DETERMINATION REPORT

Wood waste to energy project at Sawmill-25 (Arkhangelsk) in Russian Federation

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DETERMINATION REPORT

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Client: CAMCO International	Client ref.: Arthur Houston

Project Name: Wood waste to energy project at Sawmill-25 (Arkhangelsk)
Country: Russian Federation
GHG reducing Measure/Technology: Fuel switch from fossil fuels to biomass
ER estimate: 215 362 tonnes CO_{2e} for the 5 years crediting period

Size
☒ Large Scale
☐ Small Scale
Determination Phases:
☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Determination Status
☒ Corrective Actions Requested
☒ Clarifications Requested
☒ Full Approval and submission for registration
☐ Rejected

In summary, it is DNV's opinion that, with the exception of the formal approval of the project activity by the focal point of Russia, the project Wood waste to energy project at Sawmill-25 (Arkhangelsk)Wood waste to energy project at Sawmill-25 (Arkhangelsk) meets all relevant UNFCCC requirements for the JI and all relevant host country criteria.

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Report title:
Wood waste to energy project at Sawmill-25 (Arkhangelsk) in Russian Federation

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Abbreviations

BWW	Bark and wood waste
CAR	Corrective Action Request
CEF	Carbon Emission Factor
CH_4	Methane
CHP	Combined heat power
CL	Clarification request
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
DNV	Det Norske Veritas
EIA	Environmental Impact Assessment
ERU(s)	Emission Reduction Unit(s)
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
MTS	Motor transport shop
NPV	Net Present Value
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change

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1 EXECUTIVE SUMMARY – DETERMINATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a determination of the Wood waste to energy project at Sawmill-25 (Arkhangelsk) project. The determination was performed on the basis of UNFCCC criteria for Joint Implementation projects, in particular the verification procedure under the Article 6 supervisory committee (JI track II) described in the Guidelines for the implementation of Article 6 of the Kyoto Protocol, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project is implemented at the JSC "Sawmill-25", Arkhangelsk, Russia on the Tsiglomen and Maimaksa production sites located within the administrative borders of Arkhangelsk. The project envisages an increase of the amount of bark and wood waste (BWW) used as fuel for generating heat and power, thus reducing consumption of fossil fuel, the amount of dumped BWW and overall GHG emissions into the atmosphere.

The project is implemented in 2 stages:

- Construction and commission of the new BWW boiler-house at the Tsiglomen production site in 2005;

- Construction of the new BWW combined heat power plant at the Maimaksa production site from 2006 to 2007.

The project is proposed as a JI project between Russia and one of the European Union countries. However, the focal point of Russia have not yet provided approval letter to the project.

The project developer applied its own baseline and monitoring methodology for the project based on the JI guidance for baseline and monitoring setting, elements of the approves CDM methodology ACM0006 "Consolidated methodology for electricity generation from biomass residues", version 05 of 2007-05-2007 and own competence. It is sufficiently demonstrated that project faces several relevant barriers and that the project is thus deemed to generate emission reductions that are additional to any that would have occurred in its absence.

The monitoring management system, including correct handling of measurement instruments and records, will be defined once the project is implemented.

The average annual emission reductions are 43 072 tonnes of CO_2eq during the 5 years crediting period (2008-2012). The underlying assumptions have been verified and it is deemed likely that the forecast amount is achieved.

Parties, stakeholders and NGOs were invited to provide comments on the project. No comments were received.

The project is not expected to cause significant environmental impact. The technical design documentation for the project has been submitted to environmental authorities and received positive endorsement.

In summary, it is DNV's opinion that, with the exception of the formal approval of the project activity by the focal point of Russia, the Wood waste to energy project at Sawmill-25 (Arkhangelsk) project meets all relevant UNFCCC requirements for the JI and all relevant host country criteria.

2 INTRODUCTION

The CAMCO International has commissioned Det Norske Veritas Certification AS to perform a determination of the Wood waste to energy project at Sawmill-25 (Arkhangelsk) in Russian Federation proposed as Joint Implementation (JI) project between Russia and sponsor country (not yet defined). This report summarises the findings of the determination of the project, performed on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the Guidelines for the implementation of Article 6 of the Kyoto Protocol and the subsequent decisions by the JI Supervisory Committee.

2.1 Objective

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

2.2 Scope

The determination scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. Det Norske Veritas Certification AS based on the recommendations in the Validation and Verification Manual /3/ employed a risk-based approach in the determination, focusing on the identification of significant risks for project implementation and the generation of ERUs.

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

3 METHODOLOGY

The determination consists of the following three phases:

I a desk review of the project design documents

II follow-up interviews with project stakeholders

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

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the determination:

/1/ CAMCO International, Project Design Document for "Wood waste to energy project at Sawmill-25 (Arkhangelsk)", version 1.1 of 2007-02-20 and version 2 of 2007-05-18.

/2/ Revision to the approved consolidated baseline methodology ACM0006/ Version 05 "Consolidated baseline methodology for grid-connected power generation from biomass residues". CDM – Executive Board, 2007-05-18

/3/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): Determination and Verification Manual. http://www.vvmanual.info

/4/ Report "Energy inspection of utilizing-energy boiler units PR-2500 №1,2 to determine their technical, economic and ecological indices", Energy center, Arkhangelsk State Technical University, Arkhangelsk, 2005

/5/ Report "Test results of utilizing boiler units of Tsiglomen sawmill", Energy center, Azrkhangelsk State Technical University, Arkhangelsk, 2003

/6/ Investment project justification "Boiler house reconstruction aimed for complete BWW utilization and environmental protection", 2002

/7/ Guidance on Criteria for Baseline Setting and Monitoring, Version 01. JISC Fourth meeting. Report - Annex 6, 2006

/8/ 2006 Revised IPCC Guidelines, Volume 2

/9/ Methane and Nitrous Oxide Emissions from Biomass Waste Stockpiles, World Bank PCFplus Research, August 2002

/10/ Power and district heating emission baselines. Commissioned by Nordic Council of Ministers. ECON-Report no 2004-114

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

- The additionality section has been completely revised as response to DNV's request;
- Some minor text clarification has been made in the PDD.
- The use of methodology ACM0006 has been updated from version 3 to version 5

3.2 Follow-up Interviews with Project Stakeholders

In the period of 2007-03-29 – 2007-03-30, DNV performed the site visit and interviews with project stakeholders in Arkhangelsk. Representatives of CAMCO International and JSK "Sawmill-25"and were interviewed to confirm the assumptions of the baseline and monitoring methodology and to resolve issues identified in the document review. The interview topics were:

- Project boundary;
- Project's lifetime and crediting period;
- Baseline determination and verification of assumptions used;
- Monitoring plan;
- Emission reduction calculations.

