JI DETERMINATION REPORT

JSC POLOGY OIL-EXTRACTION PLANT

UTILIZATION OF SUNFLOWER SEEDS HUSK FOR HEAT AND POWER PRODUCTION AT JSC 'POLOGY OIL-EXTRACTION PLANT

Report No.: 8000363440 – 08/230

Date: 16.05.2011

TÜV NORD CERT GmbH
JI/CDM Certification Program
Langemarckstraße, 20
45141 Essen, Germany
Phone: +49-201-825-3335
Fax: +49-201-825-3290
www.tuev-nord.de
www.global-warming.de

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Final Approval by: Mr. Rainer Winter (Head of JI/CDM Certification Program)	Organisational unit: TÜV NORD JI/CDM Certification Program
Client: RWE Power AG	Client ref.: Mr. Antonio Aguilera Lagos
Summary:	☒ positive determination opinion ☐ negative determination opinion

RWE Power AG has commissioned the TÜV NORD JI/CDM Certification Program (CP) to make a determination of the project "Utilization of Sunflower Seeds Husk for Heat and Power Production at JSC 'Pology Oil-Extraction Plant" 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.

In the course of the determination 12 Corrective Action Requests (CARs) and 5 Clarification Requests (CLs) were raised and except for CAR A3 successfully closed. Only CAR A3 could not be closed at this stage. This is because a positive determination opinion is a prerequisite for applying Letter of Approval of all parties involved. Hence the CAR A3 can be closed after receipt of the Letter of Approval.

The review of the project design documentation (PDD Version 3 dated 04.05.2011) 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 ACM006 version 10 demonstrates that the proposed project activity is not a likely baseline scenario.

An analysis as provided by the applied approved CDM methodology ACM006 version 10 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 187,584 CO2e is most likely to be achieved within the crediting period between 2008 and 2012.

The conclusions of this report show, that the JI project, as it was described in the project documentation is in line with all criteria applicable for the determination of JI project activities.

Report No.: 8000363440 – 08/230	Subject Group: Climate Protection	
Report title: "Utilization of Sunflower Seeds Husk for Heat and Power Production at JSC 'Pology Oil-Extraction Plant"		
Work carried out by: Mr. Eric Krupp Mr. Evgeni Sud		
Final technical review by: Rainer Winter	Local technical review by	
Date of this revision: 16.05.2011	Rev. No.: 1	Number of pages: 114

Indexing terms

Climate protection	Kyoto Protocol
JI	Determination PDD

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

RWE Power AG has commissioned the TÜV NORD JI/CDM Certification Program (CP) to make a determination of the project

"Utilization of Sunflower Seeds Husk for Heat and Power Production at JSC 'Pology Oil-Extraction Plant"

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 UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Determination is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).

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

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 Sunflower Seeds Husk for Heat and Power Production at JSC 'Pology Oil-Extraction Plant"		
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	*ACM0006 Version 10 "Consolidated methodology for electricity generation from biomass residues"*
Crediting period	2008-2012
Start of crediting period	01.01.2008

The project was initiated according to the Track 2 procedures. In 2011 the PP requested TÜV Nord to forward the request to withdraw of the JI PDD of the project "Utilization of Sunflower Seeds Husk for Heat and Power Production at JSC 'Pology Oil-Extraction Plant", Ukraine" in accordance with paragraph 4 of the "Procedures for the withdrawal of submissions under the verification procedure under the Joint Implementation Supervisory Committee".

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	JSC Oil Pology Extraction Plant
Other Parties	Germany	RWE Power AG

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:	Zaporizhia oblast
Project location address	36 Lomonosov street, Pology

2.4 Technical Project Description

The project activity includes reconstruction of heat and power supply system based on cogeneration at JSC Pology Oil Extraction Plant. Project activity encompasses the installation of **three biomass fired boilers** and a **steam turbine** to cover heat and electricity needs of the Oil-Extraction Plant. The biomass to be used in these three boilers is sunflower seed husks. The sunflower seed husks are a biomass residue from production facilities. As a result of the project activity the old fossil fuel fired steam boilers will be replaced. Furthermore, the project activity would displace the electricity import from the grid.

In this context it should be noted that the initial design was the installation of only two biomass boilers and a steam turbine. After the two biomass boilers were installed their performance turned out to be insufficient. The steam output and its technical parameters were below the expected performance. Due this the installation of the steam turbine has been delayed. Hence the project participant has decided to install an additional biomass boiler, which should serve as a back-up solution. It is expected that inclusion of the additional boiler will ensure the reliability of combined heat and power generating system.

The biomass boilers are designed in such a manner that they will be able to cover fully the heat demand of the oil extraction site. The intended steam turbine is designed to cover approximately 50% of the electricity demand. For detailed key parameters of the Baseline and Project activity equipment please refer to Table 2-4.

Table 2-4: Technical specification of Baseline and Project activity equipment

Key parameters:	**Baseline Scenario**		
Equipment	Steam Boiler	Steam Boiler	Steam Boiler
Manufacturer:	Bijsk boiler factory	Bijsk boiler factory	Bijsk boiler factory
Manufacturer number	4632	7730	5501
Manufacturing / Commissioning Date:	1974 / 1975	1974 / 1975	1974 / 1975
Type:	DKVR-20-23-250	DKVR-20-23-250	DKVR-40-23-350
Fuel Type:	Natural Gas, Mazut and biogas[1]	Natural Gas and Mazut	Natural Gas only
Capacity: Steam / Power	20t/h	20t/h	20t/h
Temperature	250℃	250℃	350℃
Operational lifetime:	20 years	20 years	20 years
Operation allowance as per technical expertise.	2013	2014	2014

[1] Bio- gas from biomass gasification engines

Key parameters:	**Project Activity**			
Equipment	Steam Boiler	Steam Boiler	Steam Boiler	Steam Turbine
Manufacturer:	Bijsk boiler factory	Bijsk boiler factory	Bijsk boiler factory	Yet not finally fixed
Manufacturing / Commissioning Date:	2006 / 2007	2006 / 2007	Is yet not commission ed	
Type:	E 20-2.4-350 DV	E-20-2,4-370 C	E-20-2,4-350 DV	Yet not finally fixed
Fuel Type:	Sunflower seeds	Sunflower seeds	Sunflower seeds	Steam turbine
Capacity: Steam / Power	20t/h	20t/h	20t/h	1,75 MW_{EL}
Temperature	350°C	370°C	350°C	N/A
Operational lifetime:	20 years	20 years	20 years	

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 determination is given in the table 3.1 below:

Table 3.1: Determination PDD sequence

Topic	Time
Assignment of determination	23.07.2008
Submission of PDD for global stakeholder commenting process	29.07.2008 – 27.08.2008
On-site visit	08.10.2008 – 09.10.2008
Technical review on Determination report ver. 0	20.11.2009
Final Determination report ver. 0	20.11.2009
Revised Determination report version 1	16.05.2011
Technical review on the revised Determination report version 1	14.05.2011

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 determination 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 determination team, consistent of one team leader and 1 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]	Scheme competence [3]	Technical competence [4]	Verification competence [5]	Host country Competence	Team Leading competence
☒ Mr. ☐ Ms.	Evgeni Sud	TN CERT Germany	TL	LA	☒	-	☒	☒	☒
☒ Mr. ☐ Ms.	Eric Krupp	TN CERT Germany	TM[A]	SA	☒	1.1	☒	☒	☒
☒ Mr. ☐ Ms.	Rainer Winter (Head of JI/CDM Certification Program)	TN CERT Germany	TR, FA[B]	SA	☒	1.1	☒	☒	☒

[1] TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

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

[3] GHG auditor status (at least Assessor)

[4] As per S01-MU03 or S01-VA070-A2 (such as A, B, C, D…)

[5] In case of verification projects

[A] Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

[B] No team member

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 determination process. The comments and the discussion of the same are documented in annex 5 of this report.

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 determination 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 determination ERU. 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 determination 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	2	1	-
Project baseline (B) - Baseline Methodology - Baseline scenario determination - Additionality determination - Calculation of GHG emission reductions Project emissions Baseline emissions - Leakage	6	1	-
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	3	-
Estimation of greenhouse gas emission reductions (E)	1	-	
Environnemental impacts (F)	-	-	-
Stakeholder Comments (G)	-	-	-
SUM	**12**	**5**	**-**

[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 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.*	The geographic coordinates from CJSC Pology Oil-Extraction Plant are 36°24803'°East, 47°460894'North (see page 6 in the PDD)		
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 could be verified in the course of the determination. The geographical coordinates (36°24'°East, 47°46'North) have been crosschecked with google maps and found consistent		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

	Finding A2		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The date of management decision to go ahead with the project due to additional income from ERUs is not clear. The PP may clarify the date and provide a chronological description of the project implementation.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	In 2005 the management of CJSC Pology Oil-Extraction Plant considered the possibility of installation of new gas fired boilers instead of old fired boilers. After receiving information about JI projects, management of CJSC Pology Oil-Extraction Plant began thinking about the possibility to implement CHP plant utilizing the husk at the Enterprise. Though CHP equipment is much more expensive than gas fired boilers, the Enterprise will be able to sell ERUs to the credit buyer(s) and get additional finances for the project. That is why CJSC Pology Oil-Extraction Plant finally decided to reconstruct its energy supply system through realisation of JI project.		

	Finding A2
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 date of the investment decision (19.10.2005) could be verified based on the provided Minutes of meeting/MD/. Ad evident from the minutes of meeting/MD/ JI was considered at the time of the decision making. In addition, the PP has provided the different stages of the project implementation in the chronological order. The same could be evidenced by the minutes of meetings, which took place before the investment decision was made. The chronological description could be confirmed within the interviews with the management of the plant during the on-site visit.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding A3		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The approvals of Parties involved are pending.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Letter of Approval from all parties involved will be applied upon receipt of the positive determination opinion.		
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.*	A positive determination opinion is a prerequisite for applying the relevant approvals. Project participant will apply for the relevant approval. The CAR can be closed after receipt of the Letter of Approval from all parties involved.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☐ 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.		

	Finding B1
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The used methodology is ACM0006 Version 06. That is already done in the PDD
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.*	References to other Tools have been also included. The Version 6 of the Methodology is not more valid.
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The PDD has been updated to version 10 of ACM0006.
AIE Assessment #2 *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 ACM0006 Version 10 is a valid version. Requests for registration can be submitted until 17 May 2011.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ 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)*	a) It is unclear whether CH_4 emissions are excluded from the project boundary. b) The gases and sources for Baseline and Project activity included in the project boundary are summarized in the PDD. The PP may revise the PDD accordingly.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	a) this point cleared in figure 5 in the PDD b) We used table 2 of the methodology (please refer to the page 19-20 of the PDD)		
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.*	a) As evident from the revised PDD the CH_4 emissions related to the project and baseline scenario have been included. This is in line with the methodology. b) The project boundary including the GHG sources and the relevant equipment has been clearly described in the revised PDD in accordance with the provisions of the methodology. Please refer to section 5.2.2.		

	Finding B2
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ 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 analysis of the alternatives for **power** generation as specified by the methodology is incomplete. The PP may revise the PDD accordingly.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	For the power generation the project participants identified and selected the next most realistic and credible alternatives: • (P1) The proposed project activity not undertaken as JI project (installation of 1,75 MWel turbine generating power using the steam produced in the husk fired steam boilers). • (P4) The generation of power in the grid. (in other words - the purchasing electricity from the grid "continuation of existing situation"). • (P5) The installation of a new biomass residue fired power plant, fired with the same type and with the same annual amount of biomass residues as the project activity, but with a lower efficiency of electricity generation (e.g. an efficiency that is common practice in the relevant industry sector) than the project plant and therefore with a lower power output than in the project case. • (P6) The installation of a new biomass residue fired power plant that is fired with the same type but with a higher annual amount of biomass residues as the project activity and that has a lower efficiency of electricity generation (e.g. an efficiency that is common practice in the relevant industry sector) than the project activity. Therefore, the power output is the same as in the project case. • (P9) The installation of a new fossil fuel fired captive power plant at the project site.		
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.*	All relevant and possible alternatives for electricity generation as required by the methodology have been examined in the PDD. For details please refer to section 5.2.3 of this report.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

	Finding B4		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The analysis of the alternatives for heat generation as specified by the methodology is incomplete. The PP may revise the PDD accordingly. The remaining technical lifetime of each existing boiler should be explained and evidenced in the context of the scenario H6. Please clarify why other scenarios as indicated in the methodology have not been considered, in particular, with regard to biomass gasification system.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	a) For the heat generation the following realistic and credible alternatives were examined: • (H1) The proposed project activity not undertaken as JI project (installation of husk-fired boilers of 60 t/h of total steam output). • (H4) The generation of steam in boilers using the same type of biomass. • (H6) The generation of heat in boilers using fossil fuels • (H7) The use of heat from external sources (purchasing heat from the local District Heating Utility). b) The evidences for the remaining lifetime of the boiler equipment have been provided to the determination team. c) Biogas gasification has been considered within the elaboration of the baseline scenario.		
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 PP has included a detailed analysis of the possible alternatives for steam generation as required by the methodology. Also, the biogas gasification system has been taken into account within the determination of the most probable baseline scenario. For details please refer to section 5.2.3 of this report. The evidences for the justification of the remaining lifetime of the boilers have been provided and deemed to be reliable and appropriate.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ 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)*	The analysis of the alternatives for **biomass treatment** as specified by the methodology is incomplete. The PP may revise the PDD accordingly. In particular: a) (B5, B6) is not in line with methodology; please consider these two scenarios separately. b) (B7) Please revise scenario (B7) in the PDD as per methodology. c) Other scenarios as per ACM0006. Please clarify why other scenarios as indicated in the methodology have not been considered, in particular, with regard to use of biomass gasification system for heat generation.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	For the use of biomass residues (sunflower seeds husk) the following alternatives are considered: • (B1) The sunflower seeds husk is dumped or left to decay under the mainly aerobic conditions. This applies, for example, to dumping and decay of husk on fields. • (B2) The sunflower seeds husk is dumped of left to decay under clearly anaerobic conditions. This applies, for example, to deep landfills with more than 5 meters. This does not apply to biomass residues that are stock-piled2 or left to decay on fields. • (B3) The biomass residues are burnt in an uncontrolled manner without utilizing it for energy purposes. • (B4) The sunflower seeds husk is used for heat and/or electricity generation at the project site. • (B5) The biomass residues are used for power generation, including cogeneration, in other existing or new grid-connected power plants. • (B6) The biomass residues are used for heat generation in other existing or new boilers at other sites • (B7) The biomass residues are used for other energy purposes, such as the generation of biofuels
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.*	A detailed analysis of the plausible alternatives for the use of biomass residues has been carried. For details on the assessment please refer to section 5.2.3 of this report.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding B6		
Classification	☒ CAR	☐ CL	☐ FAR

	Finding B6
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	a) The combined alternatives (Combinations) based on outcome of the Step 1 for power, heat and biomass use have not been defined in the PDD. b) The procedure to identification of the baseline scenario and the justification of the additionality is not in line with the methodology and tools referred to therein. c) The selection of the financial indicator is unclear. d) The sensitivity analysis is pending. The PP may revise the PDD accordingly
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	a) All realistic and credible alternative scenarios to the project activity: Scenario 1 (A1) = P1 + H1 + B4 and Scenario 2 (A2) = P4 + H6/H4 + B2 have been identified as combination of the most plausible alternatives. b) Barrier analysis and investment analysis for defined combinations have been carried out. c) Net Present Value has been selected as the most appropriate financial indicator. d) Sensitivity analysis has been carried out and results were presented in the PDD
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.*	Alternative 1 (A1) = P1 + H1 + B4 This combination reflects the proposed project activity not undertaken as JI. Hence, it has been correctly identified. Alternative 2 (A2) = P4 + H6/H4 + B2 This combination examines the continuation of current practise and hence has been correctly identified. Afterwards, the steps 2 and 3 of the Combined tool to identify the baseline scenario and demonstrate additionality" have been applied in the PDD in order to determine the baseline scenario and justify the additionality. The Net present Value (NPV) has been identified as a most suitable financial indicator within the investment analysis. The NPV reflects the costs of the project and baseline scenario and hence is suitable for the purpose of investment comparison. It is also in line with the "Combined Tool" and hence has been accepted by determination team. Please refer to section 5.2.3. The included sensitivity analysis shows that the conclusion regarding the financial/economic attractiveness is robust to variations in the critical assumptions like natural gas price, electricity tariff, and investment costs. Determination team has reproduced the sensitivity analysis and it could be verified that the conclusion is robust even assuming 10% higher natural gas price and electricity purchase tariffs and lower investment costs.

