JI DETERMINATION REPORT

UNIPLYT LTD.

UTILIZATION OF WASTE WOOD FOR STEAM PRODUCTION AT "UNIPLYT" LTD WOOD-WORKING AND FIBREBOARD PLANT IN VYGODA VILLAGE AND VENEER PLANT IN DZVINIACH VILLAGE.

Report No: 8000362318 – 08/214

Date: 21.09.2009

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Date of first issue: 21.09.2009	Project No.: 8000362318 – 08/214
Final Approval by: Mr. Eric Krupp	Organisational unit: TÜV NORD JI/CDM Certification Program
Client: Uniplyt Ltd.	Client ref.: Mr. Volodymyr Pylypiv
Summary:	☒ positive determination opinion ☐ negative determination opinion

The Uniplyt ltd." has commissioned the TÜV NORD JI/CDM Certification Program to carry out the Determination PDD for the JI Track 1 project: "Utilization of waste wood for steam production at "Uniplyt" Ltd Wood-working and Fibreboard plant in Vygoda village and Veneer plant in Dzviniach village" with regard to the relevant requirements for the Joint Implementation project activities of the host country, as well as the criteria for consistent project operations and monitoring.
Within the project activity two new waste wood fired steam boilers will be installed at the production sites of the Uniplyt Ltd. A risk-based approach has been followed to perform this determination. In the course of the determination 10 Corrective Action Requests (CARs) and 1 Clarification Requests (CLs) were raised and successfully closed.
The review of the project design documentation (PDD Version 2 dated 17.09.2009) and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria. In detail the conclusions can be summarised as follows:
- The project is in line with all relevant host country criteria (Ukraine) and all relevant UNFCCC requirements for JI project activities.
- An analysis as provided by the applied approved CDM methodology AM0036 version 2.1 demonstrates that the proposed project activity is not a likely baseline scenario.
An analysis as provided by the applied approved CDM methodology AM0036 version 2.1 " demonstrates that the project activity will result in a reduction of anthropogenic emissions by sources that is additional to any that would otherwise occur;
- The monitoring plan is transparent, adequate and provides for the collection and archiving of all relevant data necessary for determination project and baseline emissions within the project boundary during the crediting period;
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 175,880 t CO2e is most likely to be achieved within the 5 years crediting period.
The conclusions of this report show, that the JI project, as it was described in the project documentation meets requirements as defined in Order # 718 and is in line with all criteria applicable for the determination of JI project activities.

Report No.: 8000362318 – 08/214	Subject Group: Climate Protection	
Report title: "Utilization of waste wood for steam production at "Uniplyt" Ltd Wood-working and Fibreboard plant in Vygoda village and Veneer plant in Dzviniach village		
Work carried out by: Mr. Rainer Winter Mr. Evgeni Sud		
Final technical review by: Mr. Eric Krupp	Local technical review by	
Date of this revision: 21.09.2009	Rev. No.: 0	Number of pages: 105

Indexing terms

Climate protection	Kyoto Protocol
JI	Determination PDD

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Abbreviations

BAU	Business as usual
CL	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
ERU	Emission Reduction Unit
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CR	Clarification Request
DFP	Designated Focal Point
FAR	Forward Action Request
EB	CDM Executive Board
EIA	Environmental Impact Assessment
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
NCV	Net Calorific Value of Fuel
ODA	Official Development Assistance
PDD	Project Design Document
Th	Thousand
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change

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1 OBJECTIVE / SCOPE

Uniplyt LTD. has commissioned the TÜV NORD JI/CDM Certification Program (CP) to make a determination of the project

"Utilization of waste wood for steam production at "Uniplyt" Ltd Wood-working and Fibreboard plant in Vygoda village and Veneer plant in Dzviniach village"

with regard to the relevant requirements for JI project activities

The purpose of a determination is to have an independent third party assess of the project design and is a requirement for all JI projects. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Determination is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).

2 GHG PROJECT DESCRIPTION

2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

Item	Data		
Project title	"Utilization of waste wood for steam production at "Uniplyt" Ltd Wood-working and Fibreboard plant in Vygoda village and Veneer plant in Dzviniach village"		
JI Procedure	☒ Track 1	☐ Track 2	
Project size	☒ Large Scale	☐ Small Scale	
Project Scope *(according to UNFCCC sectoral scope numbers for CDM)*	☒	1	Energy Industries (renewable- /non-renewable sources)
	☐	2	Energy distribution
	☐	3	Energy demand
	☒	4	Manufacturing industries
	☐	5	Chemical industry
	☐	6	Construction
	☐	7	Transport
	☐	8	Mining/Mineral production
	☐	9	Metal production
	☐	10	Fugitive emissions from fuels (solid, oil and gas)
	☐	11	Fugitive emissions from production and consumption of halocarbons and hexafluoride
	☐	12	Solvents use
	☐	13	Waste handling and disposal
	☐	14	Afforestation and Reforestation
	☐	15	Agriculture

Applied Methodology	*AM0036 "Fuel switch from fossil fuels to biomass residues in boilers for heat generation", version 2.*
Crediting period	2008-2012
Start of crediting period	01.01.2008

2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

Table 2-2: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	Ukraine	"Uniplyt" Ltd

2.3 Project Location

The details of the project location are given in table 2-3:

Table 2-3: Project Location

No.	Project Location
Host Country	Ukraine
Region:	Ivano Frankivsk
Project location address	Vygoda and Dzviniach village

2.4 Technical Project Description

The technical key data are provided in tables 2-4a and 2-4b below

Table 2-4a: Technical data of the project activity

Key parameters:	Vygoda					Dzviniach	
Ordinal Number:	№1	№2	№3	№4	№5	№6	№7
Manufacturer:	DKVR-10/39	DKVR-10/39	DKVR-10/39	DE-25/14	DE-25/14	E-2,5/09	E-2,5/09
Type:	Natural Gas Fired Steam Boiler	Natural Gas Fired Steam Boiler	Natural Gas Fired Steam Boiler	Natural Gas Fired Steam Boiler	Natural Gas Fired Steam Boiler	Natural Gas Fired Steam Boilers	Natural Gas Fired Steam Boilers
Capacity:	7,4 MW	7,4 MW	7,4 MW	19 MW	19 MW	1,9 MW	1,9 MW
Steam Pressure:	39 bar	39 bar	39 bar	13 bar	13 bar	8 bar	8 bar
Manufacturing Date:	1987	1989	1990	1985	1985	1993	1994
Commission-ing Date:	1989	1990	1994	1989	1989	2002	1999
Lifetime:	20 years	20 years	20 years	20 years	20 years	20 years	20 years
Next examination	11/2011	12/2011	06/2011	03/2009	04/2010	07/2011	02/2016
Operation within the Project Activity:	2 boilers will remain as a reserve boiler, whereas another boiler will be dismantled. The decision which boilers will serve as reserve boilers has not yet been reached.			Boiler will be dismantled	Boiler will be dismantled	1 boiler will remain as a reserve boiler, whereas another boiler will be dismantled. The decision which boiler will serve as a reserve boiler has not yet been reached.	

The project activity involves replacement of the natural gas fired steam boilers by waste wood fired boiler at "Uniplyt" Ltd. Within the implementation of the project activity two waste wood fired steam boilers will be installed at each site, i.e. one waste wood fired steam boiler will be installed in Vygoda and one Dzviniach village. Each waste wood fired boiler is designed in such a manner that it is able to cover the heat demand of the relevant site. For detailed key parameters of waste wood fired boilers at both sites please refer to **Table 2-4a**.

Currently there are 5 operational natural gas fired steam boilers[1] at the fibreboard plant in Vygoda and 2 natural gas fired steam boilers at the veneer plant in Dzviniach. After the implementation of the project activity following equipment will be kept as reserve or dismantled:

- at wood-working and fibreboard plant located in **Vygoda** three out of five operational natural gas fired boilers will put out of operation and the remaining two will be kept as reserve.

- at veneer plant located in **Dzviniach** village out of two operational natural gas fired boilers one will be put out of operation and one will be kept as reserve.

The waste wood fired boiler at the fibreboard plant in Vygoda is in the process of construction and is expected to be operational in 2009. For detailed key parameters of natural gas fired boilers at both sites please refer to **Table 2-4b**

The project implementation at the veneer plant in Dzviniach is in the tendering stage and is expected to be operational in 2010. There is a technical specification of the required waste wood fired boiler. Based on the technical specification tender documents have been developed. Tender documents have been sent to five technology suppliers. At present commercial offers from technology suppliers are expected.

Table 2-4b: Key parameters of Waste Wood Fired Boilers:

Key parameters:	Vygoda	Dzviniach
Ordinal Number:	№8	№9
Manufacturer:	Vyncke JNO-HD LCX	Will be identified after financial closure
Type:	Waste wood fired steam boiler	Waste wood fired steam boiler
Capacity:	13,3 MW	8 MW
Steam Pressure:	20 bar	
Manufacturing Date:	2008	2009
Commissioning Date:	2009 expected	2009 expected

[1] For detailed key parameters of natural gas fired boilers at both sites please refer to Table 1-3

3 METHODOLOGY AND DETERMINATION PDD SEQUENCE

3.1 Determination PDD Steps

The determination of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the project design document (PDD)
- A desk review of the PDD[/PDD/] submitted by the client and additional supporting documents
- Determination planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft determination reporting
- Resolution of corrective actions (if any)
- Final determination reporting
- Technical review
- Final approval of the determination.

The sequence of the validation is given in the table 3.1 below:

Table 3.1: Determination PDD sequence

Topic	Time
Assignment of determination	01.07.2008
Submission of PDD for global stakeholder commenting process	16.07.08 – 14.08.08
On-site visit	26.08.2008 and 27.08.2008
Draft reporting finalised	05.09.2008
Technical review on draft reporting finalised	04.09.2008
Final reporting finalised	17.08.2009
Technical review on final reporting finalised	17.08.2009

3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the JI accreditation requirements

a contract review was carried out before the contract was signed.

3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consistent of one team leader and 2 additional team members, were appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

Table 3-2: Involved Personnel

	Name	Company	Function [1)]	Qualification Status [2)]	Sectoral competence	Technical competence	Host country Competence	Controlling competence
☒ Mr. ☐ Ms.	Rainer Winter	TÜV NORD	TL	SA	x	x	-	x
☒ Mr. ☐ Ms.	Evgeni Sud	TÜV NORD	TM	E	x	x	x	-
☒ Mr. ☐ Ms.	Sergej Friesen	TÜV NORD	T	T	-	-	x	-
☒ Mr. ☐ Ms.	Eric Krupp	TÜV NORD	TR, FA	SA	x	x	-	x

[1)] TL : Team Leader; TM : Team Member, TR: Technical review; FA: Final approval

[2)] GHG Auditor Status: A : Assessor; E : Expert; SA: Senior Assessor; T : Trainee; TE Technical Expert

3.4 Consideration of Public Stakeholder Comments

Acc. to the modalities and procedures the draft PDD, as received from the project participants, has been made publicly available on the dedicated UNFCCC JI website prior to the determination activity commenced. Stakeholders have been invited to

comment on the PDD within the 30 days public commenting period. In case comments were received, they are taken into account during the validation process. The comments and the discussion of the same are documented in annex 5 of this report.

The project was switched from JI Track-2 to JI Track-1 procedures. Upon request, the project design document (PDD) for "Utilization of waste wood for steam production at "Uniplyt" Ltd Wood-working and Fibreboard plant in Vygoda village and Veneer plant in Dzviniach village" has been withdrawn in accordance with the Procedures for the withdrawal of submissions under the verification procedure under the Joint Implementation Supervisory Committee. The final PDD version 2 provided on 17.09.2009 serves as the basis for the final assessment presented herewith.

3.5 Determination PDD Protocol

In order to ensure consideration of all relevant assessment criteria, a determination protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of determination and the results from pre-determination the identified criteria. The determination protocol reflects the generic JI requirements each JI project has to meet as well as project specific issues as applicable. The determination protocol serves the following purposes:

- It organises, details and clarifies the requirements that a JI project is expected to meet;
- It ensures a transparent determination PDD process where the independent entity will document how a particular requirement has been validated and the result of the determination.

The determination protocol as described in Figure 1.

Determination Protocol Table A-1: Requirement checklist				
Checklist Item	***Determination PDD Team Comment***	***Reference***	***Draft Conclusion***	***Final Conclusion***
The checklist items in Table A-1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the determination team and how the assessment was carried out.*	*Gives reference to the information source on which the assessment is based on*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft determination stage.*	*In case a corrective action or a clarification the final assessment at the final determination stage is given.*

Figure 1: Determination protocol tables

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

3.6 Review of Documents

The published PDD (version 1) and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the determination team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

3.7 Follow-up Interviews

The determination team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for JI.

During determination the determination team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-3.

Table 3-3: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives Project consultant	- Chronological description of the project activity with documents of key steps of the implementation. - Current status of plant design - Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project - Host Government Approval - Approval procedures and status - Monitoring and measurement equipment and system. - Financial aspects - Crediting period - Project activity starting date - ERU allocation / ownership - Baseline study assumptions - Additionality - Monitoring - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - National Legislation - Editorial issues of the PDD

A comprehensive list of all interviewed persons is part of section 7 'References'.

3.8 Project comparison

The determination team has compared the proposed JI project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology
- Additionality issues
- Reasons for reviews, requests for reviews and rejections within the JI registration process.

3.9 Resolution of Clarification and Corrective Action Requests

3.9.1 Definition

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first determination ERU.

3.9.2 Draft Determination PDD

After reviewing all relevant documents and taken all other relevant information into account, the determination team issues all findings in the course of a draft determination report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

3.9.3 Final Determination PDD

The final determination starts after issuance of the proposed corrective action (CA) of the CARs CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are "closed out" by the determination team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification. The determination team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive determination opinion can be issued by the determination team.

The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

3.10 Technical review

Before submission of the final determination report a technical review of the whole determination procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the determination opinion and the topic specific assessments as prepared by the determination team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.11 Final approval

After successful technical review of the final report an overall (esp. procedural) assessment of the complete determination will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for Letter of Approval can be started (in case of a positive determination opinion).

4 DETERMINATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised**:**

Table 4-1: Summary of CARs, CLs and FARs issued

Determination topic [1)]	No. of CAR	No. of CL	No. of FAR
General description of project activity (A) - Project boundaries - Participation requirements - Technology to be employed - Contribution to sustainable development	1	-	-
Project baseline (B) - Baseline Methodology - Baseline scenario determination - Additionality determination - Calculation of GHG emission reductions Project emissions Baseline emissions - Leakage	5	-	-
Duration of the Project / Crediting Period (C)	-	-	-
Monitoring Methodology (D) - Monitoring of Project emissions Baseline emissions Leakage Sustainable development indicators / environmental impacts Project management planning	3	1	-
Estimation of greenhouse gas emission reductions (E)	1	-	
Environnemental impacts (F)	-	-	-
Stakeholder Comments (G)	-	-	-
SUM	**10**	**1**	**-**

[1)] The letters in brackets refer to the determination protocol

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all determination items it should be referred to the determination protocols (see Annex 1).

The findings of determination process are summarized in the tables below.

