archiving period is mentioned correctly in the revised PDD and the same is mentioned in the Donetsksteel Order for storage of data on JI project, dated 16 August 2008. The CAR is closed
CAR5 One assumption of project emissions seems to be incorrect: The measurement of NCV is not (the	D.2.3 D.2.4	The measurements of NCV of natural gas are to be performed by sampling on daily basis. The relevant changes were made to	The correct version of formulas is confirmed as well as description of sources for NCV.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
most probably) continual and monitoring will be probably provided by sampling. It is not included information about η in the section D.1.1.	D.2.6	Section D (page 29) of PDD version 3.1. In section D 1.1 it is stated that source of data for NCV of NG is "natural gas supplier". The footnote with the following text was added to PDD version 3.2: "Measurement is not performed by project participants and conducted by the supplier of natural gas on sampling basis" Parameter η was typed in calculation formula by misprint. It was corrected in Section D of PDD version 3.1. Parameter η is not taken into account in emission reduction calculations; therefore, it is not monitored and not included to section D.1.1.	The CAR is closed
CAR6 Registration, monitoring, measurement and reporting procedures are not defined in the PDD. Information about maintenance and installation is not included in the PDD. Day-to-day records handling is not described in detail, information about responsibilities are included briefly only	D.2.7 D.2.8 D.2.9 D.3.7 D.3.8 D.3.9	Principal scheme for data recording and reporting on electricity generation is as follows: electricity generation is monitored by electronic meter directly connected with computer system at accounting office of Department of Head Energy Engineer; data is transferred with no human intervention. However, readings of the flow meter are also recorded on hourly basis to the operational logs for cross-check. Data on electricity consumption for generation is monitored by induction meters, readings of which are recorded to operational logs. Figures from those logs are filled in daily reports reflecting the readings of the flow meters for each 24 hours, the daily reports are then submitted	The description of recording and QA/QC procedures for maintenance of data is acceptable. The flow-meters were excluded from section related to electricity measurement. The CAR is closed

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		to accounting office of Department of Head Energy Engineer. Daily reports are analysed, difference in readings with data for the previous day is inputted into Excel based computer system, where data are accumulated and aggregated into monthly reports. Principal scheme for data recording and reporting on fuel consumption follows: Consumption of NG, BFG and COG is monitored by flow meters, data of which are displayed through electronic logger. On daily basis the recorded data in electronic format is transferred to Process Control and Instrumentation Division (PCI Division), where it is downloaded into Excel based computer system, where data are accumulated and aggregated into monthly reports. There are also procedures for cross-check and ensuring accuracy of data in place at Donetsksteel. They are described in the answer to CAR 7. Copies of monthly reports are provided to Global Carbon B.V. which performs emission reductions calculation and prepares Monitoring reports. Specific details (serial numbers, calibration dates etc.) of flow meters used for monitoring will be provided in the monitoring reports with the aim to ensure maximal accuracy of reporting for the	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		corresponding periods. Installation and maintenance of metering devices is performed according to Plant Standard STP 54C-7.6-01-2006. According to this standard the responsibilities on installation, calibration and maintenance of metering devices are carried out by the Heads of the Department who assign responsible executors. In case with CHP-SAS these are Head of CHP-SAS with Deputy Head of Boiler Workshop and Deputy Head of Electrical Workshop respectively who organize execution of the relevant data collection procedures, periodic calibration according to the requirements of producers of the metering devises, maintaining them in working order and their repair. The copy of Sub-process RP 54C-7.6-01-03: Operation and maintenance of metering devices was provided to AIE as evidence. Data recording process during the time of repair of metering devices is regulated by Instruction for Data Recording on Gas Fuel Consumption, paragraph 5.7: in case of absence of the flow meters due to their calibration or repair the average readings for the previous three days has to be recorded. The copy of Instruction for Data Recording on Gas Fuel Consumption was provided to AIE as evidence. The same principle originating from USSR standards is applied to recording data of electricity	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		meters. The explanation of monitoring procedures was extended in Section D (pages 35-37) of PDD version 3.1 Addition to the answer (13.04.2011): flow meters are used by mistake. The metering devises used for monitoring electricity generation and consumption are power meters. According to Instruction for Data Recording on Gas Fuel Consumption paragraph 5.7 the maximum acceptable time for meter calibration or repair works is three days. Information was added to Section D (pages 35-37) of PDD version 3.2	
CAR7 More details is requested for the authority and responsibility of overall project management. The follow procedures should be identified: • for training of monitoring personnel • for emergency preparedness for cases where emergencies can cause unintended emissions • for corrective actions in order to provide for more accurate future monitoring and reporting • for review of reported results/data	D.5.1 D.5.2 D.5.3 D.5.4 D.5.5	Donetsksteel has a comprehensive system for education and training of staff. All of the staff members receive professional education which imply theoretical studies, practical supervised training at worksite and qualification exam. At worksite all the staff members are periodically instructed to refresh their knowledge of their responsibilities and safety rules. Training of monitoring personnel takes place in line with general professional training system working at the Plant. Training of the monitoring personnel at CHP-SAS is organized by Head of CHP-SAS, executed through Deputy Head of Boiler Workshop and Deputy Head of Electrical Workshop.	The detail procedures as are described in response are included in the updated PDD. The procedures sufficiently described reaction and management of individual areas (training, emergency preparedness, corrective actions and review of reported data). Further, the plant is certified according to ISO 9001 and ISO 14001, which ensure minimum acceptable standard in theses procedures. The CAR is closed