	Finding B6
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding B7		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Justification of the changes in the project design as compared to the design specified in the published PDD is not provided. In particular: 1. The reasons for inclusion of an additional third boiler are not clear. 2. The impact on the technology and the entire technical design of the project activity is unclear. 3. The impact on the baseline and additionality justification is not provided 4. How the changes in the technical design in the investment comparison analysis is not provided. By doing this 4a. please justify the assumed investment costs of the additional biomass and natural gas boilers. 4b Please explain why it was assumed that the electricity demand for boiler in operation remains unchanged. 4c Please justify the assumed revised interest on loan 5. Please explain the impact of the introduction of the third boiler on the estimated amount of emission reductions. 6. Please explain how the inclusion of the third boiler influence the results of the environmental impact assessment carried out for the previous design.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The design of the project has slightly been changed in the course of its implementation, compared to the project information provided in the published project design document (PDD) and its supporting information. The essence of the changes is the introduction of third sunflower seed husk boiler. As a result the modified project design involves three sunflower seed husk boilers and a steam turbine instead of two sunflower seed husk boilers and steam turbine. 1. The reason for introduction of the third sunflower seed husk		

	boiler is more reliable operation of combined heat and power generating system. The change in project design does not cause any changes in heat or electricity generation/consumption volumes as well as sunflower seed husk consumption volumes, but will allow carrying SSH boilers maintenance and repairing works not limiting energy generation. 2. Introduction of the third boiler does not have significant impact on the technology and the entire technical design of the project activity. 3. Introduction of the third boiler does not have significant impact on the baseline and additionality justification. The results of financial analysis and sensitivity analysis have been updated; the conclusion of financial analysis and sensitivity analysis were not affected (Section B.2 and Annex 2.7 of the PDD). 4. The investment comparison analysis has been modified by including the cost of the third boiler in the cashflow of the project scenario and the cost of additional natural gas fired boiler in the cashflow of the baseline. The results of financial analysis and sensitivity analysis have been updated; the conclusion of financial analysis and sensitivity analysis were not affected (Section B.2 and Annex 2.7 of the PDD). 4.a The investment cost of the additional biomass boiler was assumed based on the data from the Enterpise as estimated within the Feasibility study. The investment cost of the additional natural gas boilers were assumed equal to the one that has been foreseen in the initial project design. The investment costs of the biomass boiler have been provided by the Enterprise. The confirmation letter as well as the detailed structure of investment cost has been provided to the determination team. 4.b The assumption that the electricity demand for boiler in operation remains unchanged has been made because the introduction of the third sunflower seed husk boiler is not supposed to change the volume of energy production and overall SSH boilers operating time and thus electricity consumption. 4.c Installation of three SSH boilers is financed by own funds of the Enterprise. Installation of steam turbine is partly covered by credit resources. The interest rate on the credit was added to the financial analysis according to the data provided by the Enterprise. It is important to note that the consistent assumptions in the project and baseline scenarios regarding the shares of equity financing and loan financing have been used. The data for the baseline scenario assumptions (interest rate, share of total investments financed by loan, repayment) has been have been assumed equal to the values used for project scenario investments.

	5. Installation of the third boiler does not cause any changes in heat or electricity generation volumes as well as sunflower seed husk consumption volumes and thus does not influence the calculations of expected GHG emissions reductions. At the same time, due to the updated information regarding the time of the steam turbine installation (1st of April, 2012) as well as on SSH consumption volumes and heat energy generation in 2008-2012 the amount of estimated GHG emission reductions has been changed. Updated calculations of GHG emission reductions are presented in Section E of the PDD and throughout the document. 6. Before the installation of the third boiler the separate environmental impact assessment on its installation has been made in accordance with the national regulations of Ukraine; all relevant approvals were received. On this basis the permission for the operation of the equipment was received. The explanation on the separate environmental impact assessment on the third boiler installation is included in Section F.2 of the revised PDD. Documented evidence has been provided to the determination team.
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.*	1. An appropriate explanation of the reasons for the inclusion of an additional third boiler has been provided. As per the explanation provided by the PP the additional boiler will ensure the reliability of the steam generation. The third boiler can be considered as a back-up boiler, which will allow PP to carry out maintenance and repairing works of the biomass boilers without decrease (or even interruption) of the energy generation. It could be concluded that the inclusion of an additional third boiler is reasonable in light of the insufficient performance of the two biomass boilers. For further details please refer to the assessment given in the section 5.3 of this report. 2. As third boiler will serve as a back-up boiler its installation will not cause any changes in heat or electricity generation volumes. The steam demand of the plant remains unchanged. Hence, it could be concluded that the inclusion of the additional boiler would not change the characteristics of the initial design but only ensure its reliable operation. In other words the project design still involves reconstruction of the energy supply system of the CJSC Pology Oil-Extraction Plant by constructing a combined heat and power plant fuelled by solid biomass (sunflower seeds husk). 3. The results of financial analysis and sensitivity analysis have been duly updated. It could be demonstrated that the introduction of the third boiler does not have an impact either on the baseline or on the additionality justification. For further

	details please refer to the assessment given in the section 5.3 of this report. 4. The PP has modified the investment comparison analysis. By doing this the PP has included the cost of the third boiler in the financial analysis of the project scenario and the cost of additional natural gas fired boiler in the financial analysis of the baseline. 4a) The investment costs of the third biomass boiler have been derived based on the costs elaborated in the feasibility study. As a result the investment costs of all biomass boilers considered in the financial analysis have been assumed based on the information provided in the feasibility study. Furthermore, the same was confirmed by the PP in the official confirmation letter/I-3B1/ of the company and the costs breakdown/I-3b2/ related to the installation of the third boiler. The investment costs for the third boiler deemed to be elaborated in an appropriate manner. 4b) Ok. Please refer to the detailed assessment given in the section 5.3 of this report. 4c) The shares of equity financing and loan financing assumed in the project scenario are consistent with the shares assumed in the baseline scenario. The data for the baseline scenario assumptions (interest rate, share of total investments financed by loan, repayment) has been have been assumed equal to the values used for project scenario investments. To apply the consistent assumption in the baseline and project scenario has been assessed as appropriate. 5. As already noted the installation of the third boiler will not result in higher energy output because it is nit intended to operate all 3 boilers at the same time. Thus it could be concluded that the installation of the third boiler will not cause any changes in heat or electricity generation volumes as well as sunflower seed husk consumption volumes. Nevertheless, the PP has reviewed the calculation of GHG emissions reductions by taking into account the most actual data as compared to the published PDD. Also the steam turbine installation schedule has been taken into account. This was done to provide more conservative and precise estimation of emission reductions due to implementation of project activity and has been assessed as appropriate. 6. The response is accepted. Documented evidence has been provided to the determination team. The same was reviwed and assessed as appropriate.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ 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)*	The inclusion of the CO_2 emissions due to the on-site fossil fuel combustion (section D.1.1.1. and D.1.1.2.) is not sufficiently justified. The PP may revise the PDD accordingly.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	In the proposed project activity is not CO_2 emissions from on site fossil fuel combustion. This point is addressed in the PDD.		
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.*	Neither the co-firing, nor the use of the startup fuels is required for operation of the biomass fired boilers. This could be verified based on the technical specification of the sunflower seed husk boilers and the feasibility study/TS-PA1//TS-PA2//FS/. For this reason the determination team has agreed that CO_2 emissions from on-site consumption of fossil fuels due to the project activity can be assumed as nil.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ 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)*	a) It is unclear why CO2 emissions from the on-site electricity consumption attributable to the project activity have been not included in the monitoring. b) The relevant equipment should be clearly indicated and included to the monitoring. c) As per provided in the section D.1.1.1. the following parameter '$EC_{PJ,HO\_NEEDs,y}$' is included in the monitoring plan. However, the purpose is unclear. The consistence with the formulae indicated in D.1.1.2. should be provided.		

	Finding D2
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	a) and b) This emission source has been excluded because there is no electricity consumption attributable to the project activity. No treatment of the sunflower seed husk (like shredder, etc.) is required. The biomass will be combusted directly in the boilers without any treatment. For this reason CO2 emissions from on-site electricity consumption attributable to the project activity have been excluded. However emission reduction due to displacement of the electricity will be determined on the net electricity generation. c) This will not be monitored in the proposed project activity.
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.*	a) and b) The CO_2 emissions from consumption of electricity have been appropriately excluded from the monitoring plan because there is no mechanical treatment of the biomass. As already indicated it could be verified that sunflower seed husk will be combusted directly without any further treatment or preparation. As per the methodology the auxiliary electricity consumption by the project plant should be considered in the calculation of the net quantity of electricity generation in the project plant. This has been done in the corresponding section. c) The exclusion of this parameter has been assessed as appropriate and in line with the methodology.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ 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)*	**PE – CH4 from combustion of biomass** a) Further information on the weight meter applied for the biomass monitoring, including information about the type, accuracy, calibration, etc. should be provided. b) The monitoring procedure for the Net Calorific value (NCV) indicated on page 28 of the PDDis not in line with the methodology. c) In particular further clarification is required regarding the formula applied to calculate the NPV on the dry basis on the page 30 of the PDD. d) EF_{CH4}: Please include the value as well as the way of deriving this value based on methodology requirements to D.1.1.2 and D.1.1.2)		

Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	a) Further details on the monitoring of the amount of the sunflower seed husk by means of the weight meter have been provided in the PDD. b) Net calorific Value will be determined by the expertise of the independent laboratory c) ok. This formula has been revised in the PDD. d) To determine the CH4 emission factor, it was decided not to conduct any measurements at the plant site, but use IPCC default values, as provided in the Table 4 of ACM0006 (p.27). 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 conservativeness factor depends on the uncertainty range of the estimate for the CH4 emission factor. According to the Table 4. Default CH4 emissions factors for combustion of biomass residues of ACM0006.
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.*	a) The required information has been provided. The appropriateness of the monitoring of the quantity of biomass residue could be verified. For further details please refer to section 5.2.5 of this report. b) The Net calorific value will be determined quarterly by an independent labour. This is in line with methodology, which requires at least every six months. c) The determination of the quantity of biomass residue has been duly revised. d) The CH_4 emission factor for the combustion of biomass residues in the project plant (41.1 kg/TJ) has been determined based on the default parameters as per the methodology. Both the default CH_4 emission factor for combustion of biomass residues and the conservativeness factor have been indentified in a conservative manner. For this reason determination team is of the opinion that the applied emission factor has been determined appropriately.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ 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)*	Further clarification about the applied grid emission factor is required.		

	Finding D4
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The CO_2 emission factor for grid electricity was taken from Ukraine - Assessment of new calculation of CEF.
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 grid emission factor for the Ukrainian grid taken as 0.896 tCO_2/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 verified.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

	Finding D5		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The baseline emissions due to the displacement of the heat are not consistent with the elaborated baseline scenario.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Baseline emissions due to displacement of heat will be determined according to the formulae (19) of the methodology. By doing this the quantity of generated heat will be determined by applying formulae (21) of the methodology.		
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 baseline emissions due to displacement of heat have been determined according to the identified baseline scenario - the generation of heat by using both fossil fuels (H6) and biogas from the degasification equipment (H4). In doing so, the (Qy will be determined according to the equation (21) of the methodology. The $Q_{project\ plant,\ y}$ will be determined as the net quantity of heat supplied to plant production facilities. The monitoring procedures for $Q_{project\ plant,\ y}$ have been assessed as conservative because $Q_{project\ plant,\ y}$ reflects the quantity of heat that would be otherwise generated by the baseline equipment. The net quantity of the heat generated by using biogas within the last 3 years ($Q_{biomass\ historic\ 3yr}$) has been provided and the value could be verified/MC/.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

	Finding D6		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Please include the justification of the parameters applied for determination of the baseline emissions due to decay of the biomass residues applied within the "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" (Tool[TME/]).		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Justification for the values applied has been provided in the PDD.		
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.*	PDD has been revised and appropriate justification for the values applied has been provided in the PDD. For details please refer to the section 5.2.4.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ 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 section 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 the estimated emission reductions has been corrected and included in the section E of the PDD. The calculations as presented in this section follow the algorithm developed in the monitoring plan. The determination team has reproduced the calculation of the forecasted emission reductions by applying the formulae for project, baseline and leakage emissions as described in the PDD and the expected amount of emission reductions as stated in the PDD could be verified.		

	Finding E1
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ 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 applying the Host Country Approval.

Project Participants: The project participant involved in the project activity is the JSC Pology Oil Extraction Plant and RWE Power AG.