	Finding A1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Full address of both sites as well as the geographical coordinates (Longitude and Latitude) for both sites should be provided in the PDD.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Indicated at page 6 Zavods'ka st. 4, Vygoda village, Dolyna district, Ivano-Frankivsk region, Ukraine Stepanyaka st. 12, Dzviniach village, Bogorodchany district, Ivano-Frankivsk region, Ukraine		
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	Full address of both sites as well as the geographical coordinates (Longitude and Latitude) for both sites have been provided in the PDD and could be proved in the course of the determination.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

	Finding B1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The Version of the Methodology applied for Baseline and Addiotionality justification is not indicated. Reference to other Tools should be also included.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	p.11, p.13, p.16 Approved baseline and monitoring methodology AM0036 "Fuel switch from fossil fuels to biomass residues in boilers for heat generation", version 2.1 "Tool for the determination and assessment of additionality"		
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The Version of the Methodology applied for Baseline and Addiotionality justification has been indicated in the PDD. References to other Tools have been also included		

	Finding B1
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding B2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In the context of justification of the 9th point of the applicability the **remaining technical lifetime** of each existing boiler should be documented in accordance with the methodology. In particular the typical average technical lifetime of boilers in the country and sector should be determined as per methodology requirements.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*			
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	In the course of determination it could be proved that determination of the typical average technical lifetime of boilers has been carried out based on the technical standards applicable for the considered heat generation technology. The provided evidences have been proved and the compliance with the applicability criteria of the methodology has been verified.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

	Finding B3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The justification of the baseline scenario should take into account the technical lifetime of the existing boilers and the operation lifetime of the waste wood boilers. Please provide further evidences for the justification of the alternative B(1). Please demonstrate that relevant laws and regulations are systematically not enforced and non-compliance is widespread in the country		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*			

	Finding B3
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	Project participant has appropriately taken into account the technical lifetime of the existing boilers and the operation lifetime of the waste wood boilers the and elaborated the baseline in accordance with the Scenario H(5). The baseline scenario for heat generation is generation of heat in the existing steam boilers using natural gas till 2011 and subsequent installation of the new natural gas fired boilers after 2011. Project participant interviewed wood-working companies located in the region with respect to the disposal and demonstrated that non-compliance is widespread. Evidences have been proved to the determination team and the conclusion could be assessed as appropriate.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding CAR B4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Please indicate a most appropriate **financial indicator** in accordance with guidance of the Sub-step 2b of the Additionality Tool.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The most appropriate financial indicators are levelized heat generation costs.		
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The levelized heat generation costs have been selected as financial indicator within the investment comparison analysis. The calculation has been provided in excel spreadsheet. The calculation has been reproduced by the determination team and formula applied as well as the calculation results could be proved.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

	Finding B5		
Classification	☒ CAR	☐ CL	☐ FAR

	Finding B5
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	**Project boundary** should be presented more clearly. In particular please define (or list) which emission **sources** and gases are included in the project boundary.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	All emission sources are indicated at page 23, table B3 The CH4 emissions are included as conservative approach
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	Emission **sources** and gases are included in the project boundary and summarized in a table form in the PDD. **Project boundary** has been provided in clear and transparent way. In particular:
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding D1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Procedures for monitoring of the **project emissions** (section D.1.1.1. and D.1.1.2.) are not exactly in line with the methodology. In particular (a) CO2 emissions from **on-site fossil fuel** combustion can be included for purposes attributable to the project activity but **other** than for heat generation. Please review this issue in the PDD. (b) CO2 emissions from on-site **electricity** consumption attributable to the project activity are not included in the monitoring. (c) CO2 emissions from **off-site transportation** of biomass residues to the project site (tCO2/yr) should be included to the monitoring. In this context the chosen option as per methodology to determine emissions from transportation should be indicated in the PDD. (d) Please clarify the baseline scenario for waste wood and decide whether **CH4 emissions from combustion** of biomass residues in the boiler(s) should/can be included to the project boundary and to the monitoring plan.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	P.30 – formulae is corrected, all necessary emissions are included As far as fossil fuel combustion is attributable to the project activity for heat generation only, it can be excluded from calculations. Electricity meters used for on-site electricity consumption measurements are present in PDD. For off-site transportation emissions Option 1 was chosen.		

	Finding D1
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The monitoring provisions for the project emissions have been appropriately in accordance with methodology requirements. For details on the assessment please refer to the section B.6. of the validation protocol.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding D2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	If project participant decides to include **CH4 emissions from combustion** of biomass residues following information should be provided: (a) How the **CH4 emission factor** for biomass is determined, i.e. measurements at the plant site or use IPCC default values, as per in Table 4 of the Methodology. Please refer to the AM0036 requirements on page 18 and 32 and provide the necessary information in the PDD. (b) Please indicate the **conservativeness factor** to determine CH4 emission factor. (c) Please include $\mathbf{NCV_k}$ (NCV of biomass) to monitoring. Please provide the monitoring of this parameter in accordance with requirements of the methodology (pl. refer to page 31 of the methodology). If applicable, please specify this for all different types of biomass. (d) Please include $\mathbf{BF_{PJ,k,y}}$ to the monitoring and specify the monitoring concept of this parameter. If applicable, please specify this for all different types of biomass.		

	Finding D2
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	All necessary data are indicated. The emission factor was calculated in accordance with Methodology and equal 41.1 kg/Tj. This value is constant. To determine the CH4 emission factor the IPCC default value is used. The uncertainty of the CH4 emission factor is in many cases relatively high. In order to reflect this and for the purpose of providing conservative estimates of emission reductions, a conservativeness factor must be applied to the CH4 emission factor. The level of the conservativeness factor depends on the uncertainty range of the estimate for the CH4 emission factor. . Where W $NCV_K = NCV_{wet,10\%} = \frac{100}{100-W}$ = moisture content of waste wood. Waste wood volume is calculated taking into consideration screws' volume and rotating frequence and using passport data on waste wood density. Amount of combusted wood can be cross-checked from the amount of produced steam considering boiler efficiency and NCV of waste wood
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The monitoring provisions for the **CH4 emissions from combustion** of biomass residues have been appropriately completed in accordance with methodology requirements. For details on the assessment please refer to the section B.6. of the validation protocol.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding D3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Please specify the **type** of measurement equipment, **accuracy class**, **calibration periods** measurement frequency, recording frequency, recording devices (log books, electronic files, etc.). Please include the monitoring procedures for the relevant parameters.		

	Finding D3
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Flow meters will be subject to a regular maintenance and periodical calibration according to the manufacturer's recommendation to ensure accuracy. Power meters will be periodically calibrated according to the manufacturer's recommendation to ensure accuracy. The temperature gauge should be subject to a regular maintenance and testing regime to ensure accuracy. The pressure gauge should be subject to a regular maintenance and testing regime to ensure accuracy. At least once a year all meters must be certified by state authorised laboratory.
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	**The type** of measurement equipment, **accuracy class**, **calibration periods** measurement frequency, recording frequency, recording devices has been duly elaborated in the PDD. Accuracy class and calibration procedures are in line with Ukrainian regulations. For details on the assessment please refer to the section B.6. of the validation protocol.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding D4		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Please provide in section D.2. the relevant **Quality control** and **quality assurance** procedures for the relevant monitoring parameters as required through the methodology.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	During the project all the meters and instruments will be calibrated regulary as per industry practices. All the data concerning calibration will be collected and archived at the enterprise and issued for verification as required. All measurement equipment have appropriative sertification. Heat meters are regulary calibrated and corss-checked with balance date. Weighting equipment is calibrated once/twice per year. Laboratory equipment is calibrated once per year. All the monitored data will be archived once a year and will be storaged during 5-year period.		

	Finding D4
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	Project participant has elaborated procedures for data management and processing within the particular stages of the monitoring. Double check procedures have been introduced to ensure high quality project management. Different tasks within the monitoring are clearly allocated to the personal of the different departments of the. Personal and the corresponding tasks/responsibilities of the project monitoring are clearly defined. Furthermore all procedures have been clearly documented.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding E1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Please correct the estimation of emission reductions in section E according to corrections in section D. Please include a **justification for values** of parameters used within the estimation of **Project and Baseline** emissions (preferably in table form).		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	All the corrections were included to sec.E		
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The calculation of estimated emission reduction reductions has been corrected and included out in the section E of the PDD. The calculations as presented in this section strictly follow the algorithm developed in the monitoring plan. The determination team has reproduced the calculation of the forecasted emission reduction by applying the formulae for project, baseline and leakage emissions as described in the PDD. The expected amount of emission reductions as stated in the PDD could be proved through the carrying out own estimations based on the input values as provided in the PDD.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

5 DETERMINATION ASSESSMENT SUMMARY

5.1 General Description of the Project Activity

5.1.1 Participation

LOA: A positive determination opinion as confirmed by an Independent Entity is a prerequisite for the Host Country Approval that can be issued on request by the Designated Focal Point of the Ukraine.

Project Participants: Project participant involved in the project activity is the Uniplyt LTD.

5.1.2 PDD editorial Aspects

Project Design Document Form Version 01 – in effect as of 15 June 2006 – has been used. This is the latest version of the PDD form. Guidelines for users of the JI PDD form Version 03 (JISC 13) have been used for completing the PDD. According to the JISC 13th meeting, these Guidelines should be taken into account for all PDDs to be published from 1 January 2009.

5.1.3 Technology to be employed.

The project activity involves replacement of the natural gas fired steam boilers by waste wood fired boiler at "Uniplyt" Ltd. Within the implementation of the project activity two waste wood fired steam boilers will be installed at each site, i.e. one waste wood fired steam boiler will be installed in Vygoda and one Dzviniach village. Each waste wood fired boiler is designed in such a manner that it is able to cover the heat demand of the relevant site. For detailed key parameters of waste wood fired boilers at both sites please refer to Table 2-4a and 2-4b.

The description of the project activity is considered to be accurate, complete, presented in a detailed manner and in line with provided evidences and results of the on-site inspection.

5.1.4 Small Scale Projects

Not applicable

5.2 Project Baseline, Additionality and Monitoring Plan

5.2.1 Application of the Methodology

The project applies the CDM approved methodology AM0036 "Fuel switch from fossil fuels to biomass residues in boilers for heat generation", version 2.1. The methodology draws upon the latest version of the Tool for the demonstration and assessment of additionality. As presented in the table below it was concluded that the methodology is applicable for the considered project activity.

Table 5-2.1 Applicability criteria assessment

Applicability Criteria	Assessment
The heat generated in the boiler(s) is Not used for power generation; or If power is generated with heat from the boilers, it is not increased as a result of the project activity, i.e, a) site, the power generation capacity installed remains unchanged due to the implementation of the project activity and this power generation capacity is maintained at the pre-project level throughout the crediting perio; and b) the annual power generation during the crediting period is not more than 10% larger than the highest annual power generation in the most recent three years prior to the implementation of the project activity.	During the on-site-visit it could be verified that heat generated in boilers is solely used fort he need of the woodworking production facilities at both plants and not for power generation. Thus this criterion is considered to be fulfilled.
The use of biomass residues or increasing the use of biomass residues beyond historical levels is technically not possible at the project site without a significant capital investment in Either the retrofit or replacements of existing boilers or the installation of new boilers; Or in a new dedicated biomass supply chain established for the purpose of the project (e.g. collecting and cleaning contaminated new sources of biomass residues that could otherwise not be used for energy purposes).	There is no biomass fired equipment installed at both project sites. For this reason the use of biomass residues can be achieved through replacement and installation of new biomass fired boilers which lead to significant capital investment.
Existing boilers at the project site have	During the on-site visit it could be verified

used **no biomass** or have used only biomass residues (but no other type of biomass) for heat generation during the most recent three years2 prior to the implementation of the project activity.	that existing boilers at both sites are gas fired boilers and have not used biomass. Also according to the technical specification natural gas and mazut are the only fuels to be combusted in existing boilers.
No biomass types other than biomass residues, as defined above, are used in the boiler(s) during the crediting period (some fossil fuels may be co-fired);	Both boilers are designed to waste wood combustion. This could be verified based on the technical specification of the biomass boiler installed at Vygoda site. TUV has reviewed the tender documents for the second boiler to be installed at Dzviniach site and gained a sufficient confidence that this boiler will be designed for combustion of the waste wood.
For projects that use biomass residues from a production process (e.g. production of sugar or wood panel boards), the implementation of the project shall not result in an increase of the processing capacity of raw input (e.g. sugar, rice, logs, etc.) or in other substantial changes (e.g. product change) in this process;	Fuel (waste wood) to be used in the new equipment does not serve as an input for further production process and for this reason will not result in an increase of the processing capacity of raw input. Furthermore the implementation of the project will result in the change (replacement) of the heat generation equipment. The new equipment will deliver steam at the same parameters to the woodworking production facilities and will not result in a substantial change of the wood working process.

The biomass residues used at the project site, site where the project activity is implemented, should not be stored for more than one year	As per the feasibility study carried out for this project waste wood will be sourced form own production facilities of Uniplyt and purchased from external sources. Taking into account that waste wood from own sources will be not sufficient to cover the total waste wood need of the biomass boilers TUV is of the opinion that the biomass residues used at the project site, site where the project activity is implemented, will be directly consumed and not be stored for more than one year
No significant energy quantities, except from transportation or mechanical treatment of the biomass residues, are required to prepare the biomass residues for fuel combustion, i.e. projects that process the biomass residues prior to combustion (e.g. esterification of waste oils) are not eligible under this methodology.	The waste wood will be directly combusted in the boilers without any preparation that requires significant energy quantities (like esterification). Co-firing of other (fossil) fuels is not required.
The biomass residues are directly generated at the project site or transported to the project site by trucks.	Yes, waste wood is a biomass residue that remains from the wood-working and fibreboard processes. The waste wood that will be delivered by trucks will also be a biomass residue that remains from the wood-working and fibreboard processes in other plants. This could be verified based on the technical specification and commercial offers of the envisioned waste wood suppliers ,
In case of project activities that involve the replacement or retrofit of existing boiler(s), all boiler(s) existing at the project site prior to the implementation of the project activity should be able to operate until the end of the crediting period without any retrofitting or replacement	Considering the information on the energy sector in Ukraine a sufficient confidence could be gained that that the average lifetime of steam generation units in Ukraine is definitely higher than 20 years. Furthermore the boilers were properly maintained and are allowed to be operated till 2011. Taking this into account determination team concluded that the three boilers will be able to operate additional 1-1,5 years after 2011 and hence until the end of the crediting period in 2012.

	For this reason TÜV is of the opinion that the project participant could appropriately demonstrate that the existing boilers will be able to operate till the end of the crediting period. A detailed analysis on this issue is carried in section 5.2.3.
Furthermore, this methodology is only applicable if the most plausible baseline scenario(s): • For heat generation is either case H2 or case H5; and • For the use of biomass residues is case B1, B2, B3, B4 and/or B5.	For heat generation the case H5 has been identified as the e most plausible scenario. For the use of biomass residues the case B1 - dumping and decay of biomass residues under mainly aerobic conditions has been identified as the e most plausible scenario. Hence this applicability criterion deemed to be also fulfilled

5.2.2 Project Boundary

The project´s spatial and system boundaries are clearly defined in the project documentation. The spatial extent of the project boundary includes the wood-working and fibreboard plant located in Vygoda village and veneer plant located in Dzviniach village as well as all the power plants connected physically to the baseline Grid (i.e. Ukraine). The boundary encompasses natural gas fired boilers for heat generation that will be displaced by biomass boilers.

Furthermore a part of the waste wood will be transported by trucks for this reason the CO2-emission sources from off-site transportation have been correctly included in the project boundary. The waste wood will be directly combusted in the boilers without preparation. Co-firing of other (fossil) fuels is not required. The CO2-emissions due to the electricity consumption of the waste wood boilers for their own needs will be determined and taken into account within the calculation of emission reductions.

Furthermore project participant decided to include CH4 emissions from the treatment of biomass residues in the baseline and from combustion of biomass residues in the boilers in the project boundary. This is in line with the methodology because dumping and decay of biomass residues under mainly aerobic conditions has been identified as a baseline scenario.