Following persons have been interviewed and provided additional information to the presented documentation during the determination

	Date	Name	Organization	Topic
/11/	2007-03-29	Mr. Alexander Samorodov	CAMCO International – Project manager	▪ Additionality of the project ▪ Baseline and project scenario confirmation ▪ Monitoring plan
/12/	2007-03-29	Mr. Vladimir Dyachkov	CAMCO International – Project developer	▪ Baseline and project scenario confirmation ▪ Fix-ante coefficients ▪ Monitoring plan ▪ ERU estimates
/13/	2007-03-30	Mr. Michael Papylev	JSC "Sawmill-25" – General director	▪ Additionality of the project ▪ Planes of production and sawmills' energy policy ▪ Results of the project implementation and outlines
/14/	2007-03-30	Mrs. Elena Krasilnikova	JSC "Sawmill-25" – Financial director	▪ Additionality of the project ▪ Planes of production and sawmills' energy policy ▪ Results of the project implementation and outlines
/15/	2007-03-30	Mr. Andrew Shurygin	JSC "Sawmill-25" – Head of energy depertment	▪ Baseline and project scenario confirmation ▪ Fix-ante coefficients ▪ ERUs estimates

- EIA
- Monitoring plan
- Current performance of the project

3.3 Resolution of Outstanding Issues

The objective of this phase of the determination is to resolve any outstanding issues which need be clarified prior to Det Norske Veritas Certification AS' positive conclusion on the project design. In order to ensure transparency a determination protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The determination protocol serves the following purposes:

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

The determination protocol consists of three tables. The different columns in these tables are described in the figure below. The completed determination protocol for the Wood waste to energy project at Sawmill-25 (Arkhangelsk) is enclosed in Appendix A to this report.

Findings established during the determination can either be seen as a non-fulfilment of JI criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

i) mistakes have been made with a direct influence on project results;
ii) JI and/or methodology specific requirements have not been met; or
iii) there is a risk that the project would not be accepted as a JI project or that emission reductions will not be issued.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

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

Determination Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 01 - in effect as of: 15 June 2006. Each section is then further sub-divided.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**OK**), or a **corrective action request (CAR)** due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the determination team has identified a need for further clarification.*

Determination Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Determination conclusion***
If the conclusions from the draft Determination are either a CAR or a CL, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the CAR or CL is explained.*	*The responses given by the project participants during the communications with the determination team should be summarised in this section.*	*This section should summarise the determination team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Determination protocol tables

3.4 Internal Quality Control

The draft determination report including the initial determination findings underwent a technical review before being submitted to the project participants. The final determination report underwent another technical review before being forwarded to the Supervisory Committee. The technical review was performed by a technical reviewer qualified in accordance with Det Norske Veritas Certification AS' qualification scheme for JI determination and verification.

3.5 Determination Team

Role/Qualification	Last Name	First Name	Country
JI validator	Myachin	Konstantin	Russian Federation
GHG auditor	Zhukova	Yulia	Russian Federation
GHG auditor	Flagstad	Ole Andreas	Norway
Sector expert	Lehmann	Michael	Norway
Technical reviewer	Telnes	Einar	Norway

4 DETERMINATION FINDINGS

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

4.1 Participation Requirements

The project participants are Joint Stock Company (JSC) "Sawmill 25" and private company "CAMCO International AG".

The host country is Russian Federation. No sponsor country has been identified to date. The Russian Federation ratified the Kyoto Protocol on 2004-11-18, submitted the national GHG emissions registry to the UNFCCC and executed other actions to fulfil with the Kyoto protocol requirements. The formal approval by Russian Federation and the sponsor country have not yet been obtained.

4.2 Project Design

The project is aimed to increase the amount of bark and wood waste (BWW) used to generate heat and power, thus reducing consumption of the fossil fuel, the amount of dumped BWW and GHG emissions into the atmosphere.

The wood waste contents bark, sawdust and shavings formed at the stage of wood debarking and sawing at the sawmill plant.

The project activity is located at the JSC "Sawmill-25, Arkhangelsk, Russia and includes Tsiglomen's and Maimaksa's sites.

The project is implemented in 2 stages:

- Construction of the new BWW boiler house at the Tsiglomen production site in 2005;

- Construction of the new BWW combined heat power (CHP) plant at the Maimaksa production site from 2006 to 2007.

The first stage of the JI project includes the construction of the sawmill's own BWW boiler-house with installed capacity of 5 MW in order to fully cover the heat needs of the Tsiglomen production site. The boiler-house was built and set into operation in 2005. The boiler's fuel is wood waste (bark and sawdust, mainly) which comes from the wood processing at the Tsiglomen site.

Traditionally (without the project), the Tsiglomen production site has been supplied with heat by the municipal boiler-house which used fuel oil and BWW to supply heat both to the sawmill and to the residential sector of Tsiglomen district. Then 1/3 of the heat delivered from the municipal boiler house was delivered to the residential sector. After this part of the project was implemented, the municipal boiler-house continued its operation supplying heat to the residential sector only.

The second stage of the JI project includes the construction of a new BWW combined heat power plant at the Maimaksa production site from 2006 to 2007. The new BWW CHP plant is planned to be in operation in June 2007 and will be equipped with two steam boilers with the rated capacity 7.5 MW each supplied by the Austrian company "Polytechnik" and one turbogenerator with the rated power 2.2 MW and the backpressure 0.18 MPa. Heating of the motor transport shop will be provided by the new CHP plant as well, instead of the old coal boiler-house, which will be closed.

The heat for the residential sector of Maimaksa will be supplied from the old boiler-house at Maimaksa production site, with burning of BWW.

The starting date for the project is April 2005 (starting of construction of the boiler house at Tsiglomen site). The expected operational lifetime of the project is 25 years. The crediting period is expected to be 5 years from 2008-01-01 until 2012-12-31.

4.3 Baseline Determination

The baseline is determined using combined approach of the own project developer methodology based on his technical knowledge and experience and approved CDM baseline methodology ACM 0006 "Consolidated baseline methodology for grid-connected power generation from biomass residues", version 05 of 2006-05-18 /3/. In the absence of the specific approved methodologies this approach is deemed applicable.

The baseline scenario is identified as the continuation of the practice of energy generation and consumption at the Tsiglomen and Maimaksa production sites by the facilities that existed in 2005, before the project implementation. The technical condition of the old boilers makes it possible to maintain their operation at the previously achieved level, while doing scheduled repair works with no significant expenses required.

In the absence of the project activity the heat supply of the sawmill and the residence sector at Tsiglomen area would be provided through fuel oil combustion by the old boiler house rented by JSC "Arkhangelsk generating company". During site visit it was confirmed that this company is not interested in using BWW, therefore the Tsiglomen boiler house currently operates on fuel oil only. The Arkhangelsk generating company is going to increase their use

of coal (main fuel) but for conservativeness it was assumed that the old boiler house at Tsiglomen will use fuel oil at least until 2012.