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 includes reconstruction of heat and power supply system based on the cogeneration at JSC Pology Oil Extraction Plant. The project activity encompasses installation of **three biomass fired boilers** and a **steam turbine** to cover heat and electricity needs of the Oil-Extraction Plant. The biomass type to be fired in the boilers is the sunflower seed husks. The sunflower seed husk is a biomass residue from the production facilities. As a result of the project activity the old fossil fuel fired steam boilers will be replaced. Furthermore, the project activity will displace the electricity import from the grid. For details please refer to Table 2-4.

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.

In this context it should be noted that the initial design was the installation of only two biomass boilers and a steam turbine. After the two biomass boilers were installed their performance turned out to be insufficient. The steam output and its technical parameters were below the expected performance. Due this, the installation of the steam turbine has been delayed. Hence, the project participant has decided to install an additional biomass boiler. It is expected that inclusion of the additional boiler will ensure the reliability of combined heat and power generating system.

5.1.4 Small Scale Projects

Not applicable

5.2 Project Baseline, Additionality and Monitoring Plan

5.2.1 Application of the Methodology

The Approved consolidated baseline and monitoring methodology ACM0006 Version 10 "Consolidated methodology electricity for generation from biomass residues" is applied for the considered project activity. The methodology is applicable because the project activity includes the installation of a new biomass residue (sunflower seed husk) fired power plant at a site where currently power generation is purchased from the grid and has not been produced at the site. As shown in table 5-2.1 the relevant applicability criteria of the methodology are fulfilled.

Table 5-2.1 Applicability criteria assessment

Applicability Criteria	Assessment
No other biomass types than biomass residues, as defined above, are used in the project plant and these biomass residues are the predominant fuel used in the project plant (some fossil fuels may be co-fired);	Yes, determination team has reviewed the technical specification of the sunflower seed husk boiler already installed and the commercial offer for other boilers. It could be verified that the planned biomass boilers are designed to sunflower seed husk combustion and no other biomass types as sunflower seed husk will used.
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;	In course of the determination it could be verified that the sunflower seed husk to be used in the new equipment does not serve as an input for further production process. For this reason project activity 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 project activity will not lead to changes of the heat and/or electricity demand of the oil extraction plant.

The biomass residues used by the project facility should not be stored for more than one year.	The technical specification of the boiler equipment has been designed by taking into account the amount of sunflower seed husk produced by the oil plant so that a sufficient confidence has been gained that biomass residues used by the project facility will combusted directly 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).	The sunflower seed husk 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.

5.2.2 Project Boundary

The determination team has examined the equipment and facilities required for the heat and power generation as well as treatment of the biomass residues with regard to 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.

As the biomass will be not transported by trucks the CO_2-emission sources from off-site transportation have been correctly assumed as nil. Furthermore, the sunflower seed husk will be directly combusted in the boilers without preparation, which requires energy consumption. The co-firing of other (fossil) fuels is not required. The CO_2-emissions due to the electricity consumption of the project activity will be taken into account within the calculation of emission reductions due to the displacement of the electricity.

Furthermore, the project participant decided to include in the project boundary the CH_4 emissions from the treatment of the biomass residues in the baseline and from the combustion of the biomass residues in the boilers. 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.

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.

5.2.3 Baseline Identification

The description of the baseline identification in the PDD is transparent and verifiable. The procedure to arrive to the baseline is in line with the applied methodology. All plausible alternatives have been identified. Only alternatives were excluded which were assessed to be not plausible. 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 following steps. In applying Step 1 of the additionality tool, the realistic and credible alternatives have been separately determined regarding:

- How **the power** would be generated in the absence of the JI project activity;
- What would happen to the biomass residues in the absence of the project activity;
- In case of cogeneration projects: how the heat would be generated in the absence of the project activity.

Power - Alternatives

In order to investigate how **power** would be generated in the absence of the project activity, project participant has examined the alternatives P1, P4, P5, P6 and P9 as per the methodology. As no power generation occurs at the site the alternatives P2, P3, P7, P8, P10 and P11 have been correctly excluded from further consideration. The further alternatives can be assessed as follows:

The alternative P1 was correctly identified as realistic and credible because it represents the project activity.

The alternative P4 was correctly identified as realistic and credible because it represents the continuation practice and there are no barriers to continue purchasing power from the grid.

The alternative P5: Based on the information as provided within the Feasibility study/FS/ and in supporting documentation/TS-PA1//TS-PA2/ a sufficient confidence has been gained that the project activity has been designed based on the heat demand of the oil plant. The capacity and efficiency of the biomass boilers as well as of the steam turbine have been designed for the most efficient steam and power generation and supply of the oil plant. The main purpose of the power generation is to cover own needs of the oil plant and not to supply electricity to the grid. Thus, the power plant efficiency and capacity have been designed subject to the heat demand of the plant and not with the purpose of increasing power generation. For this reason, the determination accepted the exclusion of this alternative form further consideration.

The alternatives P6 In the course of the determination a sufficient confidence has been gained that the project activity has been designed based on the heat demand of the oil plant and taking into account the amount of the sunflower seed husk. The installation of biomass boilers that would require a higher amount of sunflower seed husk would make the purchase of the sunflower seed husk necessary. There are no external sources in the neighbourhood where the sunflower seed husk can be supplied from. Determination team is of the opinion that it is unrealistic to transport

this type of biomass over long distances. For this reason, the determination team agreed with the exclusion of alternative P6 from further consideration.

The alternative P9 In the context of this alternative project participant has examined whether the installation of a new fossil fuel fired captive power plant at the project site can be considered as a plausible project scenario. The implementation of this scenario would require dismantling of the existing boilers and installation of the new equipment. The PP has demonstrated and evidenced that the existing steam generation equipment has been appropriately maintained and is in a good working condition/TS-BL/. In addition the corresponding technical expertise carried out by an independent technical expert has been provided and the operation of the boilers in accordance with Ukrainian regulation till 2013/2014 could be verified /TS-BL1//FS/. Taking this into account it could be concluded that the dismantling of the existing boilers and installation of the new equipment is not a plausible solution.

Furthermore, the determination team has investigated the common practice for the operation of the boiler equipment in Ukraine. Taking into account the prevailing practice[2] the determination team has accepted that the dismantling the existing equipment that is in a good working condition and can be operated further 8-9 years[3] cannot be considered as a reasonable and plausible alternative.

In the context of the alternative (P9) the PP has also investigated whether installation of a new steam turbine on the basis of the existing boiler equipment can be considered as plausible scenario. However, this was excluded because it would require the modification of the existing natural gas boilers, which would be very cost intensive und disproportional. Thus it could be concluded that a proper operation of a steam turbine without a major overhaul of the gas boilers is not realistic. The same was confirmed during the interviews with the responsible personnel of the plant. It should be noted that remaining lifetime of the natural gas boilers is till 2013/2014. Taking the above mentioned into account into account a sufficient confidence has been gained that this scenario is not plausible.

Heat - Alternatives

In order to investigate how **heat** would be generated in the absence of the project activity, project participant has examined the alternatives H1, H2, H3, H4, H5, H6 and H7 and H10.

The alternative H1 was correctly identified as realistic and credible because it represents the project activity.

The alternative H2 has been appropriately excluded from further consideration. As already indicated for the alternatives P5 and P6 the capacity and efficiency of the biomass boilers as well as of the steam turbine have been designed for the most efficient steam and power generation. For this reason, the technical design of the heat generation different from that of the project activity can not be considered as realistic and credible.

[2] For details please refer to the assessment of the alternative H6
[3] This corresponds to the difference between the date of investment decision (2005) and remainig lifetime of the natural gas boilers (2013/2014), which was attestated in at the time of the invesment decision

The alternatives H3 and H10 examines the existing fossil fuel fired cogeneration (power and heat) equipment. In the course of the on-site inspection the absence of cogeneration could be verified. As no cogeneration occurs at the site these alternatives have been correctly excluded from further consideration.

The alternative H6 In the context of alternative H6 - the continuation of the current practice, i.e. the generation of heat in existing gas fired boilers has been correctly identified as realistic and credible.

The three boilers of the type (DKVR-20-23-250 and 40-23-350) are used to cover the heat demand of the sunflower oil plant. According to the technical specification all three boilers have the corresponding required approvals for further operation/TS-BL/.

At the time of the investment decision the operation allowance as per the technical expertise was till 2014 for one boiler (DKVR-20-23-250) and till 2009 for the remaining two boilers/TS-BL/. For the purpose of the investment decision the internal technical experts (who are in charge of boiler operation and maintenance) have assessed that these boilers are in a good technical condition and will be able to continue their operation/MD/. This assessment is evident from the minutes of meetings. In addition, the expertise provided by an independent technical expert has confirmed that the two remaining boilers can be operated till 2013 and 2014 in accordance with Ukrainian laws and regulations/TS-BL1//FS/. The technical expertise has been carried out by an independent technical organization. As per the provided expertise document/TS-BL1/ this organization has an official authorization to provide the above-mentioned expertise. Taking this into account determination team agreed that continuation of the boiler operation till 2013/2014 is a plausible alternative.

Furthermore, according to the information provided within the different studies about the Ukrainian energy market carried out by the reputed organisations the typical average technical lifetime energy units is as a rule significantly higher than 20 years (average lifetime of similar equipment). For example, according to the Comparative Analysis, EU and Ukraine carried out by UNDP[4] 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-6/5. Furthermore, as per the EBRD[6] study carried out in 2007 the average age of the large energy generation units was even between 36 and 42 years/BIA-7/7. 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[8]. According to the IEA study the Ukrainian heat generating facilities are ineffective because of the outdated equipment/BIA-6//BIA-10/.

Considering the above mentioned information on the energy sector in Ukraine a sufficient confidence could be gained that the average lifetime of steam generation units in Ukraine is higher than 20 years and further operation of the outdated

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

equipment is widespread in the country. Furthermore, the boilers were properly maintained. Taking this into account determination team concluded that operation of the gas boilers till 2013/2014 and even longer can be considered as a plausible scenario.

The alternative H4 At the time of the management/investment decision a biogas degasification facility was installed at the plant. This was done in order to test the possibility to extract gaseous fuel out of the sunflower seed husk. One of the three natural gas boilers was modified to use biogas degasification station. Biogas produced was not used as predominant fuel but as a secondary fuel. It was co-fired with natural gas in one of the boilers. According to the information given by PP this was mainly a pilot project with a purpose of examination alternative possibilities of biomass utilization.

A sufficient confidence has been gained that the biogas based steam generation can not be considered as a plausible alternative. This is mainly because the amount of sunflower seed husks produced by the Pology plant is not sufficient to cover the entire steam demand of the plant. Based on provided data it could be verified that approximately 50% of sunflower seed husk has been utilized to produce approximately 8-11% biogas based steam/TS-BL//TS-BL1/. Hence, the conversion of the entire steam generation to biogas would require purchase of the additional amount of sunflower seed husk. Furthermore, according to the information provided by the different studies carried out by well-reputed organisations the large scale conversion of the entire steam generation to a biogas including the installation of a large scale degasification plant and modification of the natural gas fired boilers is not widespread in the country so that such alternative would definitely face first-of-its-kind barrier/RSS//BIA-10/BIA-11/.

Determination team agreed that conversion of the entire steam generation to biogas would require installation of a large scale biogas degasification plant with many degasification reactors with back-up machines, storage facilities, and transportation services. Such a large scale biogas degasification is more complex and requires technical know-how as compared to the natural gas that can be taken from the pipeline. In addition, the use of natural gas is more reliable because it is available on demand. In opposite degasification plant would require organization of the entire process of fuel production including feedstock supply, treatment, extraction and transportation. According to the analysis of biomass gasification provided by IEA/BIA-16/ the present commercial use of this technology still faces hurdles even in industrialized countries and is limited mainly to the co-firing applications. Determination team agreed that such a large-scale conversion to biogas is disproportionate to the financial and technical capability of the project participant and thus can not be considered as a plausible alternative.

However, for conservative purpose the PP has assumed that in the baseline scenario the heat generation would have the same structure as in the pre-project scenario. In other words the steam generation in the baseline scenario would be mainly generated by the natural gas fired boilers and partly by biogas degasification equipment.

The inclusion of the biogas equipment is not exactly in line with procedure for baseline identification as per the applied methodology. However, the determination team agreed that continuation of the pre-project situation best reflects the most plausible scenario that would occur otherwise and is the most conservative approach.

Alternative H5 has been duly excluded because there is no existing biomass residue fired cogeneration plant. Please refer to the comment above.

Alternative H7 and H8 have been appropriately excluded from the further consideration. In the course of determination it has been verified that there are no external sources where the heat can be supplied from. The district heating system of Pology city does not have the heat generation facilities required for the heat supply for production purposes. Furthermore, there is no heat transmission system that would be necessary to transport heat to Pology plant. This could be verified through observation during the on-site-visit and through the background investigation in the course of determination. The determination team also agreed that other heat generation technologies (alternative H8) like the heat pumps and the solar energy can not be considered as plausible baseline alternatives.

Considering the above mentioned the determination team concluded that the project participant has appropriately identified the most credible and realistic alternatives. These are **H1** – the proposed project activity not undertaken as JI project and **H6**/**H4** – continuation of current practise (the generation of heat in existing natural gas fired boilers with a small amount of biogas extracted from the seed husks).

Biomass - Alternatives

In order to investigate what would happen to the **biomass residues** in the absence of the project activity project activity, project participant has examined the alternatives B1 – B7 as per the methodology. Following the methodology requirements the PP has appropriately identified only **one type of biomass** residues because the project activity uses only sunflower seed husk.

The alternatives B1 and B3 as per the methodology has been appropriately excluded from further consideration because they are not in line with the national laws and regulations of Ukraine. The determination team has reviewed the Ukrainian regulations on waste handling, in particular Law on Wastes in Ukraine (3073) that have been referenced by the project participant. It could be verified that it is prohibited in Ukraine to burn the waste in uncontrolled manner and to leave the wastes husk and dumping of husk under aerobic conditions.

The alternatives B2 has been appropriately identified as realistic and credible because it is in line with national laws and regulations and represents also the current practice. Determination team has reviewed the required permissions for disposal of sunflower seed husk issued by the local administration and it could be verified that the permissions are valid till 2011. Within the on-site visit it could be observed that sunflower seed husk are disposed in deep landfill under anaerobic conditions in line with the alternative B2 as per the methodology. In the course of the determination the long time practice of disposing landfill has been verified based on the company's internal documented evidences. In addition the PP was able to demonstrate that during this time period the biomass residues have been disposed

appropriately and in accordance with regulations of the local administration. No further obstacles were observed that could prevent the extension of the permission. Taking this into account the determination team agreed with the PP that required permission can be obtained and/or extended also for the time period after 2011 i.e. after expiring of the current permission. Thus, the continuation of the current practice deemed to be a plausible option.