5.2.3 Baseline Identification

The description of baseline identification in the PDD is transparent and verifiable. The procedure to arrive to the baseline is in line with the applied project specific

methodology. All plausible alternatives have been identified. Only alternatives were excluded which are assessed not to be plausible alternatives. Within the financial analysis it could be demonstrated that the identified most plausible alternative (i.e. baseline scenario) is financially more attractive than the project scenario.

For identification of the most plausible baseline scenario, project participant has used the stepwise procedure as per the methodology. Within the Step 1 realistic and credible alternatives for heat generation and treatment of the biomass residues have been separately determined.

Assessment of the identified alternatives

Alternative H1: Determination team is of the opinion that alternative H1 **–** the proposed project activity not undertaken as JI project is a realistic and credible alternative scenario because it describes the JI project activity.

The approvals for project implementation as issued by the local authorities/administration have been provided/L-1//L-2//L-3/ and were proved.

Alternative H5 – is the generation of heat in the existing steam boilers using natural gas till 2011 and subsequent installation of the new natural gas fired boilers after 2011.

In a pre-project situation Uniplyt operated 5 boilers natural gas boilers of the type DKVR-10/39, DE-25/14 and E-2,5/09. Natural gas based heat generation represents the current situation. For this reason the continuation of the current practice and operation of the natural gas fired boilers has been assessed as a plausible and realistic scenario.

According to the technical specification almost all boilers can be operated till 2011. There are two boilers of the type DE-25/14 that has to undergo a technical inspection in 03/2009 and 09/2010. According to the information provided in the technical documents it could be verified that the boilers were properly maintained and all necessary reparation works were carried out. For this reason it can be with a sufficient confidence assumed that the two boilers will be able to operate additional 1-1,5 years till 2011.

Furthermore according to the information provided within different studies on Ukrainian energy market carried out by reputed organisations the typical average technical lifetime energy units is higher than 20 years. For example according to the Comparative Analysis, EU and Ukraine carried out by UNDP[2] in 2007 fossil fuel fired energy generation capacities have been in operation for **30 years**/BIA-9/. Also according to the Ministry of fuel and energy in Ukraine, more than 60% of energy units have being in service longer than 200,000 hours that corresponds to at least **23 years**/BIA-6/3[3]. Furthermore as per the EBRD[4] study carried out in 2007 the average age of large energy generation units was even between 36 and 42 years/BIA-7/5[5].

[2] United Nations Development Programme
[3] 23 years corresponds approx. to 200.000 hours divided by 8760 hours per year
[4] European Bank for Reconstruction and Development
[5] Though this average lifetime has been considered

Moreover according to the national reports on climate change there are approx. 100.000 boiler houses in Ukraine and a large part of them are in an insufficient technical condition and requires replacement/BIA-2/. This is also supported by the recent study carried out by IEA[6]. According to the IEA study the Ukrainian heat generating facilities are ineffective because of the outdated equipment/BIA-6//BIA-10/. Considering the information on the energy sector in Ukraine a sufficient confidence could be gained that that the average lifetime of steam generation units in Ukraine is definitely higher than 20 years and further operation of the outdated equipment is widespread in the country. Furthermore the boilers were properly maintained. Taking this into account determination team concluded that all installed boilers will be able to operate till 2011.

Alternative H(3): Continued operation of the existing boiler(s) using a different fuel (mix) as per the AM0036 has been appropriately not considered because the existing boilers cannot be operated with a different fuel mix.[7]

Alternative H(4): The boilers are in an appropriate technical condition and operating in accordance with the technical specification. For this reason determination agreed with the exclusion of the improvement of the performance of the existing boiler(s) as per alternative H(4) of AM0036 from further consideration.

Use of Biomass residues

For the use of the biomass residues the relevant alternatives as per the methodology have been analyzed to identify the most realistic and credible alternative. In particular:

Dumping and decay of biomass residues both under aerobic and anaerobic conditions as well as uncontrolled burning without utilizing for energy purposes have been appropriately assessed as not consistent with the Ukrainian laws and regulation on waste management (in particular Ukrainian Law on Waste, Nr. 3073 as of 2002). Hence project participant appropriately concluded that the alternative **B(1), B(2)** and **B(3)** as per AM0036 are not in compliance with legal and regulatory requirements of Ukraine.

However within the first step project participant demonstrated that regulations relevant for the alternative **B(1)** are systematically not enforced and non-compliance **is widespread** in the country. For this purpose project participant interviewed wood-working companies located in the region with respect to the disposal and demonstrated that non-compliance is widespread. Evidences have been proved to the determination team and the conclusion could be assessed as appropriate.

The non-compliance with the applicable laws and regulations as presented in the PDD can be further supported by information provided by the analysis of the environmental performance of Ukraine, carried out in 2007 by the economic commission for Europe (United Nations)/BIA-9/. According to this study industrial waste

[6] International Energy Agency
[7] According to the technical specification the boilers are natural gas and mazut fired

that comes inter alia from wood, pulp and paper industries is typically disposed of in landfills, particularly on the **grounds of enterprises**. As per this study only 18 per cent of industrial waste (e.g. wood waste, etc.) generated in 2004 was recycled and reused. The remaining **82 per cent** was stored at industrial sites or disposed of in landfills or sludge ponds. This study came to the conclusion that introducing of cleaner production in Ukraine has advanced slowly. One of the few investments in this field was the pilot project in the framework of the Tacis/Phare Cross-border Cooperation Programme in Ukraine and Romania. The project was implemented in three Ukrainian wood-processing companies in Chernivtsi oblast. Furthermore there are two cleaner production centres, in Kyiv and Dnipropetrovsk. However, these two centres are not very active and have only developed a few small-scale projects.

The non-compliance with the applicable laws and regulations can be also supported by National Environmental Policy of Ukraine carried out by the Ministry for Environmental Protection of Ukraine, Global Environmental Facility and the United Nations Development Programme where the Law of Ukraine, "**On waste materials," is considered to be less effective**, because the appropriate infrastructure and financing to deal with waste materials has not been secured/BIA-11/. The National Environmental Policy of Ukraine also indicates that Ukraine's current situation regarding the accumulation of waste materials is very disturbing since, despite production decreases, it is not being improved. The areas of storing hard, common waste materials often do not satisfy sanitary hygienic requirements. The majority (**80 percent) goes to surface dumps** that aren't adjusted garbage areas, thereby polluting the environment/BIA-11/.

Taking into account the information on the waste management in Ukraine as provided within the different studies as well as considering the examination of the current practice as carried out by the project participant a sufficient confidence has been gained that dumping and decay of biomass residues under aerobic conditions is widespread in the country (and in the region). For this reason this alternative (B1) has been included in further consideration.

Alternative B(4) In the PDD the alternative B(4) as per AM0036 - the biomass residues are sold to other consumers in the market and the predominant use of the biomass residues in the region/country is for energy purposes (heat and/or power generation) – was excluded from further consideration.

The exclusion can be justified based on the information as provided by the above mentioned data sources industrial waste in Ukraine. According to the National Environmental Policy of Ukraine/BIA-11/ and analysis of the environmental performance of Ukraine/BIA-9/ waste wood is basically disposed on the grounds of enterprises or on the unmanaged landfills. As shown within current practice analysis a small amount of waste-wood is not sold but mainly offered free of charge for private consumers in the neighbourhood. However there is no information available that could support that this waste wood is used for heat/power generation purposes. In the course of determination it was found out that Uniplyt is also in a similar situation and only a very small amount of waste wood is taken by the population from the neighbourhood. It should be also noted that there is no reliable information about the use of the waste wood offered to the population.

Taking this into account determination team agreed that B(4) cannot be considered as predominant option for the use of the waste wood residues and for this reason B(4) can be excluded from further consideration.

Alternative B(5) The use of waste wood as feedstock in a process (e.g. in the pulp and paper industry) is correctly excluded from further consideration. Waste wood remaining from wood-working processes on wood-working and fibreboard plant cannot be used as a feedstock. For this reason the exclusion of alternative B(5) from further consideration is appropriate.

Any other use of the biomass residues (alternative B(8) As already indicated all studies on waste disposal carried out by reputed organisations as described above came to a conclusion that industrial waste in Ukraine is mainly disposed on premises of the company or disposed of in landfills or sludge ponds. No use of biomass residues in other processes and industry sectors has been observed. (All studies express the recommendation for the use biomass residues in other processes instead of disposing it). For this reason the exclusion of the biomass use for fertilizer and/or bio fuels production was appropriately excluded from further consideration.

Summarizing the mentioned above the outcome of the Step 1 is as follows:

The realistic and credible alternatives for **heat generation** are:

- H(1) The proposed project activity not undertaken as JI project
- H(5) the generation of heat in the existing steam boilers using natural gas till 2011 and subsequent installation of the new natural gas fired boilers after 2011.

The realistic and credible alternatives for **biomass residues** are:

- B(1)The waste wood is dumped or left to decay under the mainly aerobic conditions. This applies, for example, to dumping and decay of wood residues on fields.
- B(7) The waste wood is used for heat generation at the project site not undertaken as a JI project.

As more than one credible and plausible alternative for heat generation and for the use of biomass residues remained, project participants have correctly conducted an **investment analysis** as per the Step 3 of the methodology. According to the methodology investment analysis should be carried out for all combinations alternatives for heat generation and the use of biomass residues that are remaining after the previous step. Following combinations have been appropriately identified.

A(1) = H(1) + B(7) - Project activity not undertaken as JI project

A(2) = H(5) + B(1) – Continuation of the current practice and later installation of the new gas boilers.

Financial indicator

Investment comparison analysis applied for identification of the baseline is in line with provisions of the Additionality tool/TA/. The selected financial indicator – the levelized costs for heat generation – has been identified in a line with the provisions of the Additionality tool/TA/. Within the investment analysis levelized heat costs within the baseline and project scenario have been calculated and compared. It could be demonstrated that the levelized costs of the natural gas based heat generation is lower than the levelized costs of the waste wood based heat generation.

The applied values within the financial analysis have been based on the assumptions made at the time of the management decision and have been elaborated in the feasibility study and deemed to be appropriate. For details please refer to the Annex 3 – assessment of the financial parameter.

The applied formula for the calculation of the levelized cost has been assessed as correct/LC/.

Sensitivity analysis

The included sensitivity analysis shows that the conclusion regarding the financial/economic attractiveness is robust to variations (+/- 10%) in the critical assumptions like investment cost, natural gas price and waste wood price. Determination team has reproduced the sensitivity analysis and it could be proved that the conclusion is robust even assuming 10% lower investment cost for waste wood boiler, 10% higher natural gas price and 10% lower waste wood price.

The variation of +/- 10% has been assessed as appropriate. The investment costs for one boiler have been based on the proposals form a technology supplier and deemed to be constant. The costs for the second boiler have been assumed based on the tender documents/IP-WW/, so that the variation of - 10% has been also assessed as appropriate.

5.2.4 Additionality Determination

Consideration of JI in decision making (if project start before determination PDD)

The starting date is the date of the management decision. The date has been defined in line with JI glossary of terms. The evidence for the management decision has been provided and the date of the decision could be proved. Thus based on provided evidences it could be concluded that JI was considered at the time of the decision making. The corresponding evidences/MPC//MM//BPV//TS/ have convinced that without benefits out of JI the project would be not financial viable. Furthermore the impact of JI has been calculated and it could be demonstrated that benefits out of JI would make the project financial attractive. The consideration of JI has been assessed as serious.

Application of methodology / methodological tools

PP has justified the additionality by means of applying Additionality Tool[/TA/]. This is in line with methodology (AM0036). In accordance with the Additionality Tool the additionality has to be justified through identification of the baseline scenario and common practice analysis. For the baseline identification an investment comparison analysis and barrier analysis have been carried out.

Investment analysis

Investment analysis shows that the project scenario is not the most attractive alternative or economically feasible without benefits from ERU sales. All parameters applied within the investment analysis have been assessed as plausible. Applied benchmark has been supported by evidences chosen and has been assessed as appropriate.

Barrier analysis

A detailed barrier analysis has been carried out by PP: In most cases the identified barriers have been assessed as a serious difficulty w.r.t the project implementation.

Determination team analysed In the course of the determination a sufficient confidence could be gained that an immense effort has been spent by the project participant to overcome the identified barriers. The justification of the barriers supported by evidence and substantiated. Furthermore the determination team is of the opinion that argumentation as provided by the project participant in this context is convincing.

However the identified barriers could not be assessed as a sufficient to prevent the implementation of this alternative.

Common practice analysis

Yes, Ukraine has been appropriately identified as region for the common practice analysis.

As per the PDD the waste wood heat generation activities similar to that of the project activity were not observed at the time of the management decision (2005) so that it was concluded that project type (e.g. technology or practice) has not diffused in the relevant sector and region.

Determination team has carried out a background analysis. By doing this publicly available data sources like studies, surveys, market research and official information as provided in the reporting to the UNFCCC have been analyzed. The main results and conclusions are presented summarized in section 5.2.3. in the context of the baseline identification. The conclusion as per the PDD could be verified.

The common practice analysis provided in the PDD is accurate. The information and data sources used are appropriately references and could be proved in the course of determination. A sufficient confidence could be gained that the proposed project type

(i.e.. technology and/or practice) has not diffused in the relevant sector and geographical area and the time the project started.

Summary

Identification of the baseline and the common practice analysis have been appropriately carried out in the PDD. For details please refer to the section 5.2.3. In particular it was demonstrated that natural gas based heat generation is economically most attractive than the waste wood based heat generation. Hence it can be concluded that the additionality justification has been appropriately justified. Hence the determination team concluded that the baseline scenario has been appropriately elaborated and additionality has been appropriately justified. All conclusions could be supported by the evidences.

5.2.5 Monitoring Methodology / Monitoring Plan

The monitoring plan covers all monitoring parameters given in the applied monitoring methodology. The monitoring plan can be implemented and are all monitoring arrangements are feasible within the project design.

The project involves utilization of waste wood for heat generation. In the absence of project activity the heat would be otherwise generated in the natural gas based steam boilers. According to this, the developed monitoring includes for

Baseline emissions:

- Baseline emissions from fossil fuel combustion for heat generation in the boiler(s) (tCO2 /yr)
- baseline emissions due to uncontrolled burning or decay of the biomass residues (tCO2e/yr)

Project emissions:

- CO2 emissions from off-site transportation of biomass residues to the project site (tCO2/yr)
- CH4 emissions from combustion of biomass residues in the boiler(s)
- the CO2 emissions from on-site electricity consumption (PECO2,EC,y)

Yes, all monitoring parameters required by the applied methodology contained in the monitoring plan.

The relevant monitoring parameters will be determined and stored in electronic and paper form.

The monitoring system for determination of the project and baseline emissions has been provided in a clear and transparent manner. The measurement equipment/procedure, the monitoring frequency and QA/QC procedures were appropriately described and are in compliance with the requirements of the methodology

PP has provided a detailed technical specification of the metering equipment. The information provided indicates the accuracy class, calibration procedures and responsibilities. Hence the determination team is of the opinion that PP has duly elaborated the applied monitoring equipment.

In the course of the on-site visit it could be observed that PP has a well experienced personnel and a good monitoring system for the existing equipment (natural gas boilers). Considering this a sufficient confidence could be gained that monitoring arrangements required for the JI project activity will be properly incorporated in the existing monitoring system of the company.

Project participant has elaborated procedures for data management and processing within the particular stages of the monitoring. Double check procedures have been introduced to ensure high quality project management. Different tasks within the monitoring are clearly allocated to the personal of the different departments of the. Personal and the corresponding tasks/responsibilities of the project monitoring are clearly defined. Furthermore all procedures have been clearly documented. The responsibilities are clearly defined and indicated in the PDD.