At the Maimaksa site the enterprise would cover most of the heat demand through BWW combustion in its 3 BWW utilizing boilers. However, the utilizing boilers capacities would be insufficient taking into account the planned increase of sawing and wood drying volumes, therefore shortage of heat energy would have to be covered through fuel oil combustion at the oil-fired boiler. Despite the fact that currently 2 oil-fired boilers are installed in the boiler house, the second boiler was put out of operation and struck off the register in Rostechnadzor (Russian engineering supervision) in 2002. The disassembling date has not been defined yet as a buyer for this boiler has not been identified. The motor transport shop (MTS) would continue to use the old coal-fired boiler house for heat supply. However during the recent years the coal has been practically replaced by the firewood (15 tonnes of coal used in 2006). Thus it is assumed that the MTS's boiler house in the baseline scenario would be fired by wood only.

The key factors determining GHG emissions both in the baseline and in the project scenarios are the volume of charge stock and BWW formation, power consumption, heat consumption, fossil fuel burning, BWW burning and dumping.

The wood sawing at Tsiglomen production site is considered constant and equal to 240 000 m^3/year both in the baseline and in the project scenarios. The PDD uses the enterprise's specific factors for BWW output to determinate the amount of BWW formed and it is equal to 64 800 m^3 per year.

The power consumption is not considered in the baseline and the project scenarios because the power consumption with and without the project can be supposed to stay practically equal. The power consumption by the new boiler-house is compensated by the reduction of power consumption by the old municipal boiler-house.

The calculated amount of heat energy required for the enterprise and for the heating of the residence sector is equal to 392 995 GJ/year. This number is considered both in the baseline and in the project scenarios in accordance with the enterprise's plan and standards. It has been confirmed during follow-up interview on-site. The steam pipeline loss was not considered for the new boiler house for conservative reason. The baseline fuel oil consumption by the old municipal boiler house has been calculated as 14 098 t/year.

As a result of the project, the amount of BWW dumped will decrease due to utilization in the new boiler house by 30 362 m^3/year thus avoiding its disposal on the landfill and prevent the CH_4 emissions from decay. The energy saving is estimated based on the projected steam generation and net calorific value of the BWW burnt.

At the Maimaksa production site in accordance with the enterprise plans the volumes of wood sawing will be increased to 600 000 m^3/year during the next years. This figure has been confirmed during the follow-up interview on-site with the management together with plans for the Tsiglomen site. The amount of BWW does not depend on the project and therefore will be considered the same in the baseline and in the project line and is equal to 174 000 m^3/year for volumes of wood sawing 600 000 m^3/year.

The calculated amount of heat energy required for the work of the enterprise and for the heating of the residence sector is equal to 466 108 GJ/year. This number is considered both in

the baseline and in the project scenarios in accordance with the enterprise's plan and standards. The steam pipeline loss was not considered for the new boiler house since the pipelines installed with it are significantly more effective.

The power consumption at the Maimaksa production site would be 21 655 MWh, since the turbine construction allows for a 20% surplus capacity. In the absence of the project this power is supplied by the public power grid, while with the project it is generated by the sawmill's own BWW CHP plant.

According to the expert assessment performed by specialists of sawmill's energy service, the highest possible volume of BWW utilization in the old boiler house in the baseline is assumed to be 90 000 m^3/year. It is possible to burn 3 216 m^3 of BWW per year in the boiler house of the motor transport shop given that coal combustion is practically stopped. Thus, the total highest baseline BWW consumption is 93 216 m^3 per year.

As soon as the planned sawing will increase up to 600 000 m^3 per year, the heat demand will accordingly grow and it is estimated that 1 493 tonnes of fuel oil per year would be needed to be burned in the oil-fired boiler additionally due to insufficient capacity of BWW-fired boilers.

As a result of the project, the amount of BWW dumped will decrease by the amount of BWW utilized in the new boiler house, 27 482 m^3/year. The figure of the saving is estimated based on the projected steam generation and net calorific value of the BWW burnt.

The spatial extent of the project boundary comprises the following emissions sources:

- at the Tsiglomen production site: old municipal boiler-house, the landfill of industrial waste and the new-built boiler house;
- at the Maimaksa production site: old BWW and fuel oil fired boiler-house, the coal boiler-house of MTS, the outside power suppliers (grid), the landfill of industrial waste and new CHP plant.

The GHG project emissions include only the CO_2 emissions from fuel oil combustion in the old municipal boiler house at Tsiglomen production site. The old boiler house at Maimaksa production site will provide heating for the housing estate only during project operations. There is no need using fuel oil in the old boiler house as the capacity of existing BWW boilers is more than sufficent.

The CH_4 and N_2O emissions at fuel combustion are negligibly small.

The GHG baseline emissions include the emissions of CO_2 from fuel oil combustion at the old municipal boiler house of the Tsiglomen site, the CO_2 from fuel oil combustion at the old boiler house of the Maimaksa site and the CO_2 from fossil fuel combustion at the electric power plants generating power for public grid. Additionally the avoided CH_4 emissions from the landfill due to BWW decay at the Tsiglomen and Maimaksa production sites are included into the project boundary.

4.4 Additionality

Additionality of the project is assessed by use of the step-by-step approach, proposed and elaborated by the PDD developer, based on the Guidance on criteria for baseline setting and monitoring, version 01 /6/.

Identification and discussion of the project alternatives

Tsiglomen production site

Following alternatives has been identified for the project activity at Tsiglomen production site:

1. The continuation of the existing practice of heat energy supply by the municipal boiler house working on fuel oil.
2. Construction of its own boiler house using fuel oil
3. Construction of its own boiler house using coal
4. Construction of its own boiler house using natural gas
5. Construction of its own boiler house using only BWW without its consideration as JI project activity

The feasibility analysis has been made for the alternatives proposed.

Alternative 1 is found to be most plausible for Sawmill 25 as it avoids considerable costs connected with construction and maintenance of a new boiler house. It therefore represents the baseline scenario. It was confirmed at the follow-up interview that the new renter of the municipal boiler house was considered as a technically reliable heat supplier for the production site. Since 2006 the municipal boiler house has been rented by the by JSC "Arkhangelsk generating company" – a main energy producer in the region and use fuel oil exclusively for heat generation. The BWW are burnt no more as the renter do not consider it the most stable business practice. This even if the fuel oil is a significantly more expensive fuel than BWW. In case of alternative 1 all BWW would be landfilled. The proposed scenario faces no barriers including environmental effects.

Alternative 2 is excluded from consideration as it does not provide any economic benefit for the mill. It is unlikely the Sawmill-25 would install the own boiler house that use the same fuel (fuel oil) having the available source of the heat generation as the municipal boiler house.