The alternative B4 – A part of the biomass residue is utilized for heat generation. Thus, the alternative B4 has been duly considered as plausible. For details please refer to the comments for alternative H4.

The alternatives B5 and B6 examines heat and/or power generation in other existing sites. These alternatives have been excluded because neither power, nor the heat generation based on the sunflower seed husks is a common practice in the region and in the country/RSS/. The determination team has reviewed the project participants records related to the handling of the biomass residues for the recent four years. It could be verified that the sunflower seed husk has been disposed at the landfill. A small portion has been utilized in the degasification facility.

The exclusion of these alternatives 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 the industrial waste is typically disposed of in landfills and is not utilized for energy generation. Further support has been gained through the Review of the Sunflower Oil Sector Review/RSS/. Also the National Environmental Policy[9] of Ukraine considers the Ukrainian regulation on the utilization of the industrial waste as less effective the appropriate infrastructure and financing to deal with waste materials has not been secured/BIA-11/. Taking into account the information on the waste management in Ukraine as provided within these 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 alternatives B5 and B6 can not be considered as realistic and credible.

The alternative B7 examines generation of bio fuels. This possibility has been examined in the context of exclusion H4 and appropriately excluded. The generation of other types of the biofuels can not be considered as a plausible alternative.

Considering the above mentioned the project participant has appropriately concluded that the most credible and realistic alternatives are **B2** – the sunflower seeds husk is dumped of left to decay under clearly anaerobic conditions and **B4** – the sunflower seeds husk is used for heat and/or electricity generation at the project site.

Within the next step project participant has appropriately identified all credible combinations of baseline scenarios. These are:

Alternative 1 (A1) = P1 + H1 + B4

This combination examines the proposed project activity not undertaken as JI and hence has been correctly identified.

[9] carried out by the Ministry for Environmental Protection of Ukraine, Global Environmental Facility and the United Nations Development Programme

Alternative 2 (A2) = P4 + H6/H4 + B2

This combination examines the continuation of current practise and hence has been correctly identified.

Investment analysis / Financial indicator

The Net present Value (NPV) has been identified as a most suitable financial indicator within the investment analysis. The NPV reflects the costs of the project and baseline scenario and hence is suitable for the purpose of investment comparison. It is also in line with the "Combined Tool" and hence has been accepted by determination team.

Within the investment analysis PP has calculated the NPV for the project scenario and for the Baseline scenario. It could be demonstrated that the NPV of the baseline scenario is lower than that project scenario. By doing this PP has assumed that in 2015 the existing heat generation equipment will be replaced by new one. This corresponds to the technical specification and expertise results/TS-BL/TS-BL1/.

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 supported by further evidences. They deemed to be appropriate. For details please refer to the Annex 3 – assessment of the financial parameter.

The applied formula for NPV calculation has been checked. The excel spreadsheet available for the investment calculation is clear, viewable and unprotected. The calculation has been reproduced by the determination team and the main results could be verified.

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 natural gas price, electricity tariff, and investment costs, electricity generation, NG consumption in the baseline. Determination team has reproduced the sensitivity analysis and it could be verified that the conclusion is robust even assuming 10% higher natural gas price and electricity purchase tariffs and lower investment costs. The results of the investment analysis are robust even to variation of the natural gas price (+20%), electricity tariff (+80%), investment cost (-15%).

The investment costs for the boilers have been based on the proposals from a technology supplier and deemed to be plausible. The costs for the second boiler and steam turbine have been assumed within the feasibility study based on the tender documents and internal documentation 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 19.10.2005 is the date of the management decision to go ahead with the project activity. Also in 2005 consultant has been contracted for developing the project in

accordance with JI rules. Few months after the management decision (19.05.2006) the contract with boiler manufacturer has been signed. The evidence for the management decision has been provided and the date of the decision could be verified/MD//MD-1//FS/. Based on provided evidences determination team concluded that JI was seriously considered at the time of the decision making. The corresponding evidences/MD/MD-1//FS//XLS/ have convinced that without benefits out of JI the project would be not financial viable.

Application of methodology / methodological tools

Project participant has justified the additionality by means of applying "Combined tool to identify the baseline scenario and demonstrate additionality" (Combined tool/CT/). This is in line with methodology (ACM0006). In accordance with the Combined Tool/CT/ 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. It is not economically feasible without benefits from ERU sales. All parameters applied within the investment analysis have been assessed as plausible. Applied financial analysis has been supported by evidences 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. 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 sufficiently elaborated to demonstrate that project activity would be prevented from implementation.

Step Common praxis analysis

Within the common practice analysis project participant has properly defined the Ukraine as the corresponding geographical area. Afterwards PP has identified similar activity in the defined geographical area. The analysis of similar activities – installation of seed husk based cogeneration equipment has been done in a complete and detailed manner. The references data source is the Review of the Sunflower Oil Sector/RSS/.

The references and data sources have been verified. According to the provided data source the ten of the seventeen large oil plants have installed husk boilers for heat generation. However the combined heat and power generation has not diffused in the

sunflower oil sector in Ukraine. Taking this into account PP has appropriately concluded that sunflower seed husk based cogeneration cannot be considered as the common practice in Ukraine.

As the similar activities have not been observed, the proposed project activity can be considered as **additional**.

Compliance with further methodology requirements.

In order to comply with further methodology requirements PP has documented in the PDD following information about the heat generation equipment that was operated at the project site during the most recent three years prior to the start of the project activity:

- the type and
- capacity of the boiler,
- types and quantities of fuels used.

The provided information has been evidenced and could be verified/TS-BL//HD-BL/. In addition for each boiler installed under the project activity the type and capacity of boilers and which types and quantities of fuels are planned to be used is provided in the PDD. The information in the PDD is in line with provided evidences/TS-PA1//TS-PA2/.

5.2.5 Monitoring Methodology / Monitoring Plan

The applied monitoring methodology is the approved consolidated baseline and monitoring methodology ACM0006 (Version 10). The applicability criteria for monitoring are the same as for the baseline methodology. As already investigated all criteria for applying the monitoring methodology are met.

The monitoring plan is documented according to the applied methodology. It provides for the collection an archiving of all relevant data as listed in ACM0006. The measurement equipment and the measurement methods are described in the monitoring plan and presented under section D and the Annex 4 of the PDD.

During the on-site inspection interviews with the responsible personnel have been carried out and a sufficient confidence has been gained that the personnel in charge of the monitoring has sufficient competence for operating equipment.

Project participant has introduced the 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. Personal and the corresponding tasks/responsibilities of the project monitoring are clearly defined. Furthermore all procedures have been clearly documented. A sufficient confidence has been gained that the monitoring plan will ensure accurate monitoring of the relevant parameters.

The archiving period in the revised PDD is in line with §38 of the Guidance on the baseline setting and monitoring and clearly indicate that all data monitored and

required for determination according to paragraph 37 of the JI guidelines will be kept for two years after the last transfer of ERUs for the project.

Project emissions

In the context of the project emissions project participant has appropriately included:

- CH4 emissions from the combustion of biomass residues

and correctly excluded

- CO2 emissions from transportation of biomass residues
- CO2 emissions from on-site consumption of fossil fuels
- CO2 emissions from consumption of electricity
- CH4 emissions from waste water

CO2 emissions from **transportation** of biomass residues to the project site (PETy) have been duly excluded because the biomass will be combusted directly on the site of the project participant and no transportation of biomass is envisioned. This could be verified based on the provided design of the entire project plant /TS-PA1//TS-PA2//FS/. Within the site visit the project site has been inspected, the construction works of the plant have been observed and sufficient confidence has been gained that project will be implemented as per the envisioned technical design. It is also important that sunflower seed husk will be not supplied from external sources so that transportation of this type of biomass with trucks from other sources (esp. over long distances) is not relevant in this context.

As evident from the historical data the average annual output of sunflower seeds was 53741 t/year. This is more than required for boiler operation (51443 t/a) Hence a sufficient confidence has been gained that no transportation from external sources will be required.

CO_2 emissions from on-site consumption of fossil fuels due to the project activity: The determination team agreed with the exclusion of this emission source because neither the co-firing, nor the use of the start up fuels is required for operation of the biomass resides fire boilers. This could be verified based on the technical specification of the sunflower seed husk boilers and the feasibility study /TS-PA1//TS-PA2//FS/.

CO_2 emissions from consumption of electricity have been appropriately excluded from the monitoring plan because there is no mechanical treatment of the biomass. As already indicated it could be verified that the sunflower seed husk will be combusted directly without any further treatment or preparation. As per the methodology the auxiliary electricity consumption by the project plant should be considered in the calculation of the net quantity of electricity generation in the project plant. This has been done in the corresponding section.

CH_4 emissions from waste water: As already indicated there is no treatment of the biomass. For this reason this emission source has been appropriately considered as irrelevant in the context of the project activity.

CH_4 emissions from the combustion of biomass residues: Project participant has correctly included the CH_4 emissions from the combustion of the biomass residues because the emissions from the uncontrolled decay (as per B2) have been included in the project boundary. The formula (6) of the ACM0006 has been applied for determination of CH_4 emissions from combustion. This is in line with the methodology. Also the monitoring of the relevant parameters has been duly elaborated. In particular:

The **Quantity of sunflower seed husk** combusted in the project plant will be determined on the wet basis. The quantity of sunflower seed husk will be measured by weight meters. The moisture content will be adjusted in order to determine the quantity of dry biomass. The measurement will be done by using frequency converter for recording of consumption of husk supply to the boiler. The quantity will be determined based on the quantity of revolutions of the dosage sluice. The frequency will be recorded every 20-180 seconds in electronic form on server. The consumption of sunflower seed husk will be determined subject to dosage sluice load factor of the particular furnace (fire-chamber) in accordance with the manufactures monitoring procedures. Each biomass boiler has two furnaces (fire-chambers). Hence the total consumption of the boiler is determined as the sum of the two furnaces. The described procedure is in line with provided evidences/MHW//MP//MPD/. The quantity will be cross checked with quantity of heat generated by the two biomass boilers. The steam generation will be measured by the flow meters installed at each boiler. The procedures for monitoring this parameter deemed to be duly elaborated.

The recordings will be carried out every 12 hours within the shift changeover in the paper form (log book). The collected data in paper format (log book) will be aggregated on a monthly basis and archived in both paper and electronic form. The responsible for data collection and archiving is the project manager. During the on-site-visit it has been verified that the corresponding procedures for monitoring of parameters have been implemented and appropriately carried out by the responsible personal.

The **moisture content** and **net calorific value** (NCV) will be determined in order to compute the quantity on the dry basis. The moisture content of the biomass residue will be determined on a quarterly basis by the independent and reputed laboratory. It could be also verified that already in the pre-project situation moisture content and NCV measurements on the sunflower seed husk for internal needs of the company have been carried out by an independent Sevastopolj laboratory since several years/MC/. This laboratory is certified in Ukraine as an independent expert for carrying out these measurements. It is envisioned to carry out the moisture content and NCV by this laboratory.

In addition moisture content will be determined on a regular basis by company's internal laboratory. These measurements will be used for crosscheck purpose. PP has provided evidences that the moisture content of the sunflower seed husk has remained stable during the last years/MC/. Taking this into account determination team is of the opinion that procedures for monitoring the moisture content are duly elaborated.

CH_4 emission factor for the combustion of biomass residues in the project plant (41.1 kg/TJ) has been determined based on the default parameters as per the methodology. Both the default CH_4 emission factor for combustion of biomass residues and the conservativeness factor have been indentified in a conservative manner. For this reason determination team is of the opinion that the applied emission factor has been determined appropriately.

Baseline Emissions

Following baseline emissions have been correctly included**:**

- Emission reductions due to displacement of electricity
- Emission reductions due to displacement of heat
- Emissions due to anaerobic decay of biomass residues

Emission reductions due to displacement of electricity

Emission reductions due to the displacement of the electricity will be calculated as a product of the net quantity of the electricity generated with biomass residues and the CO_2 baseline emission factor for the electricity displaced due to the project. The formula (8) of the methodology has been correctly applied in this context.

Grid emission factor for the Ukrainian grid taken as 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 document has been checked and the value applied in the calculation could be verified.

As per the monitoring plan the electricity generation will be determined as **net quantity of electricity generated** in the project plant during the year. This is in line with the identified scenario – scenario 2 and methodology requirements.

The net quantity of electricity generated will be determined as a difference between gross electricity generated by the steam turbine and the electricity consumption of the boilers and steam turbine. According to the monitoring plan net quantity of electricity generated will be measured continuously with appropriate and state of the art equipment. As per the technical specification for the envisioned electricity meters/M-EL/ the accuracy of the meters will be 1%. The issue was discussed during the site visit and sufficient confidence was gained that metering equipment will be calibrated in accordance with procedures of the manufacturer and host country regulations. The QA/QC procedures have been also elaborated in accordance with methodology requirements.

Emission reductions due to displacement of heat

Baseline emissions due to displacement of heat have been determined according to the identified baseline scenario - the generation of heat by using both fossil fuels (H6) and biogas from the degasification equipment (H4). The formula to calculate emission reductions due to displacement of heat is in line with the formula (26) of the methodology.

Quantity of heat: The quantity of the heat that displaces the heat generation based on the fossil fuels (Qy) will be determined according to equation (28) as per methodology. In doing so the $Q_{project\ plant,\ y}$ will be determined as the net quantity of heat supplied to plant's production facilities. The net quantity of the heat generated by using biogas within the last 3 years ($Q_{biomass\ historic\ 3yr}$) has been provided and the value could be verified/MC/.

According to the monitoring plan net quantity of heat generated will be measured continuously with appropriate and state of the art equipment. The steam generation $Q_{project\ plant,\ y}$ will determined by vortex flow meters. The envisioned mass flow measurement accuracy as indicated in the PDD is in line with provided technical specification of the meters/TSH/. The calibration should be carried out every 3 years/TSH/. The accuracy has been assessed as appropriate. The issue was discussed during the site visit and sufficient confidence was gained that metering equipment will be calibrated in accordance with procedures of the manufacturer and host country regulations. The QA/QC procedures have been also elaborated in accordance with methodology requirements.

Energy efficiency of the boiler that would be used in the absence of the project activity to generate heat has been determined as highest efficiency value (93.4%) among the three fossil fuel fired boilers that would be used in the absence of the project activity/TS-BL1//TS-BL/.

According to the applied technical standards the efficiency of the steam boilers of this type and of the corresponding the steam output (between 6.5t/h and 75t/h) should be 93%. The identified value is in line with technical standards for this boiler type. For this reason the identified value is considered to be appropriately identified.

Emissions due to anaerobic decay of biomass residues

The decay under clearly anaerobic conditions (case B2) was identified as the most likely baseline scenario for the use of the biomass residues. Thus the project participants has appropriately applied "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" for determination of the baseline emissions Anaerobic decay of biomass residues.