5.2.6 Leakage

According to the methodology project participant should explain why leakage effects can be ruled out through demonstrating that does not result in increased use of fossil fuels or other GHG emissions elsewhere.

For this purpose project participant interviewed the waste wood working companies in the region. The interviewed companies are envisioned and potential suppliers to the project activity. The companies are located in the region of the project activity and for this reason were appropriately identified as representative sample of suppliers.

According to the information given by these companies the waste wood which remains from wood-working production processes is not utilized for energy generation by the interviewed companies. Waste wood is mainly stored at premises of these companies and offered to population free of charge. Though it can be assumed that the population uses waste wood for heat generating purposes there is no reliable information about the exact use of the waste wood offered to the population. Furthermore the amount of the waste wood supplied to the population is very small in comparison to the amount disposed.

In the course of determination it could be verified that the analysis of handling waste wood in the region as presented by project participant is in line with the information provided by the wood working companies. Provided The capacity is as per the technical specification and the feasibility study. The corresponding supporting documents and evidences have been checked and the analysis of common practice for waste wood disposal could be proved.

Further confidence that the project activity will not result in increased use of fossil fuels or other GHG emissions elsewhere (and in particular at the wood working companies) could be gained through the examination of the waste management in Ukraine as provided within the studies carried out by reputed organisations as presented in section 4.2.2. within the analysis of alternative B1.

Taking into account argumentation and supported documents as provided by the project participant as well as information as provided in the surveys and studies on the waste management in Ukraine determination team agreed that leakage effects can be ruled out.

5.2.7 Calculation of GHG Emission Reductions

The calculation has been done as per applied project specific methodology. All data not to be monitored have been assessed as correct. The values for the monitoring parameters assumed within the calculation are plausible. It could be concluded that the estimated emission reductions are plausible and conservative.

According to the final PDD the project is expected to reduce emissions of 5,782,430 tCO2e over the 5 years crediting period.

The calculation of the GHG emission reductions is carried out in the corresponding excel spreadsheets and the out come is presented in section E of the PDD. The calculation is in line with the applied methodology and is presented in a complete and

transparent manner. Emission reductions have been calculated as difference between the Baseline emissions, minus the project emissions and leakage.

The **project emissions** result from electricity consumption that is attributable to the project activity, the CO2 emissions from off-site transportation of biomass residues that are combusted in the boiler(s) to the project site, and from the CH4 emissions from combustion of biomass residues for heat generation.

To calculate CO2 emissions from off-site transportation

CO2 emissions from off-site transportation are estimated based on assumption for the number of trucks, the average round trip distance as well as average CO2 emission factor for the trucks. **Number of trucks** has been appropriately estimated based on the required amount of the waste wood and the payload of the trucks. The **average round trip distance** has been estimated for the two sites separately. The estimated distance is in line with location of envisioned fuel suppliers and for this reason is considered to be appropriately estimated. The average **CO2 emission factor for the trucks** has been determined based on the IPCCC information. The applied values have been proved, the determination team has reproduced the calculation and the CO2 emissions from off-site transportation in 0.00121 TCO2/km could be proved.

CO2 emissions from the from electricity consumption

Grid emission factor for the Ukrainian grid of 0,896 tCO2/MWh is based on the standardized emission factors for the Ukrainian electricity grid as determined by the Global Carbon B.V. and verified by TUV SÜD/EF/. The documents have been checked and the value applied in the calculation could be proved.

The electricity consumption of the project activity has been estimated based on the information provided by the technology supplier and own experience of the project participants. This issue was discussed during the site visit and sufficient confidence was gained that the value has been estimated in conservative manner.

CH4 emissions from combustion of biomass residues for heat generation

CH4 emissions from combustion of biomass residues for heat generation is based on the CH4 emission factor for the combustion of the biomass residues in the boilers, Net calorific value of the biomass and the quantity of biomass residue type k used for heat generation as a result of the project activity.

CH4 emission factor for the combustion of the biomass residues has been assumed based on the IPCC default values as per the methodology. Project participant has in appropriate manner applied right default CH4 emission factor for combustion of waste wood and the highest conservativeness factor.

Net calorific value of the biomass The assumed net calorific value of waste wood to be combusted in the new biomass boilers is 10.3 GJ/t. The water content of the biomass is 36%. Both values have been assumed based on the on site measurements and own estimates. The estimated NCV on dry basis is assumed to be 16,1 MJ/t. This issue was discussed during the site visit and

sufficient confidence was gained that the value has been estimated in appropriately. Furthermore this value is higher as the IPCC default value (15,6 MJ/t), so that the conservative nature is considered to be provided.

Quantity of biomass residue was determined based on the boilers' thermal capacity, the nominal operating hours, the efficiency and the nominal loading rate and the net calorific value of the biomass. The assumed boilers' thermal capacity is in line with the envisioned capacity of the two biomass boilers /TS//TSD//FS/. The efficiency is as per the technical specification. The documents have been checked and the value applied could be proved. Nominal operating hours and the nominal loading rate are plausible and considered to be properly estimated. As mentioned above the net calorific value of the biomass has been estimated in a conservative manner.

The determination team has reviewed the calculation of the CH4 emissions from combustion of biomass residues for heat generation as presented in the corresponding excel spreadsheets and it could be proved that the calculation has been done appropriately.

Baseline emissions include CO2 emissions from fossil fuel combustion in the boilers in the absence of the project activity and the CH4 emissions from the treatment of biomass residues in the absence of the project activity.

CO2 emissions from fossil fuel combustion

on the Baseline emissions from fossil fuel combustion in the boilers are determined by multiplying the heat generated with fossil fuels that are displaced by biomass residues with the CO2 emission factor of the least carbon-intensive fossil fuels that would be used in the absence of the project activity and by dividing by the average net efficiency of heat generation in the boiler(s).

Heat generated with incremental biomass residues was determined based on the boilers' thermal capacity, the nominal operating hours, and nominal loading rate. As indicated above the assumed boilers' thermal capacity is in line with the envisioned capacity of the two biomass boilers. The nominal operating hours, and nominal loading rate are considered to be appropriate estimated.

CO2 emission factor of the fossil fuel displaced by biomass residues has been appropriately determined. Natural gas has been correctly identified as a fossil fuel that would be displaced by the biomass residues. The CO2 emission factor is in line with IPCC values.

Average net efficiency of heat generation in the gas fired boilers is assumed to be 89%. This value has been determined based on the measured efficiency prior to the project activity. In the last three years prior to the project activity the measured efficiency was in a range between 81% and 86%. As per the manufacturer information boiler efficiency is 89%. The higher value among the measured efficiency prior to the implementation of the project activity and

manufacturer's information on the efficiency has been applied. This is in line with the methodology.

TUV has reviewed the calculation and it could be proved that the calculation has been done appropriately.

CH4 emissions from the treatment of biomass residues in the absence of the project activity

The baseline emissions due to uncontrolled burning or aerobic decay of the biomass residues have been appropriately determined in accordance with the identified baseline scenario – the biomass residues are dumped or left to decay under mainly aerobic conditions (scenario B1).

The CH4 emissions from the treatment of biomass are calculated by multiplying the quantity of biomass residues that would not be used in the absence of the project activity with the net calorific value and an appropriate emission factor,

Quantity of biomass residue

Biomass to be combusted in the waste wood boilers will be both from the own wood working facilities and from external sources. As already indicated biomass coming from other wood working companies would be left to decay under aerobic conditions on the unmanaged landfills and/or offered for the population.

Though it can be assumed that the population uses waste wood for heat generating purposes there is no reliable information about the exact use of the waste wood offered to the population. To provide a conservative nature project participant excluded waste wood from external sources and estimated CH4 emissions from aerobic decay of biomass based on the waste wood from the own sources. Though this is not exactly in line with the monitoring plan this assumption is considered to be conservative and for this reason has been assessed as appropriate.

Net calorific value of the biomass: As already indicated in this section has been appropriate determined based on the on-site measurements of NCV on wet basis and the wet content.

CH4 emission factor for uncontrolled burning of the biomass 41 $kgCH_4/TJ$ is based on the IPCC values. Appropriate conservativeness factor has been applied. The determination is in line with the methodology and appropriate.

GWP is appropriately assumed to be 21

5.2.8 Project Management Planning

The project management planning is appropriate for the purpose of the projects monitoring. Please refer to the comments under monitoring section (section 5.2.6)

5.2.9 Crediting Period

The choice of the crediting period is appropriate. The crediting period starting date is appropriate.

5.2.10 Environmental Impacts

The project documentation contains an analysis of environmental impacts. An EIA is required from host country. EIA was carried out in accordance with the requirement of host country.

5.2.11 Comments by Local Stakeholders

All relevant local stakeholders have been invited to comment on the project. No comments were received.

6 DETERMINATION OPINION

The Uniplyt ltd." has commissioned the TÜV NORD JI/CDM Certification Program to carry out the Determination PDD for the JI Track 1 project: " Utilization of waste wood for steam production at "Uniplyt" Ltd Wood-working and Fibreboard plant in Vygoda village and Veneer plant in Dzviniach village" with regard to the relevant requirements for the Joint Implementation project activities of the host country, as well as the criteria for consistent project operations and monitoring.

Within the project activity two new waste wood fired steam boilers will be installed at the production sites of the Uniplyt Ltd. The existing natural gas based heat generation equipment will be mainly dismantled. The proposed project activity will result in the decrease of the GHG emissions through the replacement of the natural gas by the waste wood and avoiding methane emissions through landfilling the waste wood which would occur otherwise.

A risk-based approach has been followed to perform this determination. In the course of the determination 10 Corrective Action Requests (CARs) and 3 Clarification Requests (CLs) were raised and successfully closed.

The review of the project design documentation (PDD Version 2 dated 17.09.2009) and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria. In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (Ukraine) and all relevant UNFCCC requirements for JI project activities.

- An analysis as provided by the applied approved CDM methodology AM0036 version 2.1 demonstrates that the proposed project activity is not a likely baseline scenario.

An analysis as provided by the applied approved CDM methodology AM0036 version 2.1 " demonstrates that the project activity will result in a reduction of anthropogenic emissions by sources that is additional to any that would otherwise occur;

- The monitoring plan is transparent, adequate and provides for the collection and archiving of all relevant data necessary for determination project and baseline emissions within the project boundary during the crediting period;

- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 175,880 t CO2e is most likely to be achieved within the 5 years crediting period.

Essen, 21.09.2009

Mr Rainer Winter,
Team Leader
TÜV NORD JI/CDM CP
Validation Team Leader

Essen, 21.09.2009

Eric Krupp
Final Approval Person
TÜV NORD JI/CDM CP
Final Approval

7 REFERENCES

Table 7-1: Documents provided by the project participant

Reference	Document
/**LOE**/	Letter of Endorsement
/**BPV**/	Business plan of the investment project for the waste-wood fired boiler "Vyncke" at Vygoda village
/**CA1**/	Credit agreement № 5408K10 (21.04.2008)
/**CA2**/	Credit agreement № 5406K29 (31.07.2006)
/**CGM**/	Certificate and general technical data of the gas metering device
/**CGS**/	Certificate of gas specification (06.11.2006)
/**CP-WW**/	Analysis of current practice on the disposal of the waste wood (Proof that Leakage can be ruled out)
/**CWRS**/	Certificate of waste realization №7 (sawdust)
/**CWRL**/	Certificate of waste realization №8 (lump plate waste)
/**EEC**/	Expert report of the correspondence of the object/site to the normative acts of the energy efficiency committee (23.07.2007)
/**FS**/	Technical specification of the economic and technology details of the Uniplyt project activity.
/**IP-Gas**/	Gas contract and Proof for the gas price
/**IP-WW**/	Contract with waste wood suppliers and proof for the waste wood price
/**IP-WW1**/	Historical waste wood prices
/**IP-ET**/	Electricity tariff as per the electricity supplying company

/**L-1**/	Certificate of the state environmental inspection regarding the waste wood fired project (10.08.2007)
/**L-2**/	Expert report of the department of the normative-technical work (24.07.2007)
/**L-3**/	Certificate of the complex state inspection (20.08.2007)
/**LPC**/	Environmental Impact Assessment – License Energy and Environmental Expertise (16.08.2007)
/**LPS**/	Tender for the biomass boiler in Dzviniach. (List of companies to which the technical assignment for the supply of the waste-wood fired boiler for the Veneer Plant "Uniplyt" Ltd. in Dzviniach has been sent to)
/**M-Gas**/	Technical specification of the gas metering device "FLOUKOR"
/**M-Gas2**/	Technical specification of the temperature transmitter PT
/**M-Gas3**/	Layout plan of the project site in Dzviniach village
/**MPC**/	Minutes of project consideration (18.07.2007)
/**MM**/	Management Decision and minutes of meeting including and the proof that benefits from ERU were seriously considered within the management decision.
/**NGU**/	Monthly reports on utilization/use of the natural gas by "Uniplyt" Ltd. (2006-2007)
/**PDD**/	Project Design Document Version 1 (published version) "Utilization of waste wood for steam production at "Uniplyt" Ltd Wood-working and Fibreboard plant "Uniplyt" Ltd"" Project Design Document Version dated 17.09.2009
/**TS-B1**/	Technical specification and the commercial proposal of the biomass boiler to be installed in Vygoda.
/**TS**/	Technical specification and commercial proposal for the biomass boiler "Vyncke" at Vygoda village.