Alternative 3 is also excluded from consideration because the construction of the coal-fired boiler house requires significant capital costs exceeding costs for fuel oil fired boiler house. The coal combustion technology requires construction of special facilities for fuel store and preparation as well as ash-and-slag landfill and air filter systems. It is estimated that for Sawmill-25 the construction and running of the own coal-fired boiler house would not be compensated by lesser costs of the coal fuel.

Alternative 4 is not considered as the north of the Arkhangelsk region has no pipeline distribution system for natural gas and it is not expected to have it in the foreseeable future.

Alternative 5 which is the proposed project scenario without JI revenues faces technological, operational and financial barriers. It has been confirmed during follow-up that investment for implementation of the project at the Tsiglomen production site was 2 million Euro, apart from operational costs will come in addition to that. That is a significant sum for Sawmill-25 taking

into account its incomes and financial assets at the moment of decision making and simultaneous realization of main investment programs in 2004-2007 (modernization of the production facilities and equipment). The key factor for the management of the sawmill was a credit from Nordic Environment Finance Corporation (NEFCO) given as a part of the carbon financing of the project. Earlier, in 2002 the Sawmill-25 agreed to consider and estimate possible revenues from the GHG emissions reductions with Environmental Investment Center, Arkhangelsk. Thus, the first stage of the project has been implemented taking into account the revenues from selling ERUs due to reduced GHG emissions.

Maimaksa production site

Following alternatives has been identified for the project activity at Maimaksa production site:

1. The continuation of the existing practice of heat energy supply by its own boiler house and electricity supplied from the grid
2. Construction of its own CHP plant using fuel oil
3. Construction of its own CHP plant using coal
4. Construction of its own CHP plant using natural gas
5. Construction of its own CHP plant using only BWW without its consideration as JI project activity

The feasibility analysis has been made for the alternatives proposed.

Alternative 1 is considered to be most plausible for Sawmill-25 in the absence of the project and it represents the baseline scenario. Sawmill-25 has its own boiler house on the Maimaksa production site and the capacity of that allows to supply the production facilities with heat. Available sawing will be up to 600 000 m^3/year. The heat generation is made in three BWW utilizing boilers and one fuel oil fired boiler. The Maimaksa site would also purchase electricity from the grid which is a common practice at sawmills in Russia. All unutilized BWW would be landfilled. The baseline scenario faces no barriers including environmental.

Alternative 2 is excluded from consideration as the construction of new energy generation facilities working on fuel oil is economically inexpedient due to high fuel cost in comparison with other fuels.

Alternative 3 is excluded from consideration on the same reasons as for the Tsiglomen site.

Alternative 4 is also excluded from consideration on the same reasons as for the Tsiglomen site.

The alternative 5 which is the proposed project scenario without JI revenues faces the technological and operational barriers described in the barrier analysis. It has been confirmed during the follow-up that investment for implementation the project at the Maimaksa production site was 9.5 million Euro which is a significant sum for the enterprise taking into account its size and incomes. Sawmill-25 has its own source of heat energy produced mainly from BWW burning and covering the needs of both the enterprise and the housing estate and no needs for its imperative augmentation or replacement has been identified.

Barrier analysis

Technological barrier

The Sawmill-25 prior to the project had no technologies for efficient BWW utilization without fuel oil burning. The equipment for BWW burning without any other fuels are more complicated than previously used on mill due to BWW high humidity, various fraction content and low net calorific values of the biomass.

The technology of the fluidized bed combustion tested and used at another partner of Environmental Investment Centre – Arkhangelsk Pulp and Paper mill was considered to be inappropriate since the Tsiglomen production site of Sawmill-25 has much less heat demand than pulp and paper mill and due to the fact that the insignificant amount of fuel oil are still needed during the fluidized bed boiler start up. Since at the Tsiglomen plant no fuel oil store facilities existed the fluidized bed technology had not been chosen for Tsiglomen site.

The technology of the BWW combustion that fitted to Tsiglomen and Maimaksa production sites was a moving grate boiler with automated control system produced by Austrian company Polytechnic. However Sawmill-25 had never built or exploited BWW boilers of such type. The technology chosen required hiring and training of the personnel and advanced control and maintenance efforts.

The technology to be used at the Maimaksa site is also a moving grate boiler however the boiler will produce steam and electricity instead of heat produced on the Tsiglomen site. The Sawmill-25 never used steam turbines earlier on. It has been confirmed that electricity generation using steam produced from BWW is a first of its kind for that technology in the Arkhangelsk region.

Operational barrier

The Tsiglomen and Maimaksa sites are located in the suburbia of the Arkhangelsk city where a strong deficit of competent technical specialists exists. It has been confirmed during the follow-up interview on site that Sawmill-25 had applied significant efforts for hiring and training of new boiler house personnel at the Tsiglomen site and the sawmill expects the same problem with Maimaksa site. The operation of the high-tech energy equipment and technology requires higher motivation as well as improved culture, skills and knowledge from all staff including workers, engineers and managers.

The use of the electricity generation turbines requires them to be synchronized with the frequency of electric current in the grid. Sawmill-25 has no experience of operation of electricity generation facilities.

The above mentioned barrier requires substantial costs for Sawmill-25 in addition to the investment into new boiler houses.

Financial barrier

The detailed financial analysis has not been made or attached to the PDD (cash flow analysis, etc.). However it was verified on the follow-up interview that project implementation at Maimaksa site requires investments of 11.5 million Euros due to high cost of the imported equipment (delivery costs and custom duties included) and high cost of qualified workers for construction and assembly. However since 2005-2008 this sawmill has been performing an extended program for technical modernization and expansion, this was witnessed during site visit. It was confirmed on the meeting with Sawmill-25's top-management and financial director that a comparable size of investment in improving and increasing of the main

production capacities can bring much bigger benefit to the mill. The investment into the project is made with the fact that currently used boiler house has a necessary capacity to comply with the mill's perspective plan of development at least until 2012. Additionally, the operational costs for operation and maintenance of the new boiler house are required.

It has been confirmed that the collaboration with NEFCO and further with CAMCO with regards to the project funding and selling of the GHG emission reduction was a main factor of decision to start the project implementation.

Common practice analysis

The common practice in the sawmill sector of Russian industry was discussed during the follow-up interview by several criteria.

It was confirmed that own electricity generation by the sawmill is a first of its kind example in Russia. Due to high capital costs of installation, special requirements for operation and maintenance the combined heat and power units are not spread in Russia.

A majority of the sawmills in Russia consider the investment into production facilities as a top priority since this funding would bring quick revenues and allow to be competitive on the market. To date there are no incentives for use of the renewable energy sources in Arkhangelsk region that has been initiated by authorities. Thus the common practice in satisfying of the electricity demand is a purchase from the grid. The common practice of the heat generation is to use own generation resources (including old BWW utilization boilers) with their regular maintenance and refurbishment but without construction of new heat generation facilities.