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		Job descriptions are available at each workplace. Health and safety rules, as well as preparedness to emergency situations are covered by the above mentioned training program which ends with an exam. In addition, each month employees are instructed at the work places. The instruction registration logs are kept at each work place and were available to AIE during the site visit. Inside the project boundary unintended emissions could be related to the gas fuel used: NG, BFG and COG. In case of any emergency the supply of the fuel to CHP-SAS is to be stopped immediately after the automatic emergency signal from CHP-SAS. The gases supply is cut at gas distribution station of the Plant, blast shop or coke-chemical plant respectively. The accuracy of reported monitoring data is ensured on the stage of preparing the monthly reports used as a primary data for emission reductions calculation. Each parameter in the report is cross-checked with the readings of gas flow-meters measuring the overall fuel consumption of CHP-SAS. The fuel consumption of individual installations is determined by deducting the sum of readings of the individual consumers from the overall consumption of CHP-SAS. If the difference does not correspond to the readings being	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		cross-checked, the reason for it is determined and data are adjusted accordingly taking into account accuracy class of the metering devise. Once, the monthly report is prepared it is signed by the Head Energy Engineer and its data is used for official reporting, calculation of specific consumption norms and other purposes of the Plant. The explanation of monitoring and cross-check procedures was extended in Section D (pages 35-37) of PDD version 3.1	
CL1 It should be clarified if the project makes provisions for meeting training and maintenance needs.	A.3.3	The project builds upon existing systems of periodic training of personnel and maintenance of equipment. The project does not change the data collection and reporting processes as it uses data from standard monthly reports prepared at the Plant. The only change which is introduced by the proposed JI project is the extended period of data storage reflected in Donetsksteel Order for storage of data on JI project the copy of which was provided to the AIE.	The Order for data storage together with sufficient training management established in the plant ensures sufficiently training provisions all requested parameters. The CL is closed.
CL2 The PDD states “It is proposed to neglect leakage due to big uncertainty of data sourced in comparison of total calculated value.” The evidence for this statement is requested.	B.2.6 B.2.7 B.2.8 B.2.12 B.4.2	The only potential source of leakage that is attributable to the JI project is increase of fugitive methane emissions due to increase of natural gas consumption for electricity generation which took place as a result of the project. Fugitive emissions happen during production, transmission and distribution of natural gas through	The presented arguments are applied correctly and it is possible to confirm that leakage should be neglected. The CL is closed