/**TSD**/	Tender documents for biomass boiler in Dzviniach.
/**TS-DKVR**/	Technical specification and Certificate of the quality of boiler manufacturing of the type DKVR-10/39 in Vygoda
/**TS-ED**//	Technical specification and Certificate of the quality of boiler manufacturing (E-25/14) in Dzviniach
/**TS-EV**/	Technical specification and Certificate of the quality of boiler manufacturing of the type (E-25/14) in Vygoda
/**TSH**/	Technical specification for heat meter at Veneer plant (in case this is not provided in boiler specification/tender documents)
/**WSR**/	Requirements concerning waste storage and removal (Article 33)
/**XLS**/	Investment calculation spreadsheet

Table 7-2: Background investigation and assessment documents

Reference	Document
/**AM36**/	Approved baseline and monitoring methodology AM0036 "Fuel switch from fossil fuels to biomass residues in boilers for heat generation" (Version 02.1: 10 August 2007)
/**AT**/	Tool for the demonstration and assessment of additionality (Version 04)
/**BIA-1**/	The First National Communication on Climate Change The United Nations Framework Convention on Climate Change Kyiv 1998
/**BIA-2**/	Second National Communication Ukraine (2006)
/**BIA-3**/	Demonstrable progress report (2006)
/**BIA-4**/	Austrian-Ukranian Enenergypartnerschip report (2004)
/**BIA-5**/	Overview of Electricity Market in Ukraine, Center for social and economic research, 2008

Reference	Document
/**BIA-6**/	Ukrainian Heating Sector Review Center for social and economic research, 2008
/**BIA-7**/	Strategy for Ukraine, Document of the European Bank for Reconstruction and Development (2007)
/**BIA-8**/	Environmental Performance Reviews Ukraine, second review, Economic Commission for Europe, Committee on Environmental Policy, United Nations (2007)
/**BIA-9**/	Comparative Analysis, EU and Ukraine Security of Energy Supply United Nations Development Programme (2007)
/**BIA-10**/	Ukraine Energy Policy Review IEA 2006
/**BIA-11**/	National Environmental Policy of Ukraine: Assessment and Development Strategy carried out by Ministry for Environmental Protection of Ukraine, Global Environmental Facility, United Nations Development Programme (2007)
/**BIA-12**/	Development of the wood prices as per the information about the manufacturer of the building materials in Ukraine, Germany Trade and Invest (Federal Republic of Germany)
/**BIA-13**/	Development of the wood prices as per the information provided by the National Center for Marketing and Price Study
/**CPM**/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/**EF**/	Standardized emission factors for the Ukrainian electricity grid as determined by the Global Carbon B.V. and verified by TUV SÜD.
/**GBM**/	Guidance on Criteria for baseline setting and monitoring
/**GCP**/	Guidelines for users of the Joint Implementation project design document form (version 03)
/**GJI**/	Guidelines for the implementation of Article 6 of the Kyoto Protocol as per 9/CMP.1
/**HCR**/	Order N 342 by Ministry of Environmental Protection of Ukraine (17.07.2006) On approval of requirements to preparation of the joint implementation projects
/**MDT**/	Tool to determine methane emissions avoided from disposal of waste at a

Reference	Document
	solid waste disposal site (Version 04)

Table 7-3: Websites used

Reference	Link	Organisation
/**bemnw**/	http://www.bemnw.ru/?module=articles&id=75	Bijskenergomash Sewero-Zapad
/**dna**/	http://www.neia.gov.ua/	National Environmental Investment Agency of Ukraine
/**ipcc**/	www.ipcc-nggip.iges.or.jp	IPCC publications
/**I-GTU**/	http://energy.ihs.com/News/Press-Releases/2008/IHS-CERA-Power-Capital-Costs-Index.htm	IHS, Construction Costs for New Power Plants Continue to Escalate: IHS CERA Power Capital Costs Index
/**unfccc**/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/**IM01**/	V	☒ Mr. ☐ Ms.	Volodymyr Pylypiv	Head of purchase department "Uniplyt" Ltd.
/**IM02**/	V	☐ Mr. ☒ Ms.	Tetiana Yelovikova	Consultant Scientific Engineering Centre "Biomass"

[1)] Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

ANNEX

A1: Determination Protocol

A2: Assessment of Baseline Identification

A3: Assessment of Financial Parameters

A4: Assessment of Barrier analysis

A5: Outcome of the GSCP

ANNEX 1: DETERMINATION PROTOCOL

Table A-1: Requirements Checklist

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
A. General Description of Project Activity				
A.1. Participation Requirements *Referring to Part A and Annex 1 of the PDD as well as the JI glossary with respect to terms Party, Letter of Approval, Authorization and Project Participant.*				
A.1.1. Which Parties and project Participants are participating in the project?	Parties involved are Ukraine acting as a Host Party. Legal Project Participant of the Host Country is the "Uniplyt" Ltd OJSC "Oil Company Rosneft".	PDD	OK	OK
A.1.2. Have the involved Parties provided a valid and complete letter of approval and have all private / public project participants been authorized by an involved Party? At this stage of the project at least the Host country approval is required.	Letter of Approval can be applied only after the issuance of the positive determination opinion. A positive determination opinion as confirmed by an Independent Entity is a prerequisite for the Host Country Approval that can be issued on request by the Designated Focal Point of the Ukraine - National Environmental Investment Agency of Ukraine.	PDD	LoA will be applied	

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
A.2. Approval *The written approval of the parties involved is a mandatory requirement*				
A.2.1. Has the project provided written approvals of all parties involved? *Indicate whether a letter of approval has been received, with a clear reference to the supporting documentation.* *Indicate whether this letter was provided to the AIE by the project participants or directly by the DNA*	Please refer to the comment under A.1.2.		LoA will be applied	
A.2.2. Are the approvals issued from orgainsations listed as DNAs on the UNFCCC JI website? *Indicate the means of validation employed to assess the authenticity*	Please refer to the comment under A.1.2.		LoA will be applied	
A.2.3. Do the written approvals confim that the corresponding party is a Party to the Kyoto Protocol?	Please refer to the comment under A.1.2.		LoA will be applied	
A.2.4. Do the written approvals refer to the precise project title in the PDD submitted for registration?	Please refer to the comment under A.1.2.		LoA will be applied	
A.2.5. Is the information regarding the project participants listed in section A3 and in Annex 1 of the PDD internally consistent to each other?	Please refer to the comment under A.1.2.		LoA will be applied	

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
A.2.6. Are all project participants listed in the PDD approved at least by one Party involved? *Indicate whether the participation of the project participant(s) has been approved by a Party to the Kyoto Protocol.* *Describe the means of validation employed to draw this conclusion.*	Please refer to the comment under A.1.2.		LoA will be applied	
A.2.7. Are any other project participants approved but not listed in the PDD?	Please refer to the comment under A.1.2.		LoA will be applied	
A.3. PDD editorial aspects *The PDD used as a basis for determination PDD shall be prepared in accordance with the latest template and guidance from the JI Supervisory Committee available on the UNFCCC website.*				
A.3.1. Has the latest version of the PDD form been applied?	Yes, the Project Design Document Form Version 01 – in effect as of 15 June 2006 – has been used. This is the latest version of the PDD form.	PDD	~~CAR B5~~	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
A.3.2. Has the PDD been duly filled in accordance with the latest guidance(s)?	Guidelines for users of the JI PDD form Version 03 (JISC 13) have been used for completing the PDD. According to the JISC 13th meeting, these Guidelines should be taken into account for all PDDs to be published from 1 January 2009. Hence the PDD is in line with the latest guidance.	PDD	OK	OK
A.4. 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.4.1. Does the PDD contain a clear, accurate and complete project description? *The PDD shall contain a clear description of the project activity which provides the reader with a clear understanding*	The project activity involves replacement of the natural gas fired steam boilers by waste wood fired boiler at "Uniplyt" Ltd. Within the implementation of the project activity two waste wood fired steam boilers will be installed at each site, i.e. one	PDD /BPV/ /TS/	OK	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
of the precise nature of the project activity and the technical aspects of its implementation. *Pl. consider esp.* chapters *A.2, A.4.2 and A.4.3 (in case of LSC PDD) for assessment.* *Describe the process undertaken to validate the accuracy and completeness of the project description.* *Contain the AIE's opinion on the accuracy and completeness of the project description.*	waste wood fired steam boiler will be installed in Vygoda and one Dzviniach village. Each waste wood fired boiler is designed in such a manner that it is able to cover the heat demand of the relevant site. For detailed key parameters of waste wood fired boilers at both sites please refer to Table 2-4a and Table 2-4b. In order to assess accuracy and completeness of the project description, determination team has proved whether the description of the technology as provided in the chapters A.2, A.4.2 and A.4.3. is in line with provided evidences and physical implementation of the project activity. The determination team is of the opinion that the main steps of the technological process for waste wood heat generation have been appropriately described in the corresponding sections of the PDD. The determination team is of the opinion that the utilization of the waste wood for heat generation reflects good current practices for heat generation/BIA-4/ -/BIA-11/. The description of the project activity is considered to be accurate, complete, presented in a detailed manner and in line with provided evidences and results of the on-site inspection.	/TS-DKVR// /TS-EV/ /TS-ED/ /TS-B1/ /LPS/ /TSD/ /GCP/ /BIA-4/ /BIA-11/		
A.4.2. Is this description in accordance with the real situation or (in case of greenfield projects) is it most likely that the project will be implemented acc to the project description	In the course of the on-site visit determination team it could prove that the description of the natural gas fired boilers as per the PDD is in line with physical installation. Furthermore technical specification as indicated in the PDD could be proved based provided documentation//TS-DKVR///TS-EV//TS-ED/.	PDD //BPV/ /TS/ /TS-	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	Also the construction works for the biomass based equipment could be observed. The technical specification of the equipment installed within the project activity has been duly provided. It has been verified that the technical specification including capacity figures as indicated in the PDD is in line with the provided technical specification. Based on the provided technical documentation for the biomass boilers/LPS//TS-B1//TSD/ the a sufficient confidence could be gained that the technical characteristics of the biomass boilers will be inline with those indicated in the PDD.	DKVR// /TS-EV/ /TS-ED/ /TS-B1/ /LPS/ /TSD/		
A.4.3. In case the project involves alteration of the existing installation or process, is a clear description available regarding the differences between the project and the pre-project situation? *Describe the steps taken to validate this issue.*	Within the project activity heat for own needs (esp. for the production facilities) will be generated through the utilization of the waste wood. The pre-project situation envisaged the generation of heat through natural gas fired boiler equipment. The heat generation technology both of the project activity and of the pre-project situation is clearly and accurately provided in the PDD. In the course of determination, determination team has reviewed technical specification of the natural gas-fired heat generation units. It has been proved that the technology including capacity figures as indicated in the PDD is in line with provided evidences.	PDD /BPV/ /TS/ /TS-DKVR// /TS-EV/ /TS-ED/ /TS-B1/ /LPS/ /TSD/	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
A.4.4. Does the project design engineering reflect current good practices? *Consider the equipment specifications, literature (e.g. EU BREF papers) and professional experiences. Describe the process undertaken to assess the engineering.*	Yes. The project activity intends to incorporate the latest/state-of-the-art power generation technology and technology required for a waste wood based heat generation. The heat generation equipment is produced by a respectable and well-known manufacturer "Vyncke". According to the technical specification and information provided by the manufacturer, latest/state-of-the-art heat generation technology has been installed within the project activity. Technical specification of the equipment to be employed within the project activity has been reviewed in particular with regard to the quality standard applied by manufacturer of the considered equipment. Furthermore, information as provided by reputed external sources has been examined regarding the best practices of waste wood based heat generation. A sufficient confidence that the entire design of the project activity is appropriate and reflects good current practice has been gained through examination of technological options and opportunities as provided by different Ukrainian and international data sources/BIA-4/ -/BIA-11/.	PDD /BIA-4/ /BIA-5/ /BIA-6/ /BIA-7/ /BIA-8/ /BIA-9/ /BIA-10/ /BIA-11/ /TS/ /TS-DKVR/ /TS-EV/	OK	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
A.4.5. 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? *Describe the process undertaken to assess the state of the art technology.*	Technical specification of the equipment to be employed within the project activity has been reviewed in particular with regard to quality standard applied by a manufacturer of the considered equipment. The project activity intends to incorporate the latest/state-of-the-art associated waste wood based heat generation technology. The project activity is expected to meet international standards for environmental quality and safety. Commonly used heat generation technologies in Ukraine a are natural gas based and/or do not make use of waste wood utilization. For this reason, the project activity would result in a less carbon intensive electricity generation in Ukraine	PDD /BIA-4/ /BIA-5/ /BIA-6/ /BIA-7/ /BIA-8/ /BIA-9/ /BIA-10/ /BIA-11/ /TS/ /TS-DKVR/ /TS-EV/	OK	OK
A.4.6. Does the project make provisions for meeting training and maintenance needs? *Describe the process undertaken to assess the maintenance and training needs.*	As per the PDD, training and maintenance procedures related to this technology have been provided by the project owner and manufacturers before the power plant has become operational. This issue has been discussed during the site visit. Training and maintenance needs are continuously monitored by the project owner. It has been proved that procedures for training and maintenance are in place and the corresponding evidences have been provided. Consequently, an adequate confidence has been gained	PDD, I /BPV/ /FS/	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	proving that sufficient efforts have been made for this sake.			
A.5. Small scale project activity *It is assessed whether the project qualifies as small-scale JI project activity*				
A.5.1. Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II? *Describe the steps taken to validate this issue.*	Not applicable, because the project activity is a large scale project.			OK
A.5.2. Does the project apply one of the approved small scale categories and any methodology and tool referred therein? *Describe the steps taken to validate this issue. Check, if applicable the expiry dates of the applied methodology.*	Not applicable, because the project activity is a large scale project.			OK
A.5.3. Is the small scale project activity not a debundled component of a larger project activity? *Describe the steps taken to validate this issue. PI refer to the Compendium of guidance on debundling (EB 36, Annex 27).*	Not applicable, because the project activity is a large scale project.			OK
B. Project Baseline, Additionality and Monitoring Plan				

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
B.1. Application of the Methodology				
B.1.1. What kind of methodology has been used? .	Name: AM0036 "Fuel switch from fossil fuels to biomass residues in boilers for heat generation", Version: version 2.1 Type: ☒ CDM Approved Methodology –latest version ☐ CDM Approved Methodology –older version ☐ Combination of Approved Methodology ☐ Project specific Methodology	PDD, I /CPM/ /GBM/ /GCP/ /GJI/	OK	OK
B.1.2. Has the methodology assessment form (S01-VA 30 – A3) been used?	☒ Yes ☐ N/A (only in case of latest version of approved CDM methodology)	PDD, I /CPM/ /GBM/ /GCP/ /GJI/	OK	OK
B.1.3. Is the discussion and selection of the baseline methodology transparent? Can the applied methodology be assessed as appropriate?	☒ Yes ☐ No Comment: Yes, the applied methodology is the most suitable methodology for considered project type.	PDD, I /CPM/ /GBM/	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
		/GCP/ /GJI/		
B.1.4. Is the chosen methodology applied correctly?	Yes based on the analysis of the project design document and supporting documentations it could be proved that the methodology has been applied correctly. **CAR B1** has been raised and successfully closed.	PDD, I /CPM/ /GBM/ /GCP/ /GJI/	~~CAR B1~~	OK
B.1.5. Does the baseline methodology specify data sources and assumptions?	The methodology specifies procedures for identifying baseline scenario. The required procedure has been followed by project participant. Furthermore the methodology contains specific requirements for justification of the remaining lifetime of the existing equipment. As described in this report the justification provided by project participant is in line with methodology requirements. **CAR B2** has been raised and successfully closed.	PDD, I /CPM/ /GBM/ /GCP/ /GJI/	~~CAR B2~~	OK
B.1.6. Does the baseline methodology sufficiently describe the underlying rationale for the algorithm/formulae used to determine baseline emissions (e.g. marginal vs. average, etc.)	The applied methodology is an CDM approved methodology so that it can be concluded that baseline methodology sufficiently describes the underlying rationale for the algorithm/formulae used to determine baseline emissions	PDD, I /CPM/ /GBM/ /GCP/ /GJI/	OK	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
B.1.7. Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?	Please refer to the comments above.	PDD, I	OK	OK
B.1.8. Does the baseline methodology specify the spatial level of data (local, regional, national)?	Please refer to the comments above.	PDD, I	OK	OK
B.1.9. Is the applied CDM methodology identical with the version available on the UNFCCC website? (Valid only projects where CDM Approved Methodology has been used) *Describe the steps taken to validate this issue.*	Yes, the determination proved that CDM Approved Methodology as available on the UNFCCC website has been used.	PDD, I	OK	OK
B.1.10. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled? *Describe for <u>each</u> applicability criterion listed in the selected approved methodology the steps taken to assess the information contained in the PDD.*	Yes, all applicability criteria are fulfilled. For detailed assessment of the particular criteria please refer to the applicability assessment in section 5.2. of this report.	PDD, I	~~CAR B2~~	OK
B.1.11. Is the project in accordance to every other stipulation or requirement mentioned in all sections of the methodology? *Describe the steps taken to check whether the proposed project activity meets <u>all the other possible stipulations and</u>*	Yes, please refer to B.1.5. and B.1.10	PDD, I	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
/or limitations mentioned in all sections of the approved methodology selected.				
B.2. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project*				
B.2.1. Are the project's spatial boundaries (geographical) clearly defined? *Provide information on how the validation of the geographical boundary has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.*	The project's spatial and system boundaries are clearly defined in the project documentation. The spatial extent of the project boundary includes the wood-working and fibreboard plant located in Vygoda village and veneer plant located in Dzviniach village as well as all the power plants connected physically to the baseline Grid (i.e. Ukraine). The boundary encompasses natural gas fired boilers for heat generation that will be displaced by biomass boilers. Furthermore a part of the waste wood will be transported by trucks for this reason the CO2-emission sources from off-site transportation have been correctly included in the project boundary. The waste wood will be directly combusted in the boilers without preparation. Co-firing of other (fossil) fuels is not required. The CO2-emissions due to the electricity consumption of the waste wood boilers for their own needs will be determined and taken into account within the calculation of emission reductions. Furthermore project participant decided to include CH4 emissions from the treatment of biomass residues in the baseline and from combustion of biomass residues in the boilers in the project boundary. This is in line with the	PDD, I, /TS/ /AM36/ /TS-B1/	~~CAR B5~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
	methodology because dumping and decay of biomass residues under mainly aerobic conditions has been identified as a baseline scenario. The project boundary is clearly described in words and a visualisation of the physical project boundary as well as a table defining all significant GHG gases has been included in the PDD.			
B.2.2. Are all sources and GHGs included in the project boundary as required in the applied methodology? *Provide information on how the validation of the GHGs and sources has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.*	The determination team has examined the equipment and facilities required for the heat generation as well as treatment of the biomass residues w.r.t. the potential sources of GHG gas emissions. It could be verified that all anthropogenic emissions by sources under the control of the project participants that are significant and reasonably attributable to the JI project have been appropriately included in the project boundary.	PDD, I, /TS/ /AM36/	~~CAR B5~~	OK
B.2.3. In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and justified? *Confirm if the justification provided by the PPs is reasonable, based on assessment of supporting documented evidence provided by the PPs or by onsite observations.*	Yes, the inclusion of the CH_4 emissions form the uncontrolled burning or decay of the biomass residues and from the combustion of the biomass residues can be decided by PP. The decision to include these sources is in line with the methodology.	PDD, I, /TS/ /AM36/	~~CAR B5~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
B.3. Baseline Identification *The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.*				
B.3.1. What possible baseline scenarios have been considered? *Fill in all alternatives in table A-2.*	The realistic and credible alternatives identified for heat generation are: - H(1) The proposed project activity not undertaken as JI project - H(5) the generation of heat in the existing steam boilers using natural gas till 2011 and subsequent installation of the new natural gas fired boilers after 2011. The realistic and credible alternatives identified for biomass residues are: - B(1)The waste wood is dumped or left to decay under the mainly aerobic conditions. This applies, for example, to dumping and decay of wood residues on fields. - B(7) The waste wood is used for heat generation at the project site not undertaken as a JI project.	PDD, I	OK	OK
B.3.2. Is the list of alternatives complete? *Describe how it was validated that all alternatives are plausible and no plausible alternative is excluded from the consideration*	☒ All plausible alternative scenarios listed in the approved methodology have been considered. In the course of document review and site visit, it has been validated that no other alternatives which supply comparable outputs and / or services are to be taken into consideration. Thus no plausible scenario has been omitted.	PDD, I /AM36/	~~CL B2~~	~~OK~~