By doing this the amount of sunflower seed husks avoided from decay has been defined in accordance with equitation (44) of the methodology. The amount of the sunflower seed husks utilized in biogas degasification equipment and the disposed biomass landfill in the time period between 2004 and 2007 has been evidenced and the values as indicated in the PDD could be verified/BL-AS/. The applying equitation 44 of the methodology has been also assessed as appropriate in this context.

The formula for determination methane emissions avoided from disposal of waste at a solid waste disposal site as per the required "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" (Tool/TME/).

The parameters applied within the calculation have been verified w.r.t the particular requirements of the applied "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site". The applied values have been with assessed as appropriate. In particular:

1) Model correction factor takes as φ =0.9 is in line with the requirements of the Tool/TME/.

2) Oxidation factor OX = 0 is in line with the requirements of the Tool/TME/ because the waste disposal site (landfill) where the sunflower seeds husk would have been dumped in the absence of proposed project activity is not covered with any oxidizing material such as soil or compost. This could be observed during the on-site-visit.

3) Fraction of methane in landfill gas F=0.5, is in line with the requirements of the Tool/TME/

4) Fraction of degradable organic carbon that can decompose DOCf = 0.5, is in line with the requirements of the Tool/TME/;

5) Methane correction Factor MCF = 0.8 is in line with the requirements of the Tool/TME/ because the landfill is classified as unmanaged deep solid waste disposal sites. Its depth reaches 6-9 m that is more than 5 meters but landfill does not have cover material, neither mechanical compacting or leveling of the waste. This could be observed during the on-site-visit.

6) Fraction of degradable organic carbon in the sunflower seeds husk DOCj = 0.5 according to the IPCC 2006 Guidelines for National Greenhouse Gas Inventories (Volume 5, Table 2.4). As sunflower seeds husk cannot be clearly attributed to one of the waste types in the IPCC Guidelines, the DOC for dry wood was selected by project participants. This has been assessed as appropriate because dry wood waste has the most similar characteristics to husk

7) Decay rate for the sunflower seeds husk k = 0.03. The climate of the Pology region was correctly justified to be Boreal wet /BIA-1//BIA-2/.

8) Average annual temperature in Pology region is +8,5 C. Value could be verified based on the data of the Second National Communication Ukraine/BIA-2/.

9) MAP – mean annual precipitation = 550 mm/yr. Value could be verified based on the data of the Second National Communication Ukraine/BIA-2/.

10) PET – potential evapotranspiration = 500 mm/yr. Value could be verified based on the data of the Second National Communication Ukraine/BIA-2/. Thus MAP/PET>1.

11) f = 0 Fraction of methane captured at the landfill and flared, combusted and used in another manner (f) has been correctly taken as 0 because no methane is captured at existing Pology landfill, and there are no initiatives to construct any landfill gas collection and utilization systems at the Pology landfill.

12) Global Warming Potential of methane GWP_{CH4} = 21 is correct.

5.2.6 Leakage

In the course of determination it could be verified that sunflower seed husk have been mainly land-filled and only a small part has been utilized in the biogas degasification equipment/HD-BL//HD-BL1//LDF/.

Taking also into account the results of the Review of the Sunflower Oil Sector in Ukraine/RSS/ a sufficient confidence could be gained that no market for sunflower seed husks has been emerged. Determination team agreed that transportation of the sunflower seed husk over long distances is not a plausible scenario. This conclusion could be further supported by other official data sources/BIA-9//BIA-11/. Please refer to the assessment of the alternatives B5 and B6. Taking this into account determination team is of the opinion that leakage has been ruled out in accordance with provisions of the methodology.

5.2.7 Calculation of GHG Emission Reductions

Project emissions

CH_4 emissions from the combustion of biomass residues

The applied quantity of the combusted biomass residues (51443 t/year) is based on the technical data of the biomass boilers.

CH_4 emission factor for the combustion of biomass residues in the project plant (41.1 kg/TJ) has been determined based on the default parameters as per the methodology/Meth/. Both the default CH_4 emission factor for combustion of biomass residues and the conservativeness factor have been indentified in a conservative manner. For this reason determination team is of the opinion that the applied emission factor has been determined appropriately.

The assumed values for **moisture content (10%)** and **net calorific value** (14.4 Gj/t) are in line with information as per the independent labour expertise/MC/.

Baseline – Emissions

Emission reductions due to displacement of electricity

The formula for determination emission reductions due to the displacement of electricity as well as the applied parameters is in line with the methodology. The net quantity of electricity generated has been estimated based on the capacity of the steam turbine and a plant load factor. The assumed amount deemed to be plausible. It is in line with the value in the investment comparison analysis.

The electricity consumption of the power plant will include auxiliary electricity consumption of the biomass fired boilers and the steam turbine. For this purpose the electricity meters will be installed at the biomass boilers. The electricity meter installed at the steam turbine will determine the net electricity generation of the steam turbine.

The grid emission factor for the Ukrainian grid of 0.896 tCO_2/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 verified.

Emission reductions due to displacement of heat

Quantity of heat (Q_y) has been determined according to equation (26) as per methodology. The value of the total heat generation ($Q_{project\ plant,\ y}$) 652,844 GJ[10] is determined based on the boiler technical data. The average biogas based steam generation in the considered time period is 46,099 MJ. Hence the quantity of the natural gas based steam generation 606,744 GJ has been duly elaborated. The applied values are also plausible as compared to the historical values and taking into account the minor increase of the steam demand due to the production forecast of the plant.

The energy efficiency of the boiler that would be used in the absence of the project activity to generate heat has been determined as highest efficiency value (93.4%) among the three fossil fuel fired boilers that would be used in the absence of the project activity[TS-BL1//TS-BL/].

According to the applied technical standards the efficiency of the steam boilers of this type and of the corresponding the steam output (between 6.5t/h and 75t/h) should be 93%. The identified value is in line with technical standards for this boiler type. For this reason the identified value is considered to be appropriately identified.

Emission factor for natural gas (56.1 tCO_2/TJ) is in line with IPCCC values.

Baseline emissions due to anaerobic decay of biomass residues

The most likely baseline scenario for the use of the biomass residues is the decay under clearly anaerobic conditions (case B2). Due to this, the project participants has appropriately applied "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" for determination of the baseline emissions anaerobic decay of biomass residues.

By doing this the amount of sunflower seed husks avoided from decay (24,293 t) has been duly assumed based on the technical specification of the boilers.

The formula for determination methane emissions avoided from disposal of waste at a solid waste disposal site as per the corresponding Tool has been reproduced by the determination team and the values could be verified.

The parameters applied within the calculation have been verified w.r.t the particular requirements of the applied "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site". The applied values have been with assessed as appropriate. Please refer to 5.2.5.

Leakage emissions have been appropriately ruled out and for this reason correctly excluded from calculation.

5.2.8 Project Management Planning

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

[10] After project implementation

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. EIA carried out by an independent and authorized expert company has been provided[/EIA/*]. It could be verified that all relevant environmental impacts were identified during EIA. Necessary measures to minimise the environmental impacts are as per EIA and operating approval are taken by the operator of the plant.

5.2.11 Comments by Local Stakeholders

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

5.3 Assessment of changes during the project implementation

As already indicated after the two biomass boilers were installed their performance turned out to be insufficient. The time required for maintenance and reparation was higher than expected. This results in the higher number of stoppages and increase of the time when the boilers are not operated at designed performance level. This has led to an inconsistent and unreliable heat generation. Due this the installation of the steam turbine has been delayed.

As a result the project participant has decided to install an additional (back-up) biomass boiler. It is expected that inclusion of the additional boiler will enhance the reliability of combined heat and power generating system. The additional boiler will ensure the steam generation at required level when another boiler has to be put out of operation for example for maintenance and repair purposes.

The introduction of the third sunflower seed husk boiler does not cause any changes in heat or electricity generation volumes. This is because the third boiler will allow PP to carry out maintenance and repairing works of the biomass boilers without decrease (or even interruption) of the energy generation.

It should be noted that the overall capacity of the steam output in t/h will remain almost the same. As can be seen from the comparison below the total capacity of the project scenario will be almost equal (even slightly below) to the capacity of the boilers in the baseline scenario.

Baseline scenario

Boiler	Type	Capacity, t/h
Natural Gasboiler 1	DKVR-20-23-250	20
Natural Gasboiler 2	DKVR-20-23-250 (E-20-24-250)	20

Natural Gasboiler 3	DKVR-40-23-350	20

Project scenario

Boiler	Type	Capacity, t/h
SSH[11] boiler 1	DKVR 20-23-370C (E-20-2.4-370 R)	20
SSH boiler 2	E-20-2.4-350 DV	20
SSH boiler 3	E-20-2.4-350 DV	20

Hence the determination team concluded that the inclusion of the additional boiler would not change the characteristics of the initial design of the combined heat and power generating system but only ensure its reliable operation. In other words the project design still involves reconstruction of the energy supply system of the CJSC Pology Oil-Extraction Plant by constructing a combined heat and power plant based on the solid biomass (sunflower seeds husk).

Application of the Methodology

The determination team has examined the applicability criteria of the applied methodology. As already indicated the inclusion of the additional boiler would not change the general design of the project activity. In other words the project still includes reconstruction of heat and power supply system by means of the installation of the combined heat and power generating system. Taking this into account it could be concluded that the inclusion of the additional boiler has no impact on the validity of the relevant applicability criteria. Hence the applied methodology remains applicable.

Project Boundary

The project boundary has been duly revised and includes now three boilers. No other changes are required.

Baseline Identification

The inclusion of the third boiler has no impact on the plausible baseline alternatives identified within the Step 1. The inclusion of the third boiler has neither an impact on the power, nor on the biomass alternatives.

As already explained performance of the first two biomass boilers was insufficient. Without the inclusion of the third boiler the steam output and reliability of the steam generation within the project scenario would be lower than that of the project scenario. However this is incompatible with the steam demand of the oil plant.

In other words the main goal of the inclusion of the third boiler is to ensure that the steam output corresponds to the pre-project situation. Since the capacity of the boilers in the project scenario and the corresponding steam output remains almost

[11] SSH stands for Sunflower seed husk.

unchanged it can be concluded that the inclusion of the third boiler has no impact on the identified baseline scenario for the heat generation.

Changes within the investment comparison analysis / financial parameter
Within the **project scenario** following changes have been made and assessed by the determination team:

- The PP has included the investment costs of the third boiler. By doing this the investment cost of the third boiler have been based on the sunflower seed husk boiler as assumed within the feasibility study

- It was assumed that the operation costs and the electricity demand for boiler operation in the project scenario will remain unchanged after inclusion of the third boiler. This assumption results in higher NPV of the project scenario and has been assessed as conservative.

- The shares of equity financing and loan financing assumed in the project scenario are consistent with the shares assumed in the baseline scenario. The data for the baseline scenario assumptions (interest rate, share of total investments financed by loan, repayment) has been arrived as average values for two loans used for project scenario investments. To apply the consistent assumption in the baseline and project scenario has been assessed as appropriate

Within the **baseline scenario** following changes have been made and assessed by the determination team:

It was assumed that
- the operation costs,
- the electricity demand
- fuel costs natural gas
- Electricity purchase
- Disposal costs

in baseline scenario in the baseline scenario remain unchanged. The assumption deemed to be reasonable because the purpose of the third boiler is not to increase the heat/electricity generation but to ensure the reliability of the entire energy system. The capacity of the boilers in the project scenario and the corresponding steam output remains almost unchanged. As indicated in the Finding 7 the overall operating time of all biomass boilers will not increase. This assumption is also consistent with the corresponding assumptions made for the project scenario.

Furthermore it was assumed that in 2015 all natural gas boilers would be replaced by new natural gas boilers. This corresponds to the technical specification and expertise results of the installed boilers/TS-BL//TS-BL1/. Please also refer to the assessment of the current practice in Ukraine provided in the section 5.2.3 of this report.

Subsequently the investment costs of two additional gas boilers have been included in the financial analysis of the baseline scenario[12]. This was assessed as conservative because this results in a lower financial indicator of the baseline and makes the baseline scenario less financially attractive. The investment cost of the natural gas boilers are based on the costs assumption applied within the initial project design. This is appropriate because it demonstrates that the baseline was more financially attractive option at the time of the investment decision even when assumed revised project design.

As a result it could be concluded that the financial analysis has been revised in an appropriate manner.

The financial parameter the NPV of the project and baseline scenario have been calculated and compared. It could be demonstrated that the NPV of the baseline scenario is lower than that project scenario. Hence it was correct to conclude that the project activity is less financially attractive as compared to the baseline scenario. The applied formula for NPV calculation has been verified. The excel spreadsheet available for the investment calculation is clear, viewable and unprotected. The calculation has been reproduced by the determination team and the main results could be verified.

Additionality justification.

The inclusion of the third boiler does not change the additionality justification. This is because the main goal of the inclusion of the third boiler is not to change the initial project design but to ensure that the steam output after project implementation corresponds to the pre-project situation.

As shown within the investment comparison analysis the project activity remains financially not attractive. Even after the inclusion of the third boiler the base line scenario remains the financially most attractive option.

Common praxis analysis

The inclusion of the third boiler has no impact on the results of the common practice analysis because it does not result in a different technology, etc. Hence the results of the analysis of similar activities remain unaffected by this modification.

Monitoring plan

The main impact on the monitoring plan due to the inclusion of an additional boiler is the need to monitor the steam generated by this third boiler. The requirement to monitor the steam generation of all boilers is included in the monitoring plan. Hence a sufficient confidence could be gained that the steam generation will be duly monitored. The inclusion of the third boiler has no significant impact either on the procedure for calculation of the emission reductions or on the operational and management structure.

[12] Previously it was assumed that only one natural gas boiler will be replaced.

6 DETERMINATION OPINION

RWE Power AG has commissioned the TÜV NORD JI/CDM Certification Program (CP) to make a determination of the project "Utilization of Sunflower Seeds Husk for Heat and Power Production at JSC 'Pology Oil-Extraction Plant" 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.

In the course of the determination 12 Corrective Action Requests (CARs) and 5 Clarification Requests (CLs) were raised and except for CAR A3 successfully closed. Only CAR A3 could not be closed at this stage. This is because a positive determination opinion is a prerequisite for applying Letter of Approval of all parties involved. Hence the CAR A3 can be closed after receipt of the Letter of Approval.

The review of the project design documentation (PDD Version 3 dated 04.05.2011) 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 ACM006 version 10 demonstrates that the proposed project activity is not a likely baseline scenario.

An analysis as provided by the applied approved CDM methodology ACM006 version 10 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 187,584 CO2e is most likely to be achieved within the crediting period between 2008 and 2012.