The confirmed common practice of BWW disposal is transferring it to a landfill,is not prevented by the current legal framework. The main biomass waste fuel used for combustion in the boilers is sawing wastes as the bark combustion requires addition of significant amounts of fuel oil (or natural gas) for burning process facilitation due to poor NVC and high humidity of the bark wastes. The BWW combustion technologies used in the project are not dependent on additional fuel and do not represent a common practice of the bark and wood waste use in the sawmills in Russia.

In conclusion, it has been sufficiently demonstrated that the proposed project is additional due to valid financial, technological and operational barriers and does not represent a common practice for the timber sawing industry in the Russian Federation.

4.5 Monitoring

The PDD applies the practice of registration of fuel, energy, waste and assessment of environmental impact used at "Sawmill -25".

The monitoring plan includes regular monitoring parameters at the Tsiglomen production site:

- heat energy supply from the new boiler house (continuously, GJ),
- net calorific value of BWW on dry mass (quarterly, GJ/t),
- moisture of BWW (monthly, %).

The monitoring plan includes regular monitoring parameters at the Maimaksa production site

- gross heat generation at the new CHP plant (continuously, GJ),

- heat energy supply from the new CHP plant (continuously, GJ),
- heat energy supply from the old boiler house (continuously, GJ),
- gross electric power generation at the new CHP plant (continuously, MWh),
- net calorific value of BWW on dry mass (quarterly, GJ/t),
- moisture of BWW (monthly, %).

The average values of the moisture of BWW and net calorific value of BWW on dry mass are determined at the end of year.

It has been clarified that the operation and maintenance manuals was elaborated and implemented accordingly at the Tsiglomen production site and the same is expected to be done at the Maimaksa site. Sufficient training has been provided to the personnel in charge of the measurements and handling of the records. At the Maimaksa site the training of the operational and managerial personnel of the CHP will be conducted by the equipment supplier, this was confirmed during the site visit. All monitoring and records handling responsibility are clearly defined at the Tsiglomen and will be defined at the Maimaksa production sites before the start of the project operation.

4.5.1 Parameters determined ex-ante

Following parameters have been fixed ex-ante:

- efficiency factor for the old municipal boiler house (75.3%);
- heat for auxiliary needs of old and new boiler houses at the Tsiglomen and Maimaksa production sites (7%).
- parameters in accordance with the "Calculation of CO_2-equivalent emission reduction from BWW prevented from stockpiling or taken from stockpiles" model used /9/.

4.6 Estimate of GHG Emissions

The total GHG emission reductions are determined based on the total GHG emission reductions at the Tsiglomen and at the Maimaksa production sites over a year.

At the Tsiglomen production site the total GHG emission reductions over a year is determined based on the CO_2 emission reductions from fuel oil burning at the old municipal boiler house over a year and CH_4 emission reductions from anaerobic decomposition of dumped BWW.

The CO_2 emission reductions from fuel oil burning at the old municipal boiler house over a year is determined based on heat energy supply from the new boiler house over a year, the efficiency factor for oil-fired boilers of the old boiler house (75.3% date of 2005), the share of heat for auxiliary needs of oil-fired boilers (7%) and emission factor of CO_2 for fuel oil (77.4 t CO_2/TJ, IPCC 2006 Tier 1 Guidelines) /8/.

The mass amount of BWW burnt at the new boiler house over a year and respectively avoided from dumping at the landfill is determined based on the efficiency factor for the new utilizing boilers (85%), the share of heat for auxiliary needs of the new utilizing boilers (7%), the BWW net calorific value on working mass, the BWW net calorific value on dry mass (7.3744 GJ/t, thermotechnical analysis of 2005) and the BWW moisture (55%).

The numerical values of CH_4 emission reductions from anaerobic decomposition of dumped BWW are determined with use of the "Calculation of CO_2-equivalent emission reduction

from BWW prevented from stockpiling or taken from stockpiles" model developed by BTG biomass technology group B.V. on the basis of "Methane and Nitrous Oxide Emissions from Biomass Waste Stockpiles, Worldbank PCFplus research, August 2002"/9/. The assumptions and factors are properly described in the PDD.

GHG emission reductions at Maimaksa production site over a year are determined based on CO_2 emission reductions from fossil fuel burning at grid-connected electric power plants over a year, CO_2 emission reductions from fuel oil burning at the old boiler house over a year, CH_4 emission reductions from anaerobic decomposition of dumped BWW over a year.

The CO_2 emission reductions from fossil fuel burning at grid-connected electric power plants over a year is determined based on the gross electric power generation at the new CHP plant over a year (20 014 MWh/year), CO_2 emission factor for power from grid. According to the special research "Power and district heating emission baselines. ECON Analysis. 2005" this factor for Arkhangelsk region of Russia till 2012 have been taken equal to 0.68 t CO_2/MWh /10/.

Baseline power consumption for auxiliary needs of energy sources at Maimaksa production site are considered to be equal or higher than under the project with the same total useful heat supply. It means that power consumption under the project for auxiliary of the new CHP plant will be compensated by reduction of power consumption for the auxiliary of the old boiler house. In this connection it is enough to monitor in particular gross generation of power which would be supplied from the outside grid in the case of baseline.

The CO_2 emission reductions from fossil fuel burning at grid-connected electric power plants over a year is determined based on heat energy supply from the new CHP plant over a year (329 356 GJ), heat energy supply from the old boiler house under the project over a year (109 937 GJ), maximal volume of BWW burnt in the old boiler houses (including boiler house of the MTS) under the baseline over a year (93 216 m^3), BWW density (0.8 t/m^3), the efficiency factor for the utilizing boilers of the old boiler houses (81.3%), is efficiency factor for the oil-fired boilers of the old boiler house (91%), share of heat for auxiliary needs of the utilizing boilers (7%), share of heat for auxiliary needs of the oil-fired boilers (7%), emission factor of CO_2 for fuel oil (77.4 t CO_2/TJ), BWW net calorific value on working mass, BWW net calorific value on dry mass (7.3744 GJ/t), BWW moisture (55%).

The values of constants used in the model are explained and justified in the PDD.

Other parameters are the volume of BWW burnt at the old boiler house under the project over a year, gross heat, generation at the new CHP plant over a year, efficiency factor for the utilizing boilers of the new CHP plant.

The same model described above is used to estimate the avoided CH_4 emissions from the dumping at the landfill in the baseline scenario.

The developers provided a specific estimation file in Excel format for evaluation purposes. Separate calculations were performed for Tsiglomen and Maimaksa production sites.

The emission reduction forecast has been verified and is deemed likely that the forecast amount of 215 362 tonnes of CO_2eq is achieved.