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
	☐ The following alternative scenarios/options have been omitted. Corresponding CAR(s)/CL(s) has /have been issued In order to validate that the list of alternatives is complete determination team has investigated all possible alternatives for heat generation and treatment of the biomass residues. It was concluded that all plausible alternatives ha ve been appropriately identified. The exclusion of the alternatives from further consideration has been appropriately justified. For details pl. refer to the analysis in section 5.2.3.			
B.3.3. What has been identified as the baseline scenario? *Describe the chosen BL scenario*	The generation of heat in the existing steam boilers using natural gas till 2011 and subsequent installation of the new natural gas fired boilers after 2011 as well as the waste wood is dumped or left to decay under the mainly aerobic conditions. This applies, for example, to dumping and decay of wood residues on fields	PDD, I /BPV/ /TS/ /TS-DKVR// /TS-EV/ /TS-ED/ /TS-B1/ /LPS/ /TSD/	~~CAR B2~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
B.3.4. Has the baseline scenario been determined according to the methodology? *Describe how it is validated that the identification of the most plausible baseline scenario is carried out in accordance with the applied methodology and applied methodological tools. Please refer to table A-2.*	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to section 5.2.3 ☐ The determination has been carried out as per the applied methodology. ☒ The following CARs / CLs have been identified with respect to the selection of the baseline scenario: CL B5 and CL B6 have been raised in this context and successfully closed.. Determination of the baseline has been carried out in accordance with the methodology.	PDD, I /MPC/ /MM/ /BPV/ /TS/	~~CL B5 and CL B6~~	OK
B.3.5. Has any plausible alternative scenario been excluded? *Describe how it is validated that no plausible alternative scenario has been excluded.*	For details of the assessment regarding the evaluation of the baseline scenario pl. refer to section 5.2.3 ☐ No plausible baseline scenario has been excluded. ☒ The following plausible baseline scenarios have been excluded though no adequate justification has been provided for elimination. The following CARs / CLs have been issued: CL B2, CAR B3 and CL B5 were raised in this context and successfully closed.	PDD, I	~~CL B2~~ ~~CAR B3~~ ~~CL B5~~	OK
B.3.6. Has the baseline scenario been determined using conservative assumptions where possible?	☐ The baseline scenario has been determined using conservative assumptions where possible. Please refer to comments in table A-2 and sections B.3.2 to B.3.5	PDD, I /TS-	~~CAR B1 and~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
Describe whether the choice of the identified baseline scenario is reasonable by validating the key assumptions, calculations and rationales used in the PDD. Describe whether these are conservatively interpreted in the PDD.	above. ☒ The following CARs / CLs have been issued because assumptions used in the baseline determination have been assessed to be not conservative CAR B1 and CAR B3 have been raised in this context and successfully closed.	DKVR/ /TS-ED/ /TS-EV/	~~CAR B3~~	
B.3.7. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations? *Describe whether the PP has shown that all relevant policies and circumstances have been identified and correctly considered in the PDD in accordance with the guidance by the Board. Pl. consider the guidance EB 22 annex 3 (regarding E+ and E- policies).*	Yes, the relevant laws and regulations have been reviewed by determination team. Furthermore a background investigation on legal aspects regarding treatment of the biomass residues has been carried out. It could be verified that the elaboration of the baseline scenario has taken into account the national and/or sectoral policies, macro-economic trends and political aspirations. For details of the assessment regarding the evaluation of the baseline scenario pl. refer to section 5.2.3.	PDD, I /BIA-1/ /BIA-2/ /BIA-3/ /BIA-6/ /BIA-8/ /BIA-9/ /BIA-11/	OK	OK
B.3.8. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced? *Describe whether the documents and sources referred to in the PDD are correctly quoted and clearly referenced.*	Yes, Within the baseline determination project participant has referenced to different sources of information. These sources represent both publicly available information and company internal information. Publicly available information represents studies and market overviews carried out by well-reputed organisations (like IEA, etc.) All referred sources (e.g. websites in internet) have been checked and the information provided in the references	PDD, I /BIA-1/ /BIA-2/ /BIA-3/ /BIA-6/ /BIA-8/	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	sources could be proved. The same is valid for documents provided by project participant. All required documentation has been provided and its correctness could be verified.	/BIA-9/ /BIA-11/		
B.4. Additionality Determination *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*				
B.4.1. Methodology				
B.4.1.1. Did the additionality justification follow the requirements of the applied methodology and/or methodological tools? *Describe how it is validated that additionality justification is carried out in accordance with the applied methodology and/or applied methodological tools.*	PP has justified the additionality by means of applying Additionality Tool/TA/. This is in line with methodology (AM0036) In accordance with the Additionality Tool the additionality has to be justified through identification of the baseline scenario and common practice analysis. Both steps have been appropriately carried out in the PDD. For details please refer to the section 5.2.3.	PDD, I /TA/ /AM36/	~~CAR B4~~ ~~CL B6~~ ~~CL B7~~	OK
B.4.2. Consideration of JI before project start				

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
B.4.2.1. Is the project starting date reported in accordance with the Guidelines for completing JI PDD[8]? *Describe the steps taken to validate this issue.*	The starting date is the date of the management decision. The date has been defined in line with JI glossary of terms. The evidence for the management decision has been provided and the date of the decision could be proved. Thus based on provided evidences it could be concluded that JI was considered at the time of the decision making. The corresponding evidences/FS//MM//MPC//BPV//TS/ demonstrate that without benefits out of JI the project would be not financial viable. Furthermore the impact of JI has been calculated and it could be demonstrated that benefits out of JI would make the project financial attractive. The consideration of JI has been assessed as serious. In this context it should be noted that the implementation of the project activity has been analyzed in 2005 – approximately 6 months before the management decision. However in light of insufficient financial attractiveness management decided not to go ahead with the project activity.	PDD, I, /FS/ /MM/ /MPC/ /BPV/ /TS/	~~CL B6~~	OK
B.4.2.2. In case the project start date is before commencing of determination, was the incentive from the JI seriously considered and are details given in the PDD? *Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.*	The management decided to move forward with the implementation of the project activity based on the outcome of the feasibility study which demonstrates that without JI benefits the natural gas based heat generation is economically most attractive than waste wood based. This could be further supported by the calculation and	PDD, I, /FS/ /MM/	~~CL B6~~	OK

[8] GUIDELINES FOR USERS OF THE JOINT IMPLEMENTATION PROJECT DESIGN DOCUMENT FORM (VERSION 03)

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	comparison of the levelized heat generation costs.			
B.4.2.3. How and when was the decision to proceed with the project taken? *Describe the steps taken to validate the starting date.*	Please refer to the comment above and management decision of 2006 has been provided to the determination team.	PDD, I, /FS/ /MM/	~~CL B6~~	OK
B.4.2.4. Is the project start date consistent with the available evidences? *Describe the evidence assessed regarding the prior consideration of the JI (if necessary). Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.*	Yes, the determination team has reviewed provided evidences and the consistence of the project starting date could be proved. The project start date is consistent with the date of the management decision as per the minutes of meeting.	PDD, I, /FS/ /MM/	~~CL B6~~	OK
B.4.2.5. Was the decision to proceed with the project taken by a person which has the authority to do so? *Describe the steps taken to validate this issue.*	Yes, all provided evidences include an approval of the authorized persons. The provided evidences haven been checked and it could the corresponding approvals of the authorized persons could be verified.	PDD, I, /FS/ /MM/	~~CL B6~~	OK
B.4.2.6. How was the JI involved in the decision making process? *Describe the steps taken to validate this issue.*	Levelized heat generation costs of the gas based heat generation and that of the waste wood have been determined and compared. It was concluded that without JI the project would be not economically attractive for the project participant.	PDD, I, /FS/ /MM/	~~CL B6~~	OK
B.4.2.7. Can the JI involvement in the decision assessed as serious? *Describe whether or not the project would have been*	Yes, please refer to the comments above.	PDD, I, /FS/ /MM/	~~CL B6~~	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
undertaken without the incentive of the JI.				
B.4.3. Identification of alternatives Step 1 (in case of SSC projects pl. skip steps 1 and 2)				
B.4.3.1. Have all realistic alternatives been identified to the project? *Describe whether the list of alternatives is complete. Describe how it is validated that the alternatives are realistic.*	In order to validate that the list of alternatives is complete determination team has investigated all possible alternatives for heat generation. Furthermore plausible alternatives as required by methodology have been examined in this context. It could be concluded that project participant has taken into account the lifetime and technical specification of the existing equipment and appropriately identified all realistic and alternatives. For details please refer to the section 5.2.3 of the report.	PDD, I, /FS/ /TS-DKVR/ /TS-EV/ /TS-ED/	~~CAR B2~~	OK
B.4.3.2. Contains the list of alternatives at least the status-quo situation and the project not undertaken as a JI project? *Describe the steps taken to validate this issue.*	Yes, this is as per the PDD.	PDD, I, /FS/	~~CAR B2~~	OK
B.4.3.3. Do all identified alternatives comply with applicable regulation? *Describe the steps taken to validate this issue. Refer to the regulations.*	Yes, For details please refer to the section 5.2.3 of the report. In particular the technical specification of the existing equipment contains information about the next inspections and operation approval of the equipment. The approvals for project implementation as issued by the local authorities/administration have been provided and were	PDD, I, /FS/ /WSR/ /CP-WW/ /CWRS/	~~CAR B2~~	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	proved. Also the relevant regulation of the waste storage and disposal has been taken into account. An analysis of the current practice for the waste wood storage has been cariied out and the identified alternatives are in line with methodology requirements. For details please refer to the section 5.2.3 of the report.	/CWRL/ /L-1/ /I-2/ /L-3/		
B.4.4. Investment analysis Step 2 *In case the investment analysis as per step 2 is chosen to justify the additionality Annex 2 "Assessment of Financial Parameters" has to be used to provide additonal details of the the calculation parameters..*				
B.4.4.1. Is an appropriate analysis method chosen for the project (simple cost analysis, investment comparison analysis or benchmark analysis)? *Describe why the selected analysis method is appropriate under consideration of potential revenues and costs, potential project alternatives and potential available benchmark values.*	Investment comparison analysis applied for identification of the baseline is in line with provisions of the Additionality tool/TA/. The selected **financial indicator** – the levelized costs for heat generation – has been identified in a line with the provisions of the Additionality tool/TA/. Within the investment analysis levelized heat costs within the baseline and project scenario have been calculated and compared. It could be demonstrated that the levelized costs of the natural gas based heat generation is lower than the levelized costs of the waste wood based heat generation.	PDD, I, /FS/ /TA/ /LC/ /IP-WW/ /IP-WW1/ /BIA-12/ /BIA-13/	~~CAR B4~~	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	The applied values within the financial analysis have been based on the assumptions made at the time of the management decision and have been elaborated in the feasibility study and deemed to be appropriate. For details please refer to the Annex 3 – assessment of the financial parameter. The applied formula for the calculation of the levelized cost been assessed as correct. **Sensitivity analysis** The included sensitivity analysis shows that the conclusion regarding the financial/economic attractiveness is robust to variations (+/- 10%) in the critical assumptions like investment cost, natural gas price and waste wood price. Determination team has reproduced the sensitivity analysis and it could be proved that the conclusion is robust even assuming 10% lower investment cost for waste wood boiler, 10% higher natural gas price and 10% lower waste wood price. The variation of +/- 10% has been assessed as appropriate. The investment costs for one boiler have been based on the proposals form a technology supplier and deemed to be constant. The costs for the second boiler have been assumed based on the tender documents/IP-WW/, so that the variation of - 10% has been also assessed as appropriate. Furthermore the escalation of the carried out sensitivity			

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	analysis showed that the conclusion is robust even assuming 10% variation of the natural gas and waste wood price.			
B.4.4.2. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation? *Describe the steps taken to validate this issue.*	Yes, the excel spreadsheet available for the investment calculation is a clear, viewable and unprotected. The calculation has been reproduced by the determination team and the main results could be proved.	PDD, I, /FS/ /XLS/	OK	OK
B.4.4.3. Does the period chosen for the investment analysis reflect the technical lifetime of the project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included? *Describe how the technical lifetime / period chosen for calculating financial parameter(s) is reviewed and which documents were utilised in the course of review. Describe furthermore the approach used to check the inclusion of a potential fair value.*	The investment analysis reflects the technical lifetime 20 year of the equipment. The technical lifetime applied for the waste wood boilers is as per the technical specification provided. The time for replacement of the existing gas boilers has been selected in accordance with technical specification and remaining technical lifetime of the boilers.	PDD, I, /FS/ /TS-DKVR/ /TS-EV/ /TS-ED/ /TS-B1/	OK	OK
B.4.4.4. Are depreciation and other non-cash related items added back to net profits for the purpose to calculate the financial indicator?	The depreciation and other non-cash related items are not relevant for the determination of the levelized heat costs.	PDD, I, /FS/ /XLS/	OK	OK
B.4.4.5. Is taxation excluded in the investment analysis or is the benchmark intended for	The calculation of the levelized costs in the baseline scenario is consistent with that of the project scenario.	PDD, I, /FS/	~~CL B7~~	OK