The conclusions of this report show, that the JI project, as it was described in the project documentation is in line with all criteria applicable for the determination of JI project activities.

Essen, 16.05.2011

Evgeni Sud,

Determination Team Leader

Lead Assessor TÜV NORD JI/CDM CP

Essen, 16.05.2011

Rainer Winter

Technical Reviewer and Final Approval Person

Head of JI/CDM Certification Program

7 REFERENCES

Table 7-1: Documents provided by the project participant

Reference	Document
/**LOE**/	Letter of Endorsement
/**BL-AS**/	Historical data on the amount of sunflower seed husk for the years 2004-2007 including the information w.r.t. the amount , generated, utilized in biogas generator equipment and amount disposed
/**BL-EL**/	Electricity purchase in the time period between 2004 and 2007
/**DR**/	Proof for internal benchmark of the company applied as discount rate within the NPV analysis.
/**EL-P**/	Power purchase tariffs of the project participant
/**EL-P1**/	Annual report of National Electricity Regulation Commission for the year 2005.
/**EF**/	Standardized emission factors for the Ukrainian electricity grid as determined by the Global Carbon B.V. and verified by TUV SÜD.
/**FS**/	Feasibility Study for the utilization of sunflower seeds husk for heat and power production at closed Joint-Stock Company (CJSC) "Pology Oil-Extraction Plant
/**HD-BL**/	Historical data of the natural gas consumption, steam generation and biogas utilization by the natural gas fired boilers of the Pology oil extraction plant
/**HD-BL1**/	Historical data of the steam generation and biogas utilization by the natural gas fired boilers of the Pology oil extraction plant
/**I-GG**/	Data applied for estimation of the investment costs of the new gas boilers.
/**IoL**/	Information on the average interests on loan in the year 2006 as per the information provided by Ukrainian bank (Ukrsozbank)

/**IOP**/	A detailed elaboration of the operation costs of the project activity.
/**I-3B1**/	The official confirmation letter of related to the investment costs for the installation of the third boiler
/**I-3B2**/	The costs breakdown related to the installation of the third boiler
/**MC**/	Results of the Pology's laboratory measurements including the proof for the moisture content of the sunflower seed husks.
/**MD**/	Management Decision and Proof that benefits from ERU were seriously considered.
/**MD-1**/	Information provided by project participant about chronological steps of implementation of the project activity.
/**M-EL**/	Technical specification of the envisioned electricity meters.
/**M-HW**/	Additional information w.r.t. the metering equipment for the measurements of the quantity of the biomass residues to be combusted in the boiler.
/**MP**/	Monitoring plan, including a list of the metering equipment.
/**MPD**/	Diagram with information about the monitoring system
/**NGP**/	Invoice for natural gas provided by the natural gas supplier
/**NGP1**/	Natural gas tariff as per the official and publicly available information of the main state-owned natural gas supplier in Ukraine
/**LDF**/	Lease contract for using landfill for disposal of the sunflower seed husk
/**PDD**/	Project Design Document *UTILIZATION OF SUNFLOWER SEEDS HUSK FOR HEAT AND POWER PRODUCTION AT JSC 'POLOGY OIL-EXTRACTION PLANT* version 3 dated 04/05/2011

/**RSS**/	Review of the Sunflower Oil Sector Sector Review. Study Supported Under the Swiss/EBRD Technical Co-operation Fund, the UK/EBRD Technical Co-operation Fund for Eastern Europe and Asia and Trade Partners UK
/**TS-BL**/	Technical specification of the boiler equipment (natural gas fired boilers) installed prior to the project activity.
/**TS-BL1**/	Technical expertise carried out by an independent expert that confirms the operation of the natural gas fired boilers till 2013/2014.
/**TS-PA1**/	Technical specification and commercial proposal for sunflower seeds fired boiler already installed within the project activity.
/**TS-PA2**/	Technical specification and commercial proposal for sunflower seeds fired boiler to be installed within the project activity.
/**TSH**/	Technical specification for heat meter (the same meter is intended for the second boiler)
/**SC-P**/	Stakeholder consultation process related documents
/**SC-M**/	Confirmation received from the Ministry about the absence of negative comments out of the stakeholder consultation process.
/**XLS**/	Excel calculation spreadsheet
/**EIA**/	Environmental Impact Assessment

Table 7-2: Background investigation and assessment documents

Reference	Document
/**Meth**/	Approved consolidated baseline and monitoring methodology ACM0006 Version 10. Consolidated methodology electricity for generation from biomass residues"
/**CT**/	"Combined tool to identify the baseline scenario and demonstrate additionality".

Reference	Document
/**MDT**/	Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site (Version 04)
/**EF**/	Standardized emission factors for the Ukrainian electricity grid as determined by the Global Carbon B.V. and verified by TUV SÜD.
/**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
/**H-1**/	Order Nr. 718, dated 10 August 2008. On Approval of the Procedure of Drafting, Review, Approval and Implementation of Projects Aimed at Reduction of Anthropogenic Emissions of Greenhouse Gases.
/**H-2**/	Order Nr. 341, dated 17.07.2006 On approval of the Requirements to the documents in which the volumes of anthropogenic emissions and absorption of greenhouse gases are substantiated for the receiving of the Letter of Endorsement by the owner of the emissions source, where the implementation of the joint introduction project is intended to be.
/**H-3**	Order Nr. 342, dated 17.07.2006 On approval of requirements to preparation of the joint implementation projects.
/**H-4**/	Decree Nr. 206, dated February 22, 2006 Cabinet of Ministers of Ukraine, "On Approval of the Procedure of Drafting, Review, Approval and Implementation of Projects Aimed at Reduction of Anthropogenic Emissions of Greenhouse Gases"
/**H-5**/	Order Nr. 33, dated June 25, 2008 National Environmental Investment Agency of Ukraine, "On approval of Requirements to preparation of the joint implementation projects"
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**/	Expansion Planning for Electrical systems A Guidebook, International Atomic Energy Agency, Vienna, 1984
/**BIA-13**/	Practical experience energy sector, P Konstantin
/**BIA-14**/	Published PDD for Utilization of sunflower seeds husk for steam and power production at the oil extraction plant OJSC 'Kirovogradoliya'
/**BIA-15**/	Study on the economical situation in Ukraine carried out by research centre at the University of Bremen supported by the Federal Government
/**BIA-16**/	IEA Energy Technology Essentials, Situation Analysis of Biomass Gasification and Hurdles to Technology Commercialization 2007
/**AT**/	Tool for the demonstration and assessment of additionality (Version 04)
/**CT**/	"Combined tool to identify the baseline scenario and demonstrate additionality".
/**I-GB**/	Commercial proposal of the technology supplier for new natural gas boilers
/**MDT**/	Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site (Version 04)
/**HCR**/	Order N 342 by Ministry of Environmental Protection of Ukraine (17.07.2006) On approval of requirements to preparation of the joint implementation

Reference	Document
	projects
/**TME**/	"Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site". version 4
/**VVM**/	IETA, PCF Validation and Verification Manual (V. 4)

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.	Tolga Acar	RWE Power AG, Climate Protection
/**IM01**/	V	☐ Mr. ☒ Ms.	Anna Tkachuk	RWE Power AG, Climate

Reference	MoI[1]		Name	Organisation / Function
				Protection
/**IM01**/	V	☒ Mr. ☐ Ms.	Valeriy Ostroushko	CJSC Pology Oil Extraction Plant

[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.**
General Description of Project Activity				
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.*				
Which Parties and project Participants are participating in the project?	Project participant involved in the project activity is the JSC Pology Oil Extraction Plant and RWE Power AG.	PDD	OK	OK
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	CAR A3	
Approval *The written approval of the parties involved is a*				

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
mandatory requirement				
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.		CAR A3	
Are the approvals issued from orgainsations listed as DNAs on the UNFCCC JI website? *Indicate the means of determination employed to assess the authenticity*	Please refer to the comment under A.1.2.		CAR A3	
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.		CAR A3	
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.		CAR A3	
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.		CAR A3	
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*	Please refer to the comment under A.1.2.		CAR A3	

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
Kyoto Protocol. *Describe the means of determination employed to draw this conclusion.*				
Are any other project participants approved but not listed in the PDD?	Please refer to the comment under A.1.2.		CAR A3	
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.*				
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	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
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
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.*				
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*	The description of the pre-project steam generation equipment including the pilot plant for biogas degasification and envisioned technical specification of the project activity have been accurately, completely provided in the PDD.	PDD /TS-BL/ /TS-BL1/	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
understanding 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.*	The technical details could be supported by evidences.	/TS-PA1/ /TS-PA2/		
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	Within the on-site-visit determination team has observed the natural gas fired boilers. Also the construction works for the biomass boiler equipment could be observed. The technical specification of both pre-project equipment and could be verified based provided evidences/TS-BL/TS-BL1/. Based on the provided technical documentation for envisione equipment/TS-PA1//TS-PA2/ a sufficient confidence could be gained that the technical characteristics of the project activity will be inline with those indicated in the PDD.	PDD /TS-BL/ /TS-BL1/ /TS-PA1/ /TS-PA2/	OK	OK
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 and power for own needs (esp. for the production facilities) will be generated through the utilization of the sunflower seed husk. The pre-project situation envisaged the generation of heat through natural gas fired boiler equipment and power purchase from the grid. The heat generation technology both of the project activity and of the pre-project situation is clearly and accurately	PDD /TS-BL/ /TS-BL1/ /TS-PA1/ /TS-PA2/	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
	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.	/TSD/		
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 biomass based heat generation technology. Co-firing of fossil fuels is not needed. The project activity is expected to meet international standards for environmental quality and safety. Commonly used heat generation technologies in Ukraine are fossil fuel based and/or do not make use of a renewable energy sources. For this reason, the project activity would result in a less carbon intensive heat generation in Ukraine. 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.	PDD /BIA-4/ /BIA-5/ /BIA-6/ /BIA-7/ /BIA-8/ /BIA-9/ /BIA-10/ /BIA-11/ /RSS/	OK	OK

Checklist Item (incl. guidance for the determination team)	**Determination** Team **Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
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 the quality standard applied by the manufacturer of the applied equipment. The project activity intends to incorporate the latest/state-of-the-art biomass based combined heat and power 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 biomass utilization. For this reason, the project activity would result in a less carbon intensive heat and electricity generation in Ukraine.	PDD /BIA-4/ /BIA-5/ /BIA-6/ /BIA-7/ /BIA-8/ /BIA-9/ /BIA-10/ /BIA-11/	OK	OK
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 will be provided by the project owner and manufacturers before the power plant become operational. This issue has been discussed during the site visit. Training and maintenance needs will be continuously monitored by the project owner. An adequate confidence has been gained proving that sufficient efforts will be made for this sake.	PDD, I /TS-PA1/ /TS-PA2/	OK	OK
Small scale project activity *It is assessed whether the project qualifies as small-scale JI project activity*				
Does the project qualify as a small scale CDM project	Not applicable, because the project activity is a large scale			OK

Checklist Item (incl. guidance for the determination team)	**Determination** Team **Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
activity as defined in decision 4 / CMP.1 annex II? *Describe the steps taken to validate this issue.*	project.			
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
Is the small scale project activity not a debundled component of a larger project activity? *Describe the steps taken to validate this issue. Pl refer to the Compendium of guidance on debundling (EB 36, Annex 27).*	Not applicable, because the project activity is a large scale project.			OK
Project Baseline, Additionality and Monitoring Plan				
Application of the Methodology				
What kind of methodology has been used? .	Name: ACM0006 Version 10 "Consolidated methodology for electricity generation from biomass residues" Version: 10 Type: ☒ CDM Approved Methodology –latest version	PDD, I /Meth//	~~CAR B1~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
	☐ CDM Approved Methodology –older version ☐ Combination of Approved Methodology ☐ Project specific Methodology			
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 /Meth/ /H-1/ /H-2/ /H-3/ /H-4/ /H-5/	OK	OK
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 /Meth/	~~CAR B1~~	OK
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.	PDD, I /Meth/	~~CAR B1~~ ~~CL B2~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
			~~CAR B3~~ ~~CAR B4~~ ~~CAR B5~~	
Does the baseline methodology specify data sources and assumptions?	The methodology specifies procedures for identifying the baseline scenario. The required procedure has been followed by project participant. Furthermore the methodology contains specific requirements for the 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.	PDD, I /Meth/	~~CAR B2~~	OK
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 a CDM approved methodology. Thus it can be concluded that baseline methodology sufficiently describes the underlying rationale for the algorithm/formulae used to determine baseline emissions.	PDD, I /Meth/	OK	OK
Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?	Please refer to the comments above.	PDD /Meth/	OK	OK
Does the baseline methodology specify the spatial	Please refer to the comments above.	PDD, I	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
level of data (local, regional, national)?		/Meth/		
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 team was able to confirm that the applied CDM methodology is identical with the version available on the UNFCCC website.	PDD, I /Meth/	OK	OK
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 /Meth/	OK	OK
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 /or limitations</u> mentioned in all sections of the approved methodology selected.*	Yes, please refer to B.1.5. and B.1.10	PDD, I /Meth/	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project*				
Are the project's spatial boundaries (geographical) clearly defined? *Provide information on how the determination 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 steam generation equipment and all the power plants connected physically to the baseline Grid (i.e. Ukraine). The boundary encompasses the natural gas fired boilers for heat generation that will be displaced by biomass boilers. As the biomass will be not transported by trucks the CO_2-emission sources from off-site transportation have been correctly excluded. The sunflower seed husk will be directly combusted in the boilers without preparation. Co-firing of other (fossil) fuels is not required. The CO_2-emissions due to the electricity consumption of the project activity will be determined and taken into account within the calculation of emission reductions. Furthermore project participant decided to include in the project boundary CH_4 emissions from the treatment of biomass residues in the baseline scenario and from combustion of biomass residues in the biomass boilers. 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.	PDD, I, /Meth/ /BL-AS/ /LDF/	~~CL B2~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
	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.			
Are all sources and GHGs included in the project boundary as required in the applied methodology? *Provide information on how the determination 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/power 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, /Meth/ /TS-PA1/ /TS-PA2/	~~CLB2~~	OK
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, /Meth/ /BL-AS/ /LDF/	~~CLB2~~	OK
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.*				

Checklist (incl. guidance for the determination team) **Item**	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
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: - H1:proposed project activity not undertaken as JI project and - H6/H4: continuation of current practise (the generation of heat in existing natural gas fired boilers with a small amount of biogas extracted from the seed husks). The realistic and credible alternatives identified for biomass residues are: B2: the sunflower seeds husk is dumped of left to decay under clearly anaerobic conditions and B4: the sunflower seeds husk is used for heat and/or electricity generation at the project site. For a detailed assessment please refer to the section 5.2.3 of this report.	PDD, I	~~CAR B3~~ ~~CAR B4~~ ~~CAR B5~~	OK
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 /Meth/	~~CAR B3~~ ~~CAR B4~~ ~~CAR~~	~~OK~~