4.7 Environmental Impact

Project implementation results in the reduction of sulphur dioxide emissions by 588 t/year, nitrous oxide by 2 t/year, nitrous dioxide by 10 t/year, carbon oxide by 101 t/year, while the solid particles will increase by 29 t/year. The total decrease of the pollutants emissions into the atmosphere for the whole project is 672 t/year. In general, the project is not expected to have any significant negative environmental impact.

It has been confirmed that before the start of the project implementation, JSC "Sawmill 25" has received all the required conclusions of the state environmental expertise.

4.8 Comments by Local Stakeholders

No comments have been received yet.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD, version 1.1 of 2007-02-20 was made publicly available on JI UNFCCC's official website[1] from from 2007-02-07 to 2007-03-23 and Parties, stakeholders and NGOs were through the JI website invited to provide comments during a 30 days period.

No comments were received.

[1] http://ji.unfccc.int/JI_Projects/Verification/PDD

APPENDIX A

JI DETERMINATION PROTOCOL

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

Requirement	Reference	Conclusion
The project shall have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a)	**CAR 1**
Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur	Kyoto Protocol Article 6.1 (b)	OK
The sponsor Party shall not aquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7	Kyoto Protocol Article 6.1 (c)	OK
The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3	Kyoto Protocol Article 6.1 (d)	OK
Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects	Marrakech Accords, JI Modalities, §20	~~**CAR 2**~~
The host Party shall be a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24	OK
The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts	Marrakech Accords, JI Modalities, §21(b)/24	OK
The host Party shall have in place a national registry in accordance with Article 7, paragraph 4	Marrakech Accords, JI Modalities, §21(d)/24	OK
Project participants shall submit to the independent entity a project design document that contains all information needed for the determination	Marrakech Accords, JI Modalities, §31	OK
The project desing document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments	Marrakech Accords, JI Modalities, §32	OK

Requirement	Reference	Conclusion
Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out	Marrakech Accords, JI Modalities, §33(d)	OK
The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project	Marrakech Accords, JI Modalities, Appendix B	OK
A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, JI Modalities, Appendix B	OK
The baseline methodology shall exclude to earn emission reductions for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, JI Modalities, Appendix B	OK
The project shall have an appropriate monitoring plan	Marrakech Accords, JI Modalities, §33(c)	OK

Table 2 Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
Are the project's spatial boundaries (geographical) clearly defined?	/1/	DR	The project spatial boundaries are clearly defined. The project activity is located at the JSC "Sawmill 25", Arkhangelsk, Russia. The manufacturing facilities of the sawmill comprise two sites named after the places of their location, Tsiglomen and Maimaksa site.		OK
Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	The project boundaries includes the fuel oil burning in the old boiler-houses and landfill of industrial waste, avoided (owing to the project) emissions from anaerobic decomposition of BWW at Tsiglomen production site; the fuel oil burning in the old boiler-house, the BWW burning in the old boiler-house, the coal burning in the coal boiler-house of MTS, the BWW burning in coal boiler-house of MTS, combustion of fossil fuel (power replaced due to the project) in outside power suppliers, the landfill of		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			industrial waste, avoided emissions from anaerobic decomposition of BWW (due to the project) at Maimaksa production site.		
Participation Requirements *Referring to Part A and Annex 1 of the PDD as well as the JI glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.*					
Which Parties and project participants are participating in the project?	/1/	DR	The legal entity project participant is JSC "Sawmill 25", Russia. CAMCO International (Austria) is the project Carbon Asset Developer.		OK
Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/	DR	The Letter of Approval of the host country Russian Federation has not been submitted to DNV. The JI focal point of Russian Federation has not been officially designated yet.	~~CAR 2~~	
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 project design engineering reflect current good	/1/	DR	Yes. It has been confirmed that project		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
practices?		I	design constitutes the good practice.		
Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/	DR	The use of bark and wood waste as fuel in the boiler house and combined heat power will result in better performance than commonly used technology of heavy oil and coal for generation heat and power. This way of using BWW as a fuel is not common practice in Russia.		OK
Does the project make provisions for meeting training and maintenance needs?	/1/	DR I	Yes. The necessary training and maintenance needs have been provided at the Tsiglomen site and it is expected at the Maimaksa site.		OK
B. Project Baseline *The determination of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
Is the discussion and selection of the baseline methodology transparent?	/1/	DR	Yes, the discussion and selection of the baseline methodology is transparent. All necessary information is provided in the PDD.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
Does the baseline methodology specify data sources and assumptions?	/1/	DR	The source of the data used for the baseline and project is clarified and verified during the site visit.		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.)	/1/	DR	The baseline emissions include the emissions of CO_2 from fuel oil combustion at the old municipal boiler house of the Tsiglomen and Maimaksa sites, CO_2 emissions from fossil fuel combustion at the electric power plants generating power for public grid and the avoided CH_4 emission from landfill in the bark and wood waste decay process. The CO_2 emission from fuel oil combustion at the old municipal boiler house has been estimated as a product of a quantity of fuel oil burnt in the old municipal boiler, average net calorific value of fuel oil and CO_2 emission factor for oil combustion. The annual fuel oil consumption has been estimated by first estimating the annual heat energy supply from the old boiler-house and taking into account a fuel oil net calorific value, efficiently of oil-fired boilers and a heat share for auxiliary needs of oil-fired boilers.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The sources of data for the baseline emissions are provided in the PDD. The CO_2 emission from fossil fuel combustion at the electric power plants generating power for public grid has been estimated as a product of annual total power consumption (amount replaced by its own generation under the project of Maimaksa production site of the enterprise) and CO_2 emission factor for power from the outside grid. The value of CO_2 emission factor is based on " Power and district heating emission baseline. Econ Analysis.2005". The avoided CH_4 emission from landfill in the bark and wood waste decay process has been estimated in accordance with the "Methane and Nitrous Oxide Emission from Biomass Waste Stockpiles, Worldbank PCFplus Research, August 2002. The model was based on the First Order Decay method with experimental specification of a number of parameters for waste wood landfills. The input value for estimating reductions in the		