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		Ukrainian national transportation system. These emissions are not under the control of project participants and are not directly measurable as they take place along the pipeline and are estimated based on default emission factors. They are available from IPCC and National Inventory Report of Ukraine 1990-2008. The emission factors from the two sources vary significantly and both sources recognize high uncertainty of their estimations. Figures provided there were taken from individual studies with remark that further research is required. The country specific values provided in Ukrainian NIR were used for leakage estimation as the latest, lowest and more accurate. Calculation of the leakages yielded a result that leakages from each source production, transmission and distribution are 237, 52 and 372 t CO_{2eq} respectively. It should be noted that overall natural gas production on Ukraine in 2006-2009 was more than 20 billion tonnes annually. An increase in the Donetsksteel demand for natural gas of 3881 thousand m^3 annually is too small to influence the amount of natural gas produced, transmitted and distributed in Ukraine. Therefore, the project will not lead to the increase in fugitive emissions of GHGs. With regard to impossibility of direct measuring of leakages by the project participants; unavailability of emission	

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		factors estimations with low uncertainty levels; as well as insignificant volumes of the leakages compered to overall fugitive emissions from oil and natural gas in Ukraine (661 tonnes of CO_{2eq} versus 23 246 570 tonnes of CO_{2eq}), it was decided to neglect leakages in calculation of emission reductions of the proposed JI project. The leakages calculation file was submitted to AIE.	
CL3 The most information is based on original data from Donetsk and only values are presented in the PDD without proper evidencing. The summary tables should be substantiated by primary evidences.	B.2.6 B.2.9 B.2.10 B.2.12	In order to ensure higher accuracy the review of the data used for calculation was undertaken. As a result, data in summary tables of Section B (pages 16-19) and in Annex 2 (pages 47-49) were corrected according to the monthly reports on fuel consumption and electricity generation balances used as primary source of information. The copies of the balances for 2007, 2008 and 2009 were provided to the AIE as sample evidence. Emission reductions were recalculated accordingly.	Provided evidences confirmed accuracy and values for leakage. It is DNV opinion that conclusion about neglecting is correct. The CL is closed.
CL4 Following evidences for closing baseline determination are requested: Increase on site electricity generation to fully cover the Plant's demand to exclude import – this scenario request construction of new CHP about 50 MW to satisfy all plant requests, which means high investment cost, which is not feasible. The evidence about plant demand and investment cost	B.2.5 B.5.1 B.5.4 B.5.5 B.5.8 B.6.3 B.6.4	Form No 11 MTP "Report on Consumption of Fuel, Heat and Power" for 2007 was provided to AIE as evidence of annual electricity demand of the Plant which is about 450 GWh. The required installed capacity is 56,25 MW (8000 operation hours annually). The available post-reconstruction capacity of 25 MW can provide approximately 200 GWh (8000	Provided arguments confirm conclusion of plant, that this investment is high that is possible to provide by plant. The CL is closed