Checklist (incl. guidance for the determination team) **Item**	**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 and power generation and treatment of the biomass residues. It was concluded that all plausible alternatives have been appropriately identified. The exclusion of certain alternatives from consideration has been appropriately justified. For details pl. refer to the analysis in section 5.2.3.		~~B5~~	
What has been identified as the baseline scenario? *Describe the chosen BL scenario*	H6/H4 – continuation of current practise (the generation of heat in existing natural gas fired boilers with a small amount of biogas extracted from the seed husks) and B2 the sunflower seeds husk is dumped of left to decay under clearly anaerobic conditions	PDD, I /Meth /XLS/	~~CAR B3~~ ~~CAR B4~~ ~~CAR B5~~	OK
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:	PDD, I /Meth/	~~CAR B3~~ ~~CAR B4~~ ~~CAR B5~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
	CAR B3, CAR B4 and CAR B5 have been raised in this context and successfully closed.			
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	~~CAR B3~~ ~~CAR B4~~ ~~CAR B5~~	OK
Has the baseline scenario been determined using conservative assumptions where possible? *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.*	☐ 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 above. ☒ The following CARs / CLs have been issued because assumptions used in the baseline determination have been assessed to be not conservative CAR B3, CAR B4 and CAR B5 have been raised in this context and successfully closed.	PDD, I /TS-BL/ /TS-BL1/ /TS-PA1/ /TS-PA2/	~~CAR B3~~ ~~CAR B4~~ ~~CAR B5~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
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 the determination team. Furthermore a background investigation of legal aspects regarding the treatment of the biomass residues has been carried out. It could be concluded that the national and/or sectoral policies, macro-economic trends and political aspirations have been taken into account within the elaboration of the baseline scenario. 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/	~~CAR B5~~	OK
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 the different sources of information. These sources represent 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 sources could be verified. The same is valid for documents provided by project participant. All required documentation has been provided and its correctness could be verified.	PDD, I /BIA-1/ /BIA-2/ /BIA-3/ /BIA-6/ /BIA-8/ /BIA-9/ /BIA-11/	OK	OK
Additionality Determination *The assessment of additionality will be validated with*				

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
focus on whether the project itself is not a likely baseline scenario.				
Methodology				
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.*	Yes, the PP has justified the additionality by means of applying "Combined tool to identify the baseline scenario and demonstrate additionality"/CT/. This is in line with methodology (ACM0006) In accordance with the Combined Tool/CT/ 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 5.2.4.	PDD, I /CT/ /Meth/	~~CAR B1~~	OK
Consideration of JI before project start				
Is the project starting date reported in accordance with the Guidelines for completing JI PDD[13]? *Describe the steps taken to validate this issue.*	The project start date 19.05.2006 is consistent with the date when the contract for the supply of first SSH boiler was signed. In addition, the PP has provided the different stages of the project implementation in the chronological order. The date of the investment decision (19.10.2005) could be verified based on the provided Minutes of meeting/MD/. As evident from the minutes of meeting/MD/ the benefits from the possible JI registration were seriously considered at the time of the	PDD, I, /MD/ /MD-1/ /XLS/	OK	OK

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

Checklist (incl. guidance for the determination team) **Item**	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
	decision making. The same could be evidenced by the minutes of meetings, which took place before the investment decision was made. The chronological description could be confirmed within the interviews with the management of the plant during the on-site visit.			
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.*	Incentive from the JI was seriously considered at the time of the decision making. Based on provided evidences/MD//MD-1//XLS/ and outcome of the financial analysis it could be concluded that without benefits out of JI the project would be not financial viable. The management decided to move forward with the implementation of the project activity taking into account the benefits out of JI.	PDD, I, /MD/ /MD-1/ /XLS/	OK	OK
How and when was the decision to proceed with the project taken? *Describe the steps taken to validate the starting date.*	Decision to proceed has been done by the management of the Pology Oil exctraction plant in 2005. Corresponding evidences have been provided to the determination team/MD//MD-1/. Please refer to the comment above.	PDD, I, MD/ /MD-1/ /XLS/	OK	OK
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.*	The project start date 19.05.2006 is consistent with the date when the contract for the supply of first SSH boiler was signed/TS-PA/.	PDD, I, /MM/ /MD-1/ /TS-PA2/	OK	OK

Checklist Item (incl. guidance for the determination team)	**Determination** Team **Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
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 have been checked and it could the corresponding approvals of the authorized persons could be verified.	PDD, I, /MM/ /MD-1/	OK	OK
How was the JI involved in the decision making process? *Describe the steps taken to validate this issue.*	A financial analysis has been carried out. It was concluded that without JI the project would be not economically attractive for the project participant. Nevertheless PP has decided to implement the considered project activity.	PDD, I, /MM/ /MD-1/ /MM/	OK	OK
Can the JI involvement in the decision assessed as serious? *Describe whether or not the project would have been undertaken without the incentive of the JI.*	Yes, please refer to the comments above.	PDD, I, /MD-1/ /MM/	OK	OK
Identification of alternatives Step 1 (in case of SSC projects pl. skip steps 1 and 2)				
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 the determination team has investigated all possible alternatives for heat and power generation. By doing this the determination team has considered historical data of the heat generation/BL-AS/, biomass utilization/HD-BL//LDF/, power purchase/BL-EL/ as well as the remaining lifetime/TS-BL//TS-BL1/ of the equipment. Further plausible alternatives as required by methodology have been examined in this context. It could be concluded that project participant has taken into	PDD, I, /TS-PA1/ /TS-PA2/ /TS-BL/ /TS-BL1/ /LDF/	~~CAR B3~~ ~~CAR B4~~ ~~CAR B5~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
	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.	/HD-BL/ /HD-BL1/ /BL-AS/ /BL-EL/		
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	OK	OK
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/TS-BL//TS-BL1/ 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/SC-M/ and found consistent with the information provided in the PDD. Also the relevant regulation of the sunflower seed husk storage and disposal has been taken into account/LDS/. An analysis of the current practice for the sunflower seed husk storage has been carried out and the identified alternatives are in line with methodology requirements. For details please refer to the section 5.2.3 of the report.	PDD, I, /TS-BL/ /TS-BL1/ /LDF/ /HD-BL/ /HD-BL1/ /BL-AS/ /BL-EL/	~~CAR B3~~ ~~CAR B4~~ ~~CAR B5~~	OK
Investment analysis Step 2				

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
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..				
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.*	The investment comparison analysis applied for the identification of the baseline is in line with provisions of the Combined Tool/CT/. The selected **financial indicator** – the Net Present Value (NPV) – has been identified in a line with the provisions of the Combined Tool/CT/. Within the investment analysis the NPV of both scenarios has been calculated and compared. It could be demonstrated that the costs for the natural gas based heat generation and power purchase is lower than the costs of the project activity. The applied values within the financial analysis have been based on the assumptions made at the time of the management decision 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 NPV been assessed as correct. **Sensitivity analysis** The included sensitivity analysis shows that the conclusion regarding the financial/economic attractiveness is robust to	PDD, I, /TS-BL/ /TS-BL1/ /LDF/ /XLS/	~~CAR B3~~ ~~CAR B4~~ ~~CAR B5~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
	variations (+/- 10%) in the critical assumptions. For details please refer to the section 5.2.3 of the report.			
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 verified.	PDD, I, /XLS/	OK	OK
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 biomass boilers is in line with the technical specification. The time for replacement of the existing gas boilers has been selected in accordance with technical specification and remaining technical lifetime of the boilers. An appropriate fair value for gas boilers in the baseline scenario has been assumed.	PDD, I, /TS-PA/ /TS-PA1/	OK	OK
Are depreciation and other non-cash related items added back to net profits for the purpose to calculate the financial indicator?	The depreciation within the investment analysis is relevant for determination for residual value for the gas boilers and gas generator (UAH). A linear depreciation method has been used and assessed as appropriate.	PDD, I, /XLS/	OK	OK
Is taxation excluded in the investment analysis or is the benchmark intended for post tax comparisons?	The taxation has been consistently excluded within analysis of all considered alternatives.	PDD, I, /XLS/	OK	OK
Were the input values used in the investment analysis valid and applicable at the time of the investment	Yes, The applied values within the financial analysis have been based on the assumptions made at the time of the	PDD, I,	~~CAR B3~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
decision?	management decision and deemed to be appropriate. For details please refer to the Annex 3 – assessment of the financial parameter.	/XLS/ /I-GG/ /IoL/ /IOP/ /LDF/ /TS-PA1/ /TS-PA2/	~~CAR B4~~ ~~CAR B5~~	
In case of project IRR: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR?	N/A because NPV was selected as a financial parameter.	PDD, I,	OK	OK
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 cash outflow?	N/A because NPV was selected as a financial parameter.	PDD, I,	OK	OK
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 because NPV was selected as a financial parameter.	PDD, I,	OK	OK
Is the benchmark value suitable for the project activity?	Please refer to B.4.4.1.	PDD, I,	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
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
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
Barrier analysis Step 3 or SSC additionality assessment				
Are there any barriers given which have a clear and definable impact on the profitability of the project?	All indicated barriers deemed to be convincing and serious obstacles for the implementation of the project activity. However no barrier could be assessed as sufficient to prevent the project implementation. The baseline and the additionality have been justified based on the analysis of the financial viability of the considered alternatives.	PDD, I	OK	OK
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
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

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
Common practice analysis Step 4 (in case of SSC projects skip this step)				
Is the defined region for the common practice analysis appropriate for the technology/industry type?	Within the common practice analysis the project participant has properly defined the Ukraine as the relevant geographical area. Afterwards the PP has identified similar activities in the defined geographical area. The analysis of the similar activities – installation of seed husk based cogeneration equipment has been done in a complete and detailed manner. The data source where this information has been taken from is the Review of the Sunflower Oil Sector/RSS/. The data source has been appropriately referenced in the PDD. The references and data sources have been verified. According to the provided data source 10 out of the 17 large oil plants have installed husk boilers for heat generation. However, the combined heat and power generation has not diffused in the sunflower oil sector in Ukraine. Taking this into account PP has appropriately concluded that sunflower seed husk based cogeneration cannot be considered as the common practice in Ukraine.	PDD, I, /RSS/ /BIA-1/ /BIA-2/ /BIA-3/ /BIA-4/ /BIA-5/ /BIA-6/ /BIA-7/ /BIA-8/ /BIA-9/ /BIA-10/ /BIA-11/	OK	OK
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, /RSS/ /BIA-1/	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
		/BIA-2/ /BIA-3/ /BIA-4/		
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 /RSS/	OK	OK
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.*				
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 estimation of the emission reduction has been carried out and results are presented in the section E of the PDD. The calculations as presented in this section follow the	PDD, I /BL-AS/ /BL-EL/ HD-BL/ /HD-BL1/	~~CAR D4~~ ~~CAR D5~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
	algorithm developed in the monitoring plan. The determination team has reproduced the calculation of the forecasted emission reductions by applying the formulae for the project, baseline and leakage emissions as described in the PDD and the amount of emission reductions could be reproduced. The assumptions made for the ex-ante calculation are in line with the financial analysis. The estimation takes also into account different stages of the project implementation. The amount of the natural gas and the biomass has been made by taking into account the capacity of the biomass 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. For details please refer to the assessment in the section 5.2.7	/XLS/ /MC/		
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*	The inclusion of the CH_4 emissions due to anaerobic decay of biomass residues and from the combustion of the biomass residues can be decided by the PP. The decision to include these sources is in line with the methodology. The emissions due to anaerobic decay of biomass residues have been calculated in accordance with "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" (Version 04). For details please refer to the assessment in the section	PDD, I, /Meth/ /XLS/ /TME/	~~CAR D6~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
choices.	5.2.7			
Have conservative assumptions been used when calculating the project emissions? *Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.*	The input values are consistent with the historical figures and take into account the planed energy demand of the plant. In this context it is important to mention that the project participant has introduced a detailed monitoring system for the company's internal purposes. The information collected and archived before the implementation of the project activity could be used for the estimation of emission reductions. The corresponding evidences have been verified and the elaboration of the assumed values could be assessed as appropriate. For details please refer to the assessment in the section 5.2.7	PDD, I /BL-AS/ /BL-EL/ HD-BL/ /HD-BL1/ /XLS/ /MC/	~~CAR D6~~	OK
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 taken as 21 tCO_2/tCH_4 is in line with IPCCC values All relevant parameters to be applied within the "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" and that will remain fixed have been appropriately justified. For details please refer to the assessment in the section 5.2.5 and 5.2.7.	PDD, I /IPCCC/ /BIA-1/ /BIA-2/	~~CAR D6~~	OK
Are all ex-ante calculation values for monitoring parameters reasonable?	☒ All "Values of data to be applied for the purpose of calculating expected emissions reductions" are considered to	PDD, I	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
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	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, baseline and leakage emissions. For the values which remain fixed throughout a crediting period a sufficient substantiation of the conservative value has been provided.			
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 the replacement of the natural gas based heat generation. 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
Monitoring of Emission Reductions *It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.*				