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			methane emission is accepted as default recommended value or conservative approach the value under this model.		
Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?	/1/	DR	Yes, the baseline methodology specifies the fuels used in the baseline and the forecasted fuels consumption in the absence of the project activity.		OK
Does the baseline methodology specify the spatial level of data (local, regional, national)?	/1/	DR I	The PDD mentions that the data used for the baseline emissions is local and national level. The data source is provided in PDD and verified during site visit.		OK
Baseline Scenario Determination *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.*					
What is the baseline scenario?	/1/	DR I	In the absence of the project activity heat supply of the sawmill and the residence sector at Tsiglomen area would be provided through fuel oil combustion by the old boiler house rented by JSC "Arkhangelsk generating company". The company is not interested in using BWW, therefore the Tsiglomen boiler house operates on fuel oil		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			only. The company is going to increase using coal as a main fuel, therefore the boiler house's operation may be supposed to be changed to coal in some future. Maimaksa production site is supplied with heat from its own boiler-house consisting of 2 oil-fired boilers, 3 BWW utilizing boilers and the coal boiler-house of small capacity for heating the sawmill's own motor transport shop (MTS). The coal boiler-house has been working mostly on firewood for the last years. The coal consumption has not been considerable (15 tons in 2006). One of the oil –fired boilers has not worked since 2002. However, following the conservative approach, it is assumed that fuel oil would continue to be burnt in the boiler house at least until 2012.		
What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/	DR I	This baseline scenario is the least risky and doesn't require investment. In the absence of the Kyoto Protocol this scenario is a real alternative for the project.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
Has the baseline scenario been determined according to the methodology?	/1/	DR	The plausible baseline scenario is identified as continuation of the current practice in the PDD at the Tsiglomen and Maimaksa production sites. Technical condition of the old boilers enables to maintain their operation at the previously achieved level, while doing scheduled repair works with no significant expenses required.		OK
Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Yes, the baseline scenario has been determined using the conservative assumption where possible.		OK
Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes, baseline scenario sufficiently takes into account relevant national and/or sectoral policies, macro-economic trends and political aspirations.		OK
Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR I	The baseline scenario determination is compatible with the available data. The literature and sources are clearly referenced in PDD. A source of a few data have not been included in PDD and was provided during site visit.		OK
Have the major risks to the baseline been identified?	/1/	DR	The major risks to the baseline haven't been		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			identified in PDD. We can consider this baseline as the least risky scenario, based on result of the follow-up interview.		
Additionality Determination *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*					
What is the methodology selected to demonstrate additionality?	/1/	DR	The PDD developer use the own methodology to explain the additionality of the project.		OK
Is the project additionality assessed according to the methodology?	/1/	DR I	No. The explanation of additionality of project is not well structured, traceable and transparent. The financial, commercial and technological barriers are described in the PDD but not sufficiently justified.	~~**CAR 3**~~	OK
Are all assumptions stated in a transparent and conservative manner?	/1/	DR I	No. See previous comment.	~~CAR 3~~	OK
Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR I	The value of pay-back period (2 years) from the start of project implementation (without taking ERU sale earnings into account) presented in the version 1.1. of the PDD and the IRR value (46.3) for the project at the	~~**CL 1**~~	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Tsiglomen production site raises the doubts of the project's additionality. However during the site visit it was confirmed that significant financial barriers existed at the moment of the decision making in 2004. The correct date of the financial additionality of the project should be made clear and justified.		
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/	DR	Yes, the starting data of the project is April 2005 (staring of construction of the boiler house at Tsiglomen site). The construction of a new BWW combined heat power (CHP) plant at Maimaksa production site is from 2006 to 2007. Expected operational lifetime of the project is 25 years (300 months)		OK
Is the start of the crediting period clearly defined and reasonable?	/1/	DR	Yes, the length of the crediting period is from 2008-01-01 to 2012-12-31 (5 years).		OK
D. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline*					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
methodology.					
Is the monitoring plan documented according to the chosen methodology and in a complete and transparent manner?		DR	The PDD applies the practice of registration of fuel, energy, waste and assessment of environmental impact used at "Sawmill -25".		OK
Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of ERUs, for this project activity, whichever occurs later?	/1/	I	Yes, it has been confirmed during the site visit.		OK
Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR I	All data necessary for estimation or measuring the greenhouse gas emissions within the project boundary are collected in accordance with the practice of registration of fuel, energy, waste and assessment of environmental impact used at "Sawmill 25". As the old boiler house will be able to consume fuel oil at the Maimaksa production site and in some cases (emergency, low ambient air temperature, insufficient wood	~~CAR~~	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			supply) could use it, the respective monitoring point need to be added.	**4**	
Are the choices of project GHG indicators reasonable and conservative?	/1/	DR I	Yes.		OK
Is the measurement *method* clearly stated for each GHG value to be monitored and deemed appropriate?	/1/	DR I	Yes		OK
Is the measurement *equipment* described and deemed appropriate?	/1/	DR I	Yes, the measurement equipment is deemed appropriate.		OK
Is the measurement *accuracy* addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR I	Yes, the measurement accuracy is addressed and deemed appropriate.		OK
Is the measurement *interval* identified and deemed appropriate?	/1/	DR I	Yes.		OK
Is the *registration*, *monitoring*, *measurement* and *reporting* procedure defined?	/1/	DR I	Yes.		OK
Are procedures identified for *maintenance* of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR I	Yes.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR I	Yes.		OK
Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR I	The reckoning method for the definition of GHG emissions is applied in PDD. The available information of emission-related company operations source is the basis for performing reliable GHG emission control.		OK
Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR I	Yes.		OK
Is the measurement *method* clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR I	Yes, it has been clarified that the operation and maintenance manuals will be elaborated accordingly once the project is implemented. Sufficient training will be provided to the personnel in charge of the measurements and handling of the records. All monitoring and records handling responsibility will be clearly defined at the Tsiglomen and Maimaksa production sites before the start of the project		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			operation.		
Is the measurement *equipment* described and deemed appropriate?	/1/	DR I	Yes, the measurement equipment is deemed appropriate. During the follow-up interview the necessary monitoring activity for the Tsiglomen production site has been observed.		OK
Is the measurement *accuracy* addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR I	Yes, the measurement accuracy was not addressed and deemed appropriate. The procedure in place on how to deal with erroneous measurement was not included in the monitoring plan, but was provided during site-visit		OK
Is the measurement *interval* for baseline data identified and deemed appropriate?	/1/	DR I	Yes.		OK
Is the *registration*, *monitoring*, *measurement* and *reporting* procedure defined?	/1/	DR I	The monitoring plan includes regular monitoring parameters at the Tsiglomen production site: ▪ heat energy supply from the new boiler house (continuously, GJ), ▪ net calorific value of BWW on dry mass (quarterly, GJ/t),		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			▪ moisture of BWW (monthly, %). The monitoring plan includes regular monitoring parameters at the Maimaksa production site ▪ gross heat generation at the new CHP plant (continuously, GJ), ▪ heat energy supply from the new CHP plant (continuously, GJ), ▪ heat energy supply from the old boiler house (continuously, GJ), ▪ gross electric power generation at the new CHP plant (continuously, MWh), ▪ net calorific value of BWW on dry mass (quarterly, GJ/t), ▪ moisture of BWW (monthly, %). The average values of the moisture of BWW and net calorific value of BWW on dry mass are determined at the end of year.		
Are procedures identified for *maintenance* of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR I	Yes. These procedures have been verified during the site visit.		OK