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
is requested.		hours of operation annually). Based on this, the required additional electricity generation capacity to cover the overall Plant's demand is 31,25 MW. Installation costs of steam turbines are 400-800 USD/kW, which means realisation of this option required investment of 12,5-25 million USD or 62,5-125 million UAH (in 2004, 1 USD was approximately 5 UAH). Besides, due to the fact that there would be no BFG available to fuel the new capacities, this option also has high operation costs because of the expenses on purchased fuel (natural gas preferably). Information about the investment costs was changed in Section B (page 15) of PDD version 3.1 in accordance with the evidence provided. Addition to the answer (13.04.2011): The data range for costs of condensing steam turbines (average of 600 000 USD/MW) is also provided by Energy Solutions Center of Distributed Generation Consortium as of 2004 which confirm the general equipment costing for this type of technology.	
CL5 The evidence that using BFG as fuel is not common practice is requested.	B.6.4	Historically, utilization of BFG as fuel was avoided because of its high toxicity due to carbon monoxide content (about 28%). With the low price for natural gas Iron and Steel Works preferred to flare BFG to avoid health and safety risks associated with its	The description in response is sufficiently evidenced with links to individual webpages. All provided evidences simultaneously demonstrate that utilization of BFG is not common practice.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		transportation. The situation changed with the rapid growth of prices for natural gas in Ukraine when it increased six fold between 2006 and 2010. There were no specialised studies on BFG treatment undertaken for Ukraine which could serve as direct evidence that using BFG as fuel was not a common practice in Ukraine at the time of the project implementation. However, declarations of the biggest Ukrainian plants about the plans to switch to NG blends with BFG and COG can be considered as indirect evidences. After the rapid growth of natural gas prices this option was considered by the biggest Ukrainian steel producers such as Alchevsk Iron and Steel Works, Dneprovsky Iron and Steel Works, Azovstal Iron and Steel Works, ArcelorMittal Steel Kryviy Rih. However, these declared plans were implemented only on two plants: at Alchevsk Iron and Steel Works and ArcelorMittal Steel Kryviy Rih, where this activity became a part of the registered and determined under JI mechanism projects. Thus, these cases cannot be considered a part of the common practise according to the "Tool for the demonstration and assessment of additionality" (Version 05.2). In 2010 utilisation of BFG was still recognized as an effective energy efficiency measure for Ukrainian metallurgical plants. The relevant explanation was added to	The CL is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		section B (pages 21-22) in PDD version 3.1	
CL6 Evidences for operational lifetime are requested as well as more details for prior consideration (it was mentioned first propose of it in 2000-2002) What is the age and residual lifetime of other important equipment? Is there any demand for additional renovations? (as a guide for the lifetime estimation is possible to use the "Tool to determine the remaining lifetime of equipment vers. 01 EB 50 Report Annex 15)**.**	A.3.1 C.1.1	Operational lifetime: Turbogenerator No1 which is a steam turbine was installed and was first commissioned in 1987. By applying the default value of 25 years for technical lifetime of steam turbines according to "Tool to determine the remaining lifetime of equipment version 01 EB 50 Report Annex 15", its remaining lifetime is 2 years (till 2012). However, the lifetime of the turbogenerator is expected to be extended based on conclusions of technical expertise to be done in 2012. The copies of Conclusion of Technical Expertise and Act on Acceptance of Equipment after Modernization and Repair proving that turbogenerator No 1 is in good state for operation till the next expertise. Boiler No 5 was commissioned in 1981. The copies of Conclusions of Technical Expertise (previous and current) were provided to AIE as evidences of operational lifetime of boiler No 5 proving periodic character of expertise and that it can be operated till 22nd of March 2012, after which next expertise will take place extending operational lifetime for the next 65000 hours. Demand for any renovations needed is determined by the periodic technical expertise by results of which the found	The operational lifetime, is evidenced to 2012 directly, which cover mostly crediting period. The lifetime after this date is most probably. The expected lifetime extend crediting period, which is sufficient. The prior consideration is evidenced and in the light of JISC answer is sufficient. The CL is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		problems are corrected. Thus, for the project equipment there is no need in additional renovations by the next expected technical expertise in 2012. Prior concideration: According to the Answer provided by JISC to DNV on the request of clarification regarding the assessment of prior consideration in JI "there is no explicit mentioning in the existing JI regulations that prior consideration needs to be demonstrated in JI". Based on this no additional evidence on prior consideration was provided to the AIE. The project participants were aware of Kyoto Protocol in connection to the related activities undertaken by Zasyadko Coal Mine management which was very active in raising awareness about JI back in 2003 already, started their own project in 2004, which in 2006 became the first in Ukraine JI project to receive Letter of Approval. The information of that project was available through conferences, energy efficiency journals etc.	
CL7 The leakage is neglected due to high uncertainty in determining of fugitive emissions from natural gas extraction, transportation, distribution and consumption. The evidences for this statement are requested.	A.1.2 D.4.1 D.4.2 E.3.1 E.3.2 E.3.3	The only potential source of leakage that is attributable to the JI project is increase of fugitive methane emissions due to increase of natural gas consumption for electricity generation which took place as a result of the project. Fugitive emissions happen during production, transmission and	The neglecting of the leakages is possible. The amount of emissions represents 0.003% of emissions due extraction, transportation, distribution and consumption on Ukraine. The arguments and sources used for this presumption were found correct.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		distribution of natural gas through Ukrainian national transportation system. These emissions are not under the control of project participants and are not directly measurable as they take place along the pipeline and are estimated based on default emission factors. They are available from IPCC and National Inventory Report of Ukraine 1990-2008. The emission factors from the two sources vary significantly and both sources recognize high uncertainty of their estimations. Figures provided there were taken from individual studies with remark that further research is required. The country specific values provided in Ukrainian NIR were used for leakage estimation as the latest, lowest and more accurate. Calculation of the leakages yielded a result that leakages from each source production, transmission and distribution are 237, 52 and 372 t CO_{2eq} respectively. It should be noted that overall natural gas production on Ukraine in 2006-2008 was more than 20 billion tonnes annually. An increase in the Donetsksteel demand for natural gas of 3881 thousand m^3 annually is too small to influence the amount of natural gas produced, transmitted and distributed in Ukraine. Therefore, the project will not lead to the increase in fugitive emissions of GHGs. With regard to impossibility of direct measuring of leakages by the project	The CL is closed