Checklist Item (incl. guidance for the determination team)		Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	post tax comparisons?		/XLS/		
B.4.4.6.	Were the input values used in the investment analysis valid and applicable at the time of the investment decision?	Yes, The applied values within the financial analysis have been based on the assumptions made at the time of the management decision and have been elaborated in the feasibility study and deemed to be appropriate. For details please refer to the Annex 3 – assessment of the financial parameter. In addition the assumed values have been reviewed by the responsible financial experts of the Project participant and crosschecked with the information as per the internal data sources. In addition project participant has justified the appropriateness of the made assumptions by providing further supporting documentation. Made assumptions could be further supported within the background investigation carried out by the determination team. CL B5 and CL b7 have been raised in this context and successfully closed.	PDD, I, /FS/ /XLS/ /BPV/ /TS/ /MM/ /TSD/	~~CL B5~~ ~~CL B7~~	OK
B.4.4.7.	In case of project IRR: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR?	N/A levelized power costs have been selected as a financial parameter.	PDD, I,	OK	OK
B.4.4.8.	In case of equity IRR: Is the part of the investment costs, which is financed by equity considered as net cash outflow and is the part financed by debt excluded in net	N/A levelized power costs have been selected as a financial parameter.	PDD, I,	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
cash outflow?				
B.4.4.9. Is the type of benchmark chosen appropriate for the type of IRR calculated (e.g. local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR)?	N/A levelized power costs have been selected as a financial parameter.	PDD, I,	OK	OK
B.4.4.10. Is the benchmark value suitable for the project activity?	levelized power costs have been selected as a financial parameter.	PDD, I,	OK	OK
B.4.4.11. Is it ensured that the project cannot be developed by other developers than the PP?	Yes, the project is carried out at the premises of the project participant where the project participant has a control over the production facilities and energy generation. Hence the project can not be developed by other developers.	PDD, I,	OK	OK
B.4.4.12. Was the benchmark consistently used in the past for similar projects with similar risks?	Yes, please refer to the comments above.	PDD, I,	OK	OK
B.4.5. **Barrier analysis Step 3 or SSC additionality assessment**				
B.4.5.1. Are there any barriers given which have a clear and definable impact on the	All the barriers identified are considered to be convincing and serious obstacles for implementation of the project activity.	PDD, I	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
profitability of the project?	However no barrier could be assessed as sufficient to prevent the project implementation. The baseline has been identified based on the investment comparison of the levelized heat generation costs of the natural gas based and waste wood based heat generation.			
B.4.5.2. How is it justified and evidenced that the barriers given in the PDD are real?	Please refer to the comment above	PDD, I	OK	OK
B.4.5.3. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity?	Please refer to the comment above	PDD, I	OK	OK
B.4.6. Common practice analysis Step 4 (in case of SSC projects skip this step)				
B.4.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type?	Yes, Ukraine has been appropriately identified as region for the common practice analysis. As per the PDD the waste wood heat generation activities similar to that of the project activity were not observed at the time of the management decision (2005). For this reason it was concluded that project type (e.g. technology or practice) has not diffused in the relevant sector and region. The carried out common practice analysis could be supported by evidences. Provided evidences could be proved and the information could be verified.	PDD, I, /BIA-1/ /BIA-2/ /BIA-3/ /BIA-4/ /BIA-5/ /BIA-6/ /BIA-7/	OK	OK

Checklist Item (incl. guidance for the determination team)		Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
		Determination team has carried out a background analysis. By doing this publicly available data sources like studies, surveys, market research and official information as provided inter alia in the reporting to the UNFCCC have been analyzed. The main results and conclusions are presented summarized in section 5.2.3. in the context of the baseline identification. It could be verified that project type (e.g. technology or practice) has not diffused in the relevant sector and region.	/BIA-8/ /BIA-9/ /BIA-10/ /BIA-11/		
B.4.6.2.	To what extent similar projects have been undertaken in the relevant region?	A sufficient confidence could be gained that the proposed project type (i.e.. technology and/or practice) has not diffused in the relevant sector and geographical area and the time the project started. Please also refer to the comment above.	PDD, I, /BIA-1/ /BIA-2/ /BIA-3/ /BIA-4/	OK	OK
B.4.6.3.	In case similar projects are identified, are there any key differences between the proposed project and existing or ongoing projects and what kind of differences are observed?	Please also refer to the comments above.	PDD, I /	OK	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
B.5. Ex-Ante Calculation of GHG Emission Reductions *It is assessed whether the ex-ante calculations of project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified. Furthermore calculation of emission reductions shall be assessed.*				
B.5.1. Are the equations applied correctly according to the applied approved methodology? *Describe clearly the steps taken to assess whether The methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions.*	☒ The equations applied for calculation are correctly applied according to the approved methodology. ☐ The following mistakes have been identified in this context: The calculation of estimated emission reduction reductions has been carried out and results are presented in the section E of the PDD. The calculations as presented in this section strictly follow the algorithm developed in the monitoring plan. The determination team has reproduced the calculation of the forecasted emission reduction by applying the formulae for project, baseline and leakage emissions as described in the PDD. The expected amount of emission reductions as stated in the PDD could be proved through the carrying out own estimations based on the input values as provided in the PDD.	PDD, I /XLS/ /TS/ /TS-B1/	~~CAR E1~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
	The assumptions made for the ex-ante calculation are in line with financial analysis. The estimation takes also into account different stages of the project implementation. The amount of natural gas and waste wood has been made by taking into account the capacity of the waste wood boilers. The electricity for the own needs has been estimated based on the information as provided by the technology supplier. The NCV has been based on the labour analysis carried out by project participant. Number of truck trips during the year and have been elaborated for the two sites separately and consistent with the envisioned capacity of the boilers.			
B.5.2. In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been used reflecting the other methodological choices (i.e. baseline identification)? *Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided) and whether the correct equations have been used reflecting the relevant methodological choices.*	The inclusion of the CH_4 emissions form the uncontrolled burning or decay of the biomass residues and from the combustion of the biomass residues can be decided by PP. The decision to include these sources is in line with the methodology. Within the ex-ante calculation of emission reductions the CH_4 emissions due to the uncontrolled burning or decay of the biomass residues and CH_4 due to Combustion of biomass residues for heat generation have been duly calculated.	PDD, I, /AM36/ /XLS/ /TS/ /TS-B1/	~~CAR E1~~	OK
B.5.3. Have conservative assumptions been used when calculating the project emissions? *Describe clearly the steps taken to assess whether all the*	The input values are based on the historical figures. In this context it is important to mention that the project participant has very detailed monitoring system for the company's	PDD, I /AM36/	~~CAR E1~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.	internal purposes. Information collected and archived since the implementation of the project activity could be used for the estimation of emission reductions. The corresponding evidences have been proved and the elaboration of the assumed values could be assessed as appropriate. For details please refer to the assessment in the section 5.	/XLS/ /TS/ /TS-B1/		
B.5.4. Are all data and parameters which remain fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions? *Describe clearly the steps taken to assess whether the values used for the fixed parameters are considered reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.*	GWP of 21 tCO_2/tCH_4. This is in line with IPCCC values	PDD, I /IPCCC/ /AM36/	OK	OK
B.5.5. Are all ex-ante calculation values for monitoring parameters reasonable? *Describe clearly the steps taken to assess whether the values used for the monitoring parameters are considered reasonable, applicable and conservative in the context of the project activity*	☒ All "Values of data to be applied for the purpose of calculating expected emissions reductions" are considered to be reasonable, applicable and conservative. ☐ The following mistakes have been identified in this context: The monitoring plan provides a complete list of the parameters to be monitored for determination the project,	PDD, I	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	baseline and leakage emissions. For the values which remain fixed throughout a crediting period a sufficient substantiation of the conservative value has been provided.			
B.5.6. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change. *Describe the steps taken to validate this issue.*	Yes, the project will lead to a real reduction of GHG emissions through replacement of the natural gas based heat generation through the waste wood based. The developed monitoring plan provides a clear and transparent procedure to measure/calculate the emission reductions. As already indicated PP was able to sufficiently demonstrate that the baseline scenario would occur in the absence of the project activity. For this reason determination team agrees that the project activity will lead to the long-term benefits related to the mitigation of climate change. For further details please refer to the assessment undertaken in this section.	PDD, I	OK	OK
B.6. Monitoring of Emission Reductions *It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.*				
B.6.1. Are all monitoring parameters required by the applied methodology contained in the monitoring plan? *Assess whether all applicable parameters listed in the*	The project involves utilization of waste wood for heat generation. In the absence of project activity the heat would be otherwise generated in the natural gas based steam boilers. According to this, the developed monitoring includes	PDD, I	~~CAR D1~~ ~~CAR D2~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
methodology are included in the monitoring plan. *Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.* *In case of different approaches can be chosen acc. to the methodology assess whether the selection of parameters is justified and correct.*	for **Baseline emissions**: • Baseline emissions from fossil fuel combustion for heat generation in the boiler(s) (tCO2 /yr) • baseline emissions due to uncontrolled burning or decay of the biomass residues (tCO2e/yr) **Project emissions:** • CO2 emissions from off-site transportation of biomass residues to the project site (tCO2/yr) • CH4 emissions from combustion of biomass residues in the boiler(s) • the CO2 emissions from on-site electricity consumption (PECO2,EC,y) Yes, all monitoring parameters required by the applied methodology contained in the monitoring plan.		~~CAR D3~~ ~~CL D4~~	
B.6.2. Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology? *Assess whether the provided information for all parameters w.r.t.*	**Project emissions (1)** For determination of the **CO2 emissions from off-site transportation of waste wood** to the project site (tCO2/yr) PP has included in the monitoring plan following parameters: • N= Number of truck trips during the year y	PDD, I	~~CL D1~~ ~~CL D2~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
a) Label (name of the data / parameter) *b) data unit* c) *description* d) *source of data* e) *measurement equipment / method / procedure* f) *monitoring frequency* g) *QA/QC procedures* *are appropriately described and in compliance with the requirements of the methodology*	• AVDy = Average round trip distance (from and to) between the biomass fuel supply sites and the site of the project plant during the year y (km) and • EFkm,CO2,y Average CO2 emission factor for the trucks measured during the year y (tCO2/km) **The parameters N and AVD** will be determined and stored in electronic and paper form. For QA/QC purpose the consistence of the measured data will be checked with the quantity of biomass. For determination of an average CO2 emission factor for the trucks measured during the year y (tCO2/km) conservative values from the literature will be applied. Hence it could be concluded that monitoring system for determination of the CO2 emissions from off-site transportation of waste wood provides for a clear and accurate monitoring. It The measurement equipment/procedure, the monitoring frequency and QA/QC procedures were appropriately described and are in compliance with the requirements of the methodology			
B.6.3. Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology? *Assess whether the provided information for all parameters*	**Project emissions (2)** For determination of the **CH4 emissions from combustion of biomass residues in the boiler(s)** ($PE_{CH4,BF,y}$) PP has included in the monitoring plan following parameters:	PDD, I /TS-B1/	~~CL D1~~ ~~CL D2~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
w.r.t. *h) Label (name of the data / parameter)* *i) data unit* j) *description* k) *source of data* l) *measurement equipment / method / procedure* m) *monitoring frequency* n) *QA/QC procedures* *are appropriately described and in compliance with the requirements of the methodology*	• $EF_{CH4,BF}$ = CH4 emission factor for the combustion of the waste wood in the boilers (tCH4/GJ) • $BF_{PJ,k,y}$ = Quantity of waste wood used for heat generation as a result of the project activity during the year y (tons of dry matter) • NCV_k = Net calorific value of the waste wood type k (GJ/ton of dry matter or GJ/liter) **CH4 emission factor** for the combustion of the waste wood in the boilers (41 kg/TJ) has been correctly calculated based on the default emission factors, uncertainty values and conservativeness factors as per the methodology. **Quantity of waste wood** used for heat generation as a result of the project activity will be measured by volume meter of the boiler. The volume meter will be installed at the boiler inlet and the throughput of the waste wood in tonnes will be measured. The metering system as described in the PDD is in line with the technical specification as provided by the technology supplier/TS-b1/. Taking into account that the amount of combusted wood will be cross-checked from the amount of produced steam a sufficient confidence could be gained that procedures for monitoring of the quantity of the waste wood have been duly elaborated.			

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	The monitoring of the **moisture content** has been included to the monitoring plan and is in line with the methodology. For the QA/QC purpose the quantity will be crosschecked with the heat generation. **Net calorific value** of the waste wood will be determined through the on-site measurements. The measurements will be carried out in laboratories. At least every six months, taking at least three samples for each measurement. For QA/QC purposes the consistency of the measurements will checked by comparing the measurement results with measurements from previous years. This is in accordance with the methodology. The monitoring plan ensures that the NCV will be determined on the **dry basis.** Hence it could be concluded that monitoring system for determination of the CH4 emissions from combustion of biomass residues in the boiler(s) provides for a clear and accurate monitoring. The measurement equipment/procedure, the monitoring frequency and QA/QC procedures were appropriately described and are in compliance with the requirements of the methodology			
B.6.4. Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology? *Assess whether the provided information for all parameters*	**Project emissions (3)** For determination of the **CO2 emissions from on-site electricity consumption (**$PE_{CO2,EC,y}$) PP has included in the monitoring plan following parameters:	PDD, I /TS-B1/ /TS/ /EF/	~~CL D1~~ ~~CL D2~~	

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
w.r.t. *o) Label (name of the data / parameter)* *p) data unit* q) *description* r) *source of data* s) *measurement equipment / method / procedure* t) *monitoring frequency* u) *QA/QC procedures* *are appropriately described and in compliance with the requirements of the methodology*	• $EC_{PJ,y}$ = On-site electricity consumption attributable to the project activity during the year y (MWh) • $EF_{grid,y}$ = CO2 emission factor for electricity used from the grid (tCO2/MWh) **Grid emission factor** for the Ukrainian grid of 0,896 tCO2/MWh is based on the standardized emission factors for the Ukrainian electricity grid as determined by the Global Carbon B.V. and verified by TUV SÜD/EF/. The documents have been checked and the value applied in the calculation could be proved. **On-site electricity consumption** of the steam boilers will be measured by two the electricity meters. Technical specification of the electricity meters including the information about the accuracy class (2.0) and calibration period (every 5 years) as well as the responsibility has been provide and deemed to be in line with provisions of the methodology. Hence it could be concluded that monitoring system for determination of the CO2 emissions from on-site electricity consumption ($PE_{CO2,EC,y}$) provides for a clear and accurate monitoring. The measurement equipment/procedure, the monitoring frequency and QA/QC procedures were appropriately described and are in compliance with the requirements of the methodology			