Checklist (incl. guidance for the determination team) **Item**	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
Are all monitoring parameters required by the applied methodology contained in the monitoring plan? *Assess whether all applicable parameters listed in the 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.*	The project involves utilization of sunflower seed husk for heat and power generation. In the absence of project activity the heat would be generated by the natural gas boilers and the power would be supplied from the grid. According to this, the developed monitoring includes for the following sources. **Baseline emissions**: Emission reductions due to displacement of electricity Emission reductions due to displacement of heat Emissions due to anaerobic decay of biomass residues **Project emissions:** CH_4 emissions from the combustion of biomass residues	PDD, I	~~CAR D1~~ ~~CAR D2~~	OK
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.* *Label (name of the data / parameter)* *data unit* *description* *source of data* *measurement equipment / method / procedure*	Yes, all parameters relevant parameters have been included in the monitoring plan. The monitoring procedures are in line with the corresponding methodology requirements. The technical specification of the measurement equipment including the accuracy class, the calibration procedures for the electricity meters/M-EL/ heat meters/TSH/ and weight meters used for the measurements of the biomass/M-HW/ have been provided and the appropriateness could be verified. Diagram with information about the monitoring system including a list of the metering equipment have been elaborated and provided/MP//MPD/.	PDD, I /BL-AS/ /HD-BL/ /HD-BL1/ /MC/ /M-HW/ /MP/ /M-H/ /MPD/	~~CAR D1~~ ~~CAR D2~~ ~~CAR D3~~ ~~CAR D4~~ ~~CAR D5~~ ~~CAR~~	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination** (Means and results of assessment) **Team** **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
monitoring frequency *QA/QC procedures* *are appropriately described and in compliance with the requirements of the methodology*	For details please refer to the section 5.2.5 of this report.	/TSH/	~~D6~~	
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 the PP has provided a detailed technical specification of the envisioned metering equipment. It could be observed that PP 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.	PDD, I	OK	OK
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 a functioning monitoring system for its internal use. The specific provisions of the monitoring paln can be incorporated in the existing system.	PDD, I	OK	OK
Are procedures identified for data management? *Check whether appropriate provisions are considered for data management including responsibilities, what*	Yes, the project participant has elaborated procedures for the GHG data management and processing within the particular stages of the monitoring including the double check	PDD, I	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
records to keep, storage area of records and how to process 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.*	procedures to ensure high quality project management.			
Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*				
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".*	The project start date 19.05.2006 is consistent with the date when the contract for the supply of first SSH boiler was signed. In addition, the PP has provided the different stages of the project implementation in the chronological order. The date of the investment decision (19.10.2005) could be verified based on the provided Minutes of meeting/MD/. As evident from the minutes of meeting/MD/ the benefits from the possible JI registration were seriously considered at the time of the decision making. The same could be evidenced by the minutes of meetings, which took place before the investment decision was made. The chronological description could be confirmed within the interviews with the management of the plant during the on-site visit.	PDD /MD/ /MD-1/ /FS/	OK	OK

Checklist Item (incl. guidance for the determination team)	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
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 verified and the value could be verified.	PDD /TS-PA/ /TS-PA1/	OK	OK
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
Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the AIE.*				
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 /EIA /	OK	OK
In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applcable duly approved?	The project documentation contains an analysis of environmental impacts. An EIA is required by the host country regulation. An EIA was carried out in accordance with	PDD /EIA/	OK	OK

Checklist (incl. guidance for the determination team) **Item**	**Determination Team** (Means and results of assessment) **Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
Check the EIA and its approval, if applicable.	the requirement of host country. The EIA was carried out by an independent and authorized expert company/EIA/*. It could be verified that all relevant environmental impacts were identified within the analysis. Necessary measures to minimise the environmental impacts are as per EIA and operating approval are taken by the operator of the plant.			
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 /EIA/	OK	OK
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 /EIA/	OK	OK
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.*				

Checklist (incl. guidance for the determination team) **Item**	**Determination Team Comments** (Means and results of assessment)	**Ref.**	**Draft Concl.**	**Final Concl.**
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 verified.	PDD, I /SC/	OK	OK
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;* *(b) The summary of the comments received as provided in the PDD is complete;* *(c) The project participants have taken due account of*	Yes, Please refer to the comment above	PDD, I	OK	OK

Checklist (incl. guidance for the determination team)	**Item**	**Determination** (Means and results of assessment)	**Team**	**Comments**	**Ref.**	**Draft Concl.**	**Final Concl.**
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 detailed analysis carried out 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	AIE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
Installed capacity (Steam turbine)	1.75	MW	Feasibility Study	/FS/	☒	☒	The capacity is as per the feasibility study. The documents have been checked and the value applied in the IRR calculation could be verified.
Total Investment cost for husk boiler and steam turbine	118,530,254	UAH	Feasibility Study	/FS/ /RSS/ /I-3b1/ /I-3b2/	☒	☒	The total investment costs for the project activity consists of the investment cost for the three husk boilers and one steam turbine. The investment costs of the first two husk boilers and the steam turbine within the different steps of the project implementation have been estimated within the feasibility study. It could be verified that the applied investment costs are in line with the information provided in the feasibility study. The plausibility of the applied values could be verified based on the provided commercial contract /TS-PA2/ for husk boilers. Further information of similar project activities in Ukraine has been reviewed and the plausibility of the assumed investment cost could be

							verified/RSS/. In the course of the determination the performance of the installed two biomass boilers turned out to be insufficient. Due to this, the PP decided to include one additional third boiler. The investment costs of the third boiler have been assumed based on the boiler costs elaborated in the feasibility study. In addition, the PP has provided (a) the official confirmation letter of related to the investment costs for the installation of the third boiler/I-3b1/ and (2) the costs breakdown related to the installation of the third boiler/I-3B2/. It could be verified that the assumed value is in line with provided evidences.
Natural gas consumption	19,106	1000m^3/year	Feasibility study Historical data	/FS/ /HD-BL/	☒	☒	The natural gas consumption in the baseline scenario has been calculated based on the quantity of heat (Qy), and the efficiency of natural gas fired boilers. The Q_y, has been determined according to equation (26) as per methodology taking into account the historical values of the average biogas based steam generation. This is conservative and in line with the estimation of the emissions reductions. The applied value Q_y is also plausible as compared to the historical values and the forecasted minor increase of the steam demand due to the production plans of the plant. The energy efficiency of the boiler that would be used in the absence of the project activity to generate heat has been determined as highest efficiency value (93.4%) among the three fossil fuel fired boilers that would be used in the absence of the project activity/TS-BL1//TS-BL/.

							According to the applied technical standards the efficiency of the steam boilers of this type and of the corresponding the steam output (between 6.5t/h and 75t/h) should be 93%. The identified value is in line with technical standards for this boiler type. For this reason the identified value is considered to be appropriately identified.
Power purchase in the baseline scenario	In the years 1-4:0 year 5: 10,000 Year 6-20: 13,031	MWh/year	Feasibility study Historical data	/FS/ /HD-BL/	☒	☒	The required amount of electricity that would be purchased otherwise in the baseline scenario has been assumed based on the 1.75MW capacity of the Steam Turbine and the plant load factor of 85%. The assumed plant load factor of 85% has been assessed as plausible and the applied value of power generation as appropriate. The applied value is in line with the planned installation of the steam turbine in the year 2012.
Cost for disposal sun flower seed husk	602,300	UAH/year	Feasibility study lease contract for using landfill for disposal of the sunflower seed husk	/FS/ /LDF/	☒	☒	The conservativeness of the assumed values could be verified based on the provided lease contract for using landfill for disposal of the sunflower seed husk and estimation of the fuel costs for transportation via diesel trucks as per the feasibility study. The value of 602,300 UAH/year was assessed as appropriate because assumed value is higher than the costs as per the contract and estimation of the transportation cost. This makes the baseline scenario less attractive and hence is conservative.
Investment cost for the new gas boilers	21,203,114	UAH	Feasibility study Commercial proposal for new gas boilers	/XLS/ /I-GB/ /I-GG/	☒	☒	The investment costs for the new natural gas boiler (10,601,557 UAH) are in line with the estimates of the project participant. The estimates have been based on the costs for the already installed natural gas boilers of the same type./I-GG/. Furthermore, the

							plausibility of the value could be verified based on the costs for new natural gas boilers of the similar type as per commercial proposal of the technology supplier/I-GB/. Unlike the published PDD the project activity involves installation of an additional sunflower seed husk boiler. Due to the inclusion of the additional boiler under the project scenario an additional natural gas boiler was added in the baseline scenario. This was done to ensure the consistency between the project and baseline scenario and thus was assessed as appropriate.
Investment costs for gas generators	1,514,508	UAH	Proof for investment costs of the new gas boilers.	/FS/ /-GG/	☒	☒	The assumed investment cost for gas generators have been estimated based on the historical costs for the construction of the already installed equipment. The historical data/I-GG/ has been provided and the value could be verified. As noted in the section 5.2.3 of the report the inclusion of the costs of the gas generators has been assessed as conservative. This is because the use of the gas generators in the baseline scenario could be duly excluded. The same has been reviewed by the determination team and assessed as appropriate. However for conservative purpose PP has assumed that in the baseline scenario the heat generation would have the same structure as in the pre-project scenario. In other words the steam generation in the baseline scenario would be mainly generated by the natural gas fired boilers and partly by biogas degasification equipment. The determination team agreed that continuation of the pre-project situation best reflects the most

							plausible scenario that would occur otherwise and is the most conservative approach. For further detail please refer to the detailed assessment in section 5.2.3.
Date of replacement	2015	year	Technical expertise	/TS-BL/ /TS-BL1/	☒	☒	The date of replacement is in line with technical specification of the installed natural gas fired boilers. In addition a technical expertise by an independent expert has been carried out. As per the expertise the natural gas fired boilers can be operated till 2014. For this reason assuming the replacement in 2015 has been assessed as reasonable.
Residual value natural gas boiler and gas generator	7,951,168	UAH	Feasibility study Commercial proposal for new gas boilers	/FS/ /I-GB/ /I-GG/	☒	☒	The residual value of the natural gas boiler and gas generators has been assumed based on the investment costs of the new equipment. The fair value is consistent with the residual value based on the linear depreciation. This assumption deemed to be plausible.
Discount rate	20	%	Feasibility study	/I-DR/ /DR/	☒	☒	The applied discount rate reflects the opportunity costs of the project participant who can choose to invest either in the considered project activity or in other projects. This is in line with the definition of the discount rate. The applied value corresponds to the internal hurdle rate of the PP. In order to further substantiate the applied discount rate PP has provided an opinion of the independent financial expert. According to the provided information the NPV discount rates in Ukraine at the time of the management decision have been estimated to be in a range between 17 - 23%. Taking this into account the assumed value of 20% has been assessed as acceptable.

Natural gas price	361	UAH/1000m3	Natural Gas Contract Natural gas tariff as per the official and publicly available information of the main state-owned natural gas supplier in Ukraine	/BIA-15/ /BIA-6/ /NGP/ /NGP1/	☒	☒	The applied natural gas tariff is based on the actual tariff for the industrial enterprises in 2005 and the assumed escalation rate equal to the average inflation rate in Ukraine in 2001-2005. In doing so the PP has taken the natural gas price that was valid at the time of the management decision (2005). The price of natural gas of 361.2 UAH/1000 m^3 in 2005 is based on natural gas tariff as per the official and publicly available information of the main state-owned natural gas supplier in Ukraine /NGP1/ for this year. The provided evidence has been checked and the value could be verified. The applied value is also in line with the natural gas tariff as per the provided a natural gas invoices from company’s gas supplier /NGP/. The plausibility of the natural gas tariff can be supported by the Study on the economical situation in Ukraine carried out by research centre at the University of Bremen /BIA-15/. According to the information given by the reputed data sources the price for industry consumers is linked to the natural gas import price. In the import price was between 50 and 95 USD per 1000m^3 in 2005 and 2006 accordingly. This corresponds approximately to 260 and 495 UAH per 1000m^3. The applied natural gas tariff is in line with the information provided /BIA-15//BIA-6/. The escalation rate was assumed based on the average inflation rate in Ukraine 7.26%. The applied escalation is in line with the escalation assumed

							within the JI and CDM projects, which is usually between 2 and 5%. Bearing in mind the negotiations (disputes) between Russian and Ukrainian gas supply companies that started in 2005 to assume a higher escalation has been assessed as a plausible.
Electricity tariff	233.3	UAH/MWh	Project Design Document /XLS/ Annual report of National Electricity Regulation Commission for the year 2005	/PDD/ /XLS/ /BIA-10/ /BIA-5/ /EI-P/ /EI-P1/	☒	☒	The price of electricity of 233.3 UAH/MWh is based on the data of annual report of National Electricity Regulation Commission for the year 2005/EL-P1/. The applied value was crosschecked against the data given in the annual report/EL-P1/ and found consistent. The applied price for the electricity also corresponds to the power purchase tariffs of the project participant/EL-P/ and is in line with time period of the management decision (2005). The same could be further supported by the information provided by the independent data sources. In particular, as per the Energy Policy Review provided by IEA for 2006/BIA-10/ the average industrial tariffs were approx. 178 UAH/MWh. This value also corresponds to the information from other publicly available data sources like Centre for Social and Economic Research/BIA-5 (198 UAH/MWh). Though the applied tariff is higher than the average industrial tariff as indicated by the third party source it was assessed as appropriate. This is mainly because a higher tariff makes the baseline scenario less attractive and hence is conservative. The escalation rate was assumed based on the average inflation rate in Ukraine 7.26%. The applied escalation is in line with the escalation assumed within the JI and CDM projects, which is usually between 2 and 5%. It is also in line with assumed

							escalation of the natural gas tariff and the information about the increasing electricity tariffs as provided by different reputed data sources/BIA—5//BIA-10/.
Project financing (interest on loan and repayment)	As per XLS	UAH/year	Feasibility study /XLS/	/FS/ /XLS/ /IoL/	☒	☒	The project financing including interest on loan and repayment is in line with the assumption made within the feasibility study/FS/. The rate of the interest on loan (18%) has been further substantiated by the information on the average interests on loan/IoL/ as provided by the Ukrainian banks. The structure of the repayment is in line with assumption made within the feasibility study.
Operation costs baseline scenario	1,583,165	UAH/year	Feasibility Study	/FS/ /IOP/	☒	☒	The applied value is in line with the elaborated detailed analysis of the operation cost/IOP/. The costs have been elaborated taking into account a detailed analysis of: • Water for steam generation • Salary for the personnel • Material costs • Other costs (maintenance, etc.) The estimation of the operation costs deemed to be duly elaborated.
Power consumption (project activity and baseline scenario)	and as per /XLS/	UAH/year	Feasibility Study	/FS/ /EL-H/ /TS-BL/ /TS-PA/ /TS-PA1/	☒	☒	The power costs for the operation of the husk boilers have been elaborated based on the estimated power consumption and the power tariffs. The power consumption has been estimated based on the information as provided by the technology supplier. The PP has elaborated power consumption of the

							husk boilers based on the technical specification and the capacity of the electrical equipment installed at the husk boilers. The electrical equipment installed at the husk boilers is higher that that of the natural gas fired boilers. This could be evidenced and the plausibility of the assumed power consumption could be verified[EL-H/TS-BL1//TS-PA//FS]
Operation costs project activity	3,996,063	UAH/year	Feasibility Study	/FS/ /IOP/	☒	☒	The applied value is in line with the elaborated detailed analysis of the operation cost[/IOP/]. The costs have been elaborated taking into account a detailed analysis of: • Water for steam generation • Salary for the personnel • Material costs • Other costs (maintenance, etc.) The estimation of the operation costs deemed to be duly elaborated and the value plausible.
Project Lifetime	20	year	Technical specification	/FS/ /TS-PA1/	☒	☒	The lifetime is in line with the operational lifetime of the project equipment. Lifetime of the sunflower seed husk boiler as applied within the financial analysis is as per the technical specification and feasibility study. The documents have been checked and the value applied in the IRR calculation 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 determination 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 determination team are presented below:

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

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