Are procedures identified for day-to-day records handling	/1/	DR	Yes.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
(including what records to keep, storage area of records and how to process performance documentation).		I			
Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR I	The leakages under the project may be neglected.		OK
Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
Is the authority and responsibility of overall project management clearly described?	/1/	DR	Yes, the authority and responsibility of the project management is clearly described.		OK
Are procedures identified for training of monitoring personnel?	/1/	DR I	Procedures for training of monitoring personnel are identified and provided during the site-visit.		OK
Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR I	Procedures for emergency preparedness for cases where emergencies can cause unintended emissions are identified and provided during the site-visit.		OK
Are procedures identified for review of reported results/data?	/1/	DR	Procedures for review of reported results are		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
		I	identified and provided during the site-visit.		
Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR I	Procedures for corrective actions in order to provide for more accurate future monitoring and reporting are identified and confirmed during the site-visit.		OK
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
Calculation of GHG Emission Reductions – Project emissions *It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
Are the calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR I	Yes. The PDD follows the logic of the methodology ACM0006 and applies an own approach with the use of some elements of the mentioned method and the basis on methodological developments of IPCC and is in accordance with the requirements of Decision9/CMP.1, Annex B		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
Have conservative assumptions been used when calculating the project emissions?	/1/	DR I	The PDD applies direct monitoring of the GHG emission reduction.		OK
Are uncertainties in the project emission estimates properly addressed?		DR I	Yes.		OK
Calculation of GHG Emission Reductions – Baseline emissions *It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
Are the calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR I	The PDD follows a logic of the methodology ACM0006 and applies an own approach with the use of some elements of the mentioned method and the basis on methodological developments of IPCC and is in accordance with the requirements of Decision9/CMP.1, Annex B		OK
Have conservative assumptions been used when calculating the baseline emissions?	/1/ /9/	DR I	The baseline emissions include the emissions of CO_2 from fuel oil combustion at the old municipal boiler house of the Tsiglomen and Maimaksa sites, CO_2 emissions from fossil fuel combustion at the electric power plants		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			generating power for public grid and the avoided CH_4 emission from landfill in the bark and wood waste decay process. CH_4 and N_2O emissions at fuel combustion are negligibly low and are neglected. The avoided CH_4 emission from landfill in the bark and wood waste decay process has been estimated in accordance with the "Methane and Nitrous Oxide Emission from Biomass Waste Stockpiles, Worldbank PCFplus research, August 2002. The model was based on the First Order Decay method with experimental specification of a number of parameters for waste wood landfills. The input value for estimating reductions in the methane emission is accepted as default recommended value or conservative approach the value under this model. Because the project started in 2005 the dumping has been avoided since 2006 that is reflected in the calculation of reduced CH_4 emissions from the landfill for the period from 2008 to 2012.	**CL 2**	
Are uncertainties in the baseline emission estimates properly	/1/	DR	Yes.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
addressed?		I			
Calculation of GHG Emission Reductions – Leakage *It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
Are the leakage calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR	The PDD follows the logic of the methodology ACM0006 and applies an own approach with the use of some elements of the mentioned method and the basis on methodological developments of IPCC and is in accordance with the requirements of Decision9/CMP.1, Annex B		OK
Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	The leakage may be neglected.		OK
Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	The leakage has not been considered for this project activity		OK
Emission Reductions *The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.*					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	Yes, the project will result in an average annual reduction of CO_2 emissions of 43 072 t CO_2/year during the period of 2008 to 2012.		OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the AIE.*					
Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	Yes.		OK
Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR I	Yes. Before the start the project implementation all required conclusions has been received.		OK
Will the project create any adverse environmental effects?	/1/	DR	No, project implementation results in reduction of sulphur dioxide, nitrous dioxide and carbon oxide emissions. The total decrease of pollutants emissions into the atmosphere for the project period is 672 ton/year.		OK
Are transboundary environmental impacts considered in the analysis?	/1/	DR	No, because the environmental impact are not considered significant.		OK
Have identified environmental impacts been addressed in the project design?	/1/	DR	Yes.		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
Does the project comply with environmental legislation in the host country?	/1/	DR I	Yes. Before the start of the project implementation, JSC "Sawmill 25" has received all the required conclusions of the state environmental expertise		OK
G. Stakeholder Comments *If required by the host country, the AIE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*					
Have relevant stakeholders been consulted?	/1/	DR	The PDD version 1.1 has been published on UNFCCC JI website from 2007-02-07 to 2007-03-23. Parties, stakeholders and observers were invited to provide comments the UNFCCC mail list. No comments were received.		OK
Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	No, as it is not required by the project of the national JI procedures.		OK
If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	No, as it is not required by the project of the national JI procedures.		OK
Is a summary of the stakeholder comments received provided?	/1/	DR	No, as it is not required by the project of the		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			national JI procedures.		
Has due account been taken of any stakeholder comments received?	/1/	DR	No, as it is not required by the project of the national JI procedures.		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
CAR 1 The Letter of Approval of the host country Russian Federation has not been submitted to DNV.	Table 1		
CAR 2 The JI focal point of Russian Federation has not been officially designated yet.	Table 1		On 2007-05-28 the Government of the Russian Federation issued a Decree #332 that set up a national JI procedures, as part of this the Ministry of Economic Development and Trade has been officially designated as JI focal point of Russia. The CAR is therefore closed.
CAR 3 The explanation of additionality of project is not well structured, traceable and transparent. The financial, commercial and technological barriers are described in the PDD but not sufficiently justified.	Table 2 B	The additonality section on the PDD has been completely revised. Several barriers for both stages of project implementation have been described. The common practice analysis was made and it was shown that proposed project doesn't reflect common practice.	The given clarifications and revision of the PDD with regards to additionality issues are deemed adequate. The arguments provided by the project developer have been discussed during the follow-up interview and site visit in March 2007. The CAR is therefore closed.
CAR 4 As the old boiler house will be able to consume fuel oil at the Maimaksa production site and in some cases (emergency, low ambient air	Table 2 D	The parameters of mass fuel oil consumption at Maimaksa production site and net calorific value of fuel oil were included into the Monitoring Plan in PDD.	The PDD revision has been checked and found appropriate. The CAR is closed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
temperature, insufficient wood supply) could use it, the respective monitoring point need to be added.		These parameters will be monitored and reported if fuel oil consumption at the old boiler house of Maimaksa site would take place.	
CL 1 The value of pay-back period (2 years) from the start of project implementation (without taking ERU sale earnings into account) presented in the version 1.1. of the PDD and the IRR value (46.3) for the project at the Tsiglomen production site raises the doubts of the project's additionality. However during the site visit it was confirmed that significant financial barriers existed at the moment of the decision making in 2004. The correct date of the financial additionality of the project should be made clear and justified.	Table 2 B	Project developer decided to revise the additionality section and refuse from the IRR assessment since it was inappropriate to the project's case. The emphasis is laid on the barrier analysis and common practice assessment as cleared by the ACM0006 and JI Guidance.	The given clarifications and revision of the PDD with regards to additionality issues are deemed adequate. The CL is therefore closed.