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
B.6.5. Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology? *Assess whether the provided information for all parameters w.r.t.* *v) Label (name of the data / parameter)* *w) data unit* x) *description* y) *source of data* z) *measurement equipment / method / procedure* aa) *monitoring frequency* bb) *QA/QC procedures* *are appropriately described and in compliance with the requirements of the methodology*	**Baseline emissions (1)** For determination of the **baseline emissions from fossil fuel combustion for heat generation in the boilers** (tCO2 /yr) PP has included in the monitoring plan following parameters: • $HG_{PJ,biomass,y}$ = Heat generated with incremental biomass residues (waste wood) used as a result of the project activity during the year y (GJ/yr) • $EF_{FF,CO2,y}$ = CO2 emission factor of the fossil fuel type displaced by biomass residues (tCO2e /GJ) • ηboiler,FF = Average net efficiency of heat generation in the boiler(s) when fired with fossil fuels **Heat generated** with incremental biomass residues (waste wood) will be measured by the steam meters the information regarding accuracy class (2.0), calibration procedures (2 years), responsibility, as well as procedures for data collecting and recording has been provided and are in line with methodology requirements. The quantity of heat generated will be crosschecked with the waste wood fired. **CO2 emission factor of the fossil fuel type (natural gas) displaced** by biomass residues (tCO2e /GJ). IPCCC default value (56.1 TCO2/TJ) will be applied this is conservative and in line with the methodology.	PDD, I /TS-DKVR/ /TS-ED/ /bemnw/	~~CAR D3~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
	Average net efficiency of heat generation in the boiler(s) when fired with fossil fuels has been determined based on the measured efficiency prior to the implementation of the project activity and manufacturer's information on the efficiency. The assumed value is corresponds to the measured efficiency manufacturer's information on the efficiency. Hence it could be concluded that monitoring system for determination of determination of the baseline emissions from fossil fuel combustion for heat generation in the boilers provides for a clear and accurate monitoring. The measurement equipment/procedure, the monitoring frequency and QA/QC procedures were appropriately described and are in compliance with the requirements of the methodology			
B.6.6. Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology? *Assess whether the provided information for all parameters w.r.t.* *cc) Label (name of the data / parameter)* *dd) data unit* ee) *description*	**Baseline emissions (2)** For determination of the baseline **emissions due to uncontrolled burning or decay of the biomass residues** (tCO2e/yr) PP has included in the monitoring plan following parameters: GWP_{CH4} = Global Warming Potential of methane valid for the commitment period (21 tCO_{2e}/tCH_4) $BF_{PJ,k,y}$ = Quantity of waste wood type k used for heat generation as a result of the project activity during the year y	PDD, I /TS-DKVR/ /TS-ED/ /bemnw/	~~CAR D3~~	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
ff) *source of data* gg) *measurement equipment / method / procedure* hh) *monitoring frequency* ii) *QA/QC procedures* *are appropriately described and in compliance with the requirements of the methodology*	(tons of dry matter) NCV_k = Net calorific value of the waste wood type k (GJ/ton of dry matter or GJ/liter) $EF_{burning,CH4,k,y}$ = CH4 emission factor for uncontrolled burning of the waste wood type k during the year y (tCH4/GJ) **Quantity of waste wood** and its **net calorific value** will be monitored in accordance with provisions of the methodology. Please refer to the comment B.6.3. **CH4 emission factor** for uncontrolled burning of the waste wood 0.001971 tCH_4 / t biomass has been correctly calculated based on the default emission factors, uncertainty values and conservativeness factors as per the methodology.			
B.6.7. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity? *Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes of monitoring equipment etc.*	Yes, in the course of the determination PP has provided a detailed technical specification of the envisioned metering equipment. The information provided indicates the accuracy class, calibration procedures and responsibilities. The information given in the PDD is in line with provided documentation. Hence the determination team is of the opinion that PP has duly elaborated the applied monitoring equipment. In the course of the on-site visit it could be observed that PP	PDD, I	~~CL D4~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
	has a well experienced personnel and a good monitoring system for the existing equipment (natural gas boilers). Hence a sufficient confidence could be gained that monitoring arrangements required for the JI project activity will be properly incorporated in the existing monitoring system of the company.			
B.6.8. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activit can be reported ex-post and verified? *Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review procedures.*	Yes, this issue has been discussed during the on-site visit and later in the course of determination. The company has implemented monitoring system for the existing technology. For the JI project activity project participant has elaborated procedures for data management and processing within the particular stages of the monitoring. Double check procedures have been introduced to ensure high quality project management. Different tasks within the monitoring are clearly allocated to the personal of the different departments of the. Personal and the corresponding tasks/responsibilities of the project monitoring are clearly defined. Furthermore all procedures have been clearly documented.	PDD, I	~~CL D4~~	OK
B.6.9. Are procedures identified for data management? *Check whether appropriate provisions are considered for data management including responsibilities, what records to keep, storage area of records and how to process*	Yes, project participant has elaborated procedures for data management and processing within the particular stages of the monitoring. Double check procedures have been introduced to ensure high quality project management. Different tasks within the monitoring are clearly allocated to	PDD, I	~~CAR D1~~	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
performance documentation *Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.*	the personal of the different departments of the. Personal and the corresponding tasks/responsibilities of the project monitoring are clearly defined. Furthermore all procedures have been clearly documented. The responsibilities are clearly defined and indicated in the PDD.			
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*				

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
C.1. Is the project's starting date clearly defined and evidenced? *Check whether the starting date is correct. Apply the definition of the project starting date as per the "Glossary of JI terms".*	Yes, project starting date 2006 has been defined as a date of the management decision. This is in line with JI Guidelines. Supporting evidences have been provided and the starting has been verified.	PDD /TS/ /FS/ /MM/	OK	OK
C.2. Is the project's operational lifetime clearly defined and evidenced? *Check whether the project lifetime is correctly defined. Consider the guidance on the assessment of investment analysis (annex to the addionality tool).* *Check in case of phased implementation this has been reflected throughout the whole PDD incl. the financial assessment, if applicable.*	Yes, the operational lifetime of 20 years is clearly defined and supported by provided evidences. The technical specification has been proved and the value could be verified.	PDD /TS/ /FS/ /MM/	OK	OK
C.3. Is the start of the crediting period clearly defined and reasonable? *Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed for determination and registration.*	The start of crediting period is 01.01.2008. This is in line with JI Guidelines.	PDD	OK	OK
D. Environmental Impacts *Documentation on the analysis of the environmental*				

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
impacts will be assessed, and if deemed significant, an EIA should be provided to the AIE.				
D.1.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)? *Check the host party regulations, regarding EIA.*	Yes, according to the relevant Ukrainian regulation an Environmental Impact Assessment (EIA) has to be carried out.	PDD /LPC/ /EEC/ /MPC/ /L-1/ /L-2/ /L-3/	OK	OK
D.1.2. In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applcable duly approved? *Check the EIA and its approval, if applicable.*	Yes, Environmental Impact Assessment (EIA) has been carried out in accordance with Ukrainian regulations. Within the EIA a detailed assessment on soil resources, air, vegetation, animal world, etc. has been carried out. The EIA has been proved and approved by the Expert conclusion for the ecology inspection of the Ivano-Frankivsk of the Ministry of Environmental Protection region №08-4/81 dated 10.08.2007. Following evidences have been proved • Expert report of the department of the normative-technical work (24.07.2007). • Certificate of the state environmental inspection	PDD /LPC/ /EEC/ /MPC/ /L-1/ /L-2/ /L-3/	OK	OK

Checklist Item (incl. guidance for the determination team)	Determination Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	regarding the waste wood fired project (10.08.2007) has been provided. Certificate of the complex state inspection (20.08.2007) and compliance with Host Country regulations could be verified.			
D.1.3. Has an analysis of the environmental impacts of the project activity been sufficiently described and in line with the host party environmental legislation? *Check the PDD (section D). Check whether the project will create any adverse environmental effects.* *Check the relevant national environmental legislation.*	Yes analysis of the environmental impacts of the project activity has been sufficiently described and is in line with the host party environmental legislation.	PDD /LPC/ /EEC/ /MPC/ /L-1/ /L-2/ /L-3/	OK	OK
D.1.4. Are transboundary environmental impacts considered in the analysis? *Check the documents and local official sources / expertise regarding transboundary environmental impacts.*	Yes, please refer to the comment above.	PDD /LPC/ /EEC/ /MPC/ /L-1/ /L-2/ /L-3/	OK	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
E. Stakeholder Comments *The AIE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*				
E.1. Have relevant local stakeholders been invited to consultation prior to the publication of the PDD? *Check by means of document review and interviews with local stakeholders if and when a local stakeholder consultation process has been carried out.*	Yes, Information on the construction and the commissioning has been submitted to the local administration which represents the interests of the local stakeholders for the examination and approval. Provided information did not raise any negative comments. The implementation of the project is supported by the administration. Furthermore the information has been published newspapers and internet. A corresponding evidences and links have been provided and were proved.	PDD, I /SC/	OK	OK
E.2. Can the local stakeholder consultation process be assessed as adequate? *Describe what assessment steps have been undertaken to assess the adequacy of the stakeholder consultation process. Give a final opinion on the adequacy.* *Please consider the following requirements in this context:* *(a) Comments by local stakeholders that can reasonably be considered relevant for the proposed JI project activity, have been invited;*	Yes, Please refer to the comment above	PDD, I	OK	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
(b) The summary of the comments received as provided in the PDD is complete; *(c) The project participants have taken due account of any comments received and have described this process in the PDD.*				

ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

Table A-2: Assessment of Baseline Identification

☐	Baseline is not identified
☒	Assessment of baseline Please see below

Please refer to the analysis in section 5.2.3 of this report

ANNEX 3: ASSESSMENT OF FINANCIAL PARAMETERS

Table A-3: Assessment of Financial Parameters

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
Installed capacity (Vygoda)	13,3	MW	Technical specification and Feasibility Study	/TS-B1/ /TS/	☒	☒	The capacity is as per the technical specification and the feasibility study. The documents have been checked and the value applied in the IRR calculation could be proved.
Investment cost Waste wood boilers	8,578,291	€	Technical specification and Feasibility Study.	/TS-B1/ /BPV/ /FS/	☒	☒	The investment costs of boiler 1 in Vygoda are as per feasibility study and the corresponding contracts. The document has been checked and the value applied in the IRR calculation could be proved. The investment cost for the boiler Nr.2 have been elaborated based on the equipment cost as given within the commercial offer of other technology suppliers. The document has been checked and the value applied in the IRR calculation could be proved. In addition cost for construction, design have been elaborated based on the costs of the boiler 1 and taking into account

							lower capacity of the boiler 2. The applied value of particular costs has been discussed in the course of the determination. A sufficient confidence could be gained that the costs have been elaborated in a conservative manner.
Investment cost natural gas boilers.	5,440,367	€	Proposal for a natural gas fired boiler	/I-G/	☒	☒	For the purposes of conservativeness project participant has appropriately assumed that within the baseline scenario the installation of the new gas fired boilers would be necessary. The assumed time of replacement (2011) is in line with the next technical inspection of the existing gas boilers (2011). The applied value could be verified based on the provided proposal for natural gas fired boilers of similar type.
Efficiency	78	%	Technical specification	/TS-B1/	☒	☒	The efficiency is as per is as per the technical specification and the feasibility study. The documents have been checked and the value applied in the IRR calculation could be proved.
Load rate	100	%	Technical specification	/TS-B1/	☒	☒	The assumed load rate is 100%. This value is in line with assumption as per the feasibility study. The documents have been checked and the value applied in the IRR calculation could be proved.
Heat losses	3	%	Technical specification	/TS-B1/	☒	☒	The assumed value of heat losses 100%. This value is in line with assumption as per the feasibility study. The documents have been checked and the value applied in the IRR calculation could be proved.
Low Calorific value of waste wood	10,3	MJ/kg	Technical specification	/FS/	☒	☒	The assumed lower heating value is as per commercial proposal of technology supplier. This value is comparable with IPCCC values and considered to be appropriate. The documents have been checked and the value applied in the IRR calculation could be proved.

Natural gas price	656,6	UAH/1000m3	Natural Gas Contract.	/IP-Gas/	☒	☒	The natural gas price has been assumed based on the natural gas price as per the contract between project participant and fuel supplier. The value of natural gas price is in line with provided evidences. The management decision to go ahead with the project was in 2006. Within the financial analysis for the years 2006, 2007 and 2008 real gas tariffs have been assumed. This has been assessed as conservative and appropriate. For the years 2009 – 2025 an escalation of 8% has been assumed. In light of the difficult gas disputes with the Ukrainian main gas suppliers occurring every year the escalation of the 8% has been assessed as appropriate.
Escalation of the natural gas price	8	%	Own estimates based on the historical escalation of the gas tariffs	/XLS/	☒	☒	The escalation of the gas prices has been based on the own estimates and historical escalation of the gas tariffs for own production facilities. The evidences have been provided and the historical figures could be proved. Within the financial analysis for the years 2006, 2007 and 2008 real gas tariffs have been assumed. This has been assessed as conservative and appropriate. For the years 2009 – 2025 an escalation of 8% has been assumed. The assumed value deemed to be plausible considering the steady increasing natural gas supply prices.
Waste wood	15,63	€/m3	Contract with fuel supplier	/IP-WW/	☒	☒	The price for the waste wood as applied within the financial analysis is as per the contracts with potential waste wood suppliers. The documents have been checked and the value applied in the IRR calculation could be proved.

Escalation of the waste woos price	10	%	Own estimates based on the historical escalation of the waste wood prices.	/XLS/ /IP-WW1/ /BIA-12/ /BIA-13/	☒	☒	The escalation of the waste wood prices has been based on the own estimates and historical escalation of the waste wood. The evidences for the increasing waste wood prices have been provided and the historical figures could be proved. The assumed values can be further supported by development of the wood prices in the years 2005/2006/2007 as provided by other official and publicly available data sources like Germany Trade and National Centre for Marketing and Price Study. According to these data sources the wood prices have significantly increased in the considered time period. The indicated increase (64-100%) is significantly higher than the assumed value (10%) for the waste wood. Hence determination team agreed that the escalation of 10% has been duly elaborated.
Electricity tariff	53,80	€/MWh	Contract with electricity supplier				The price for the electricity as applied within the financial analysis is as per the contracts with electricity suppliers. The documents have been checked and the value applied in the IRR calculation could be proved.
Operating Costs:	1 331 282	€/year	Operating Costs breakdown estimations.	/TS/	☒	☒	The annual operating costs include costs for the waste wood supply, electricity for boiler house needs as well as labour costs and the maintenance. Waste wood as well as the electricity for own needs are considered to be appropriate. (for details pl. refer to the information above) The value for labour costs and the maintenance were estimated based on current personel costs

							and information provided in technical specification. Labour costs and the maintenance make up approx 10 % of the total operating costs. The assumed values for labour costs and the maintenance have been discussed during the site visit. The values were deemed to be appropriate and conservative estimated.
Project Lifetime	20	year	Technical specification	/FS/	☒	☒	The price for the waste wood as applied within the financial analysis is as per the contracts with potential waste wood suppliers. The documents have been checked and the value applied in the IRR calculation could be proved.
Interest on loan	As per the XLS	€/year	Loan agreemnt	/CA1/ /CA2/	☒	☒	The loan agreements with banks have been provided and the applied values of the interests on loan could be verified.

ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

Table A-4: Assessment of Barrier Analysis

☒	No barrier parameters are used for additionality justification
☐	Assessment of barriers see below

Kind of Barrier (invest, tech, other)	Description of Barrier	Evidence used	Assessment of validation team	
			Appropriateness of information source	Explanation of final result
			☒	

Project participant has carried out a barrier analysis in the context of the Baseline justification. Additionality justification has been based mainly on the investment analysis. For details on the assessment of the baseline identification please refer to the section 5.2. of this report.

ANNEX 5: OUTCOME OF THE GSCP

Table A-5: Outcome of the Global Stakeholder Consultation Process

☒	No comments were received during the global stakeholder consultation period
☐	Comments were received during the global stakeholder consultation period. The comments (in unedited form) and the consideration/response of the validation team are presented below:

Comment No.:	Comment by:	Inserted on:	Subject	Comment *)	Response validation team *)	Conclusion (incl. CARs CLs or FARs)

*) In case clarifications have been requested by the determination team corresponding rows shall be added