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		participants; unavailability of emission factors estimations with low uncertainty levels; as well as insignificant volumes of the leakages compered to overall fugitive emissions from oil and natural gas in Ukraine (661 tonnes of CO_{2eq} versus 23 246 570 tonnes of CO_{2eq}), it was decided to neglect leakages in calculation of emission reductions of the proposed JI project. The leakages calculation file was submitted to AIE. Addition to the answer (13.04.2011): Ukrainian National Inventory Report 1990-2008 (NIR) is available from the hyperlink provided under the footnote 19, this table (http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/ukr-2010-nir-22may.zip).	
CL8 EIA and their approval is requested as evidence for section F – the EIA was provided, the text in the section F should be revised in terms of situation (voluntary base etc.)	F	According to Ukrainian legislation environmental impacts of a project are to be analyzed in EIA which is a part of project documentation which receives approval after its integrated expertise. For the proposed JI project development of a united project document was not necessary as the project is constituted of modernization of individual parts of an existing facility. The project was implemented according to documentation for its components (replacement of condenser, installation of condensation pumps, upgrade of control	Description of situation related to EIA process reflects now real situation as it was found during site visit. Simultaneously the description fulfils requirements related to environmental impact for JI projects. The CL is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		system with installation of new monitoring equipment, sensors and actuators etc.) which are not subject for EIA. Therefore, it didn't go through the approval procedure part of which is collection of stakeholder comments. The existing EIA covering the overall activities undertaken at CHP-SAS for its modernization was undertaken on voluntary basis as improvement under Donetsksteel environment management system (Donetsksteel is certified in ISO 14001). The relevant explanation was added to section F (pages 41-42) in PDD version 3.1	
CL9 The stakeholders' comments are obviously requested as part of EIA. It should be evidenced, that it is not requirement of Ukrainian legislation or explained the voluntary status in section G according to reality.	G	The existing EIA of Donetsksteel CHP-SAS which also covers modernization and reconstruction of its individual parts was undertaken on voluntary basis as improvement under Donetsksteel environment management system (Donetsksteel is certified in ISO 14001). Therefore, no formal requirements concerning collecting stakeholders' comments are applicable to the project. However, news items about all significant reconstruction plans are regularly published on the Plant's web-page. Information about project CHP-SAS Modernization Project for BFG Utilization was also published and is available online. It is also mentioned in the Environmental Management Plan and Environmental Impact Assessment of Donetsksteel Export Subproject which were	The explanation of the EIA process for this projects covers explanation, that the stakeholders' comments are not requested in this case. The information is now clearly described in the PDD now. The CL is closed.

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Determination conclusion
		also publicly available through Donetsksteel official web page. The relevant explanation was added to section G (page 43) in PDD version 3.1	

Table 4 Forward action requests

Forward action request	Reference to Table 2	Response by project participants
NA		