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# TECHNICAL REPORT

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## DRAFT FINAL VALIDATION REPORT

VALIDATION OF PAIDE DISTRICT HEATING PROJECT IN  
ESTONIA

REPORT No. 2002 – 3

REVISION NO. 2

# TECHNICAL REPORT

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Client : Ministry of the Environment of Finland	Client ref.: Ismo Ulvila

**Summary:**

The Finnish Pilot Programme on JI/CDM has initially approved the Paide district heating project as a JI-project. A new 8 MW biomass fired boiler would be installed to the district heating system in Paide. The new boiler would replace thermal energy production produced presently by shale oil. According to initial plans the biofuel would come from several local fuel suppliers.

Validation criteria are based on the requirements set in

- Article 6 (A6) of the Kyoto Protocol (KP) to the United Nations Framework Convention on Climate Change (UNFCCC), the guidelines for implementation of A6 of the KP as presented in the Marrakesh Accords (Mar) under decision 16/CP.7, and the annex to the decisions (hereinafter collectively referred as “JI rules”);
- Other relevant rules, including the host country legislation and JI criteria;
- The guidelines for the Finnish JI/CDM Pilot Programme, and the requirement that the Project should generate emission reduction units (ERUs) that can be transferred to Finland in accordance with A6 of the KP.

Expected yearly GHG reductions indicated in the PDD are approximately 14 500 metric tons of carbon dioxide equivalents. Based on our activities undertaken, nothing came to our attention that causes us to believe that the applied assumptions and methods do not provide a reasonable basis for the forecasted emission reductions compared to the selected most likely baseline scenario.

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Work carried out by: Tuomas Suurpää, Mats Hägerström, Veiko Kullaste and Eric Koudijs		
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**Indexing terms**

Climate change  
Greenhouse gas reductions  
Joint implementation  
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## Abbreviations

Ab	Limited (Aktiebolag)
AP	Appendix
AN	Annex
A6	Article 6 of the Kyoto Protocol
BS	Baseline Study
CAR	Corrective Action Request
CC	Consultancy Contract
CDM	Clean Development Mechanism
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon dioxide
DR	Document Review
ERU	Emission Reduction Unit
GHG	Greenhouse Gas
Gui	CDM and JI Pilot Programme – Operational Guidelines
I	Interview
JI	Joint Implementation
JIPA	Joint Implementation/Paide project (internal code for the project)
KI	National Climate Strategy (Kansallinen ilmastostrategia VNS 1/2001 vp)
KP	Kyoto Protocol
Leg	Legislation
Mar	Marrakesh Accords
MW	Megawatt
MWh	Megawatt hours
MIN	Ministry
MoV	Means of Validation
N/A	Not Applicable
NFA	Non Financial Assurance
No	Number
N <sub>2</sub> O	Nitrous oxide
OÜ	Osäuhing (private limited company)
Oy	Limited (Osakeyhtiö)
P	Page
PA	Paragraph
PCF	Prototype Carbon Fund
PDD	Project Design Document
PDDa	Author of the PDD
R1	Relevance
R2	Reliability
R3	Gross risk
Ref.	Reference
T	Target
tCO <sub>2</sub> -eq.	Metric tonnes of carbon dioxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change
VC	Validator Consultant
VP	Validation Protocol

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## 1 CONCLUSIVE SUMMARY

The Finnish Pilot Programme on JI/CDM has initially approved the Paide district heating project as a JI-project. A new 8 MW biomass fired boiler would be installed to the district heating system in Paide. According to the project design document (PDD) the new boiler would replace approximately 70-80% of the annual thermal energy production produced presently by shale oil. According to initial plans the biofuel would come from several local fuel suppliers.

The purpose of this report is to present an independent third party opinion on the project design, specially the PDD. Furthermore, being a pilot project, the purpose is also to clarify the validation process and methodology to be used in JI projects following the Ministry for Foreign Affairs Clean Development Mechanism and Joint Implementation Programme Operational Guidelines. KPMG Non-Financial Assurance (NFA) principles have been used during the validation process. Validation criteria are based on the requirements set in:

- Article 6 (A6) of the Kyoto Protocol (KP) to the United Nations Framework Convention on Climate Change (UNFCCC), the guidelines for implementation of A6 of the KP as presented in the Marrakesh Accords (MA) under decision 16/CP.7, and the annex to the decisions (hereinafter collectively referred as “JI rules”);
- Other relevant rules, including the host country legislation and JI criteria;
- The guidelines for the Finnish JI/CDM Pilot Programme, and the requirement that the Projects should generate emission reduction units (ERUs) that can be transferred to Finland in accordance with A6 of the KP.

As part of the validation project following activities were carried out:

- A review of the relevant documents (Annex 7.1);
- A site visit to Paide district heating plant;
- Interviews with the key persons related to Paide district heating project;
- Discussion with the representative of Hansa Leasing & Factoring;
- Discussions with the key persons at the Ministry of Environment in Estonia and Finland and Finnish Environment Institute.

### Summary of the validation opinion

Expected yearly GHG reductions indicated in the PDD are approximately 14 500 metric tons of carbon dioxide equivalents. Based on our activities undertaken, nothing came to our attention that causes us to believe that the applied assumptions and methods do not provide a reasonable basis for the forecasted emission reductions compared to the selected most likely baseline scenario.

## 2 INTRODUCTION

The Finnish Pilot Programme on JI/CDM has initially approved the Paide district heating project as a JI-project. A new 8 MW biomass fired boiler would be installed to the district heating system in Paide. According to the project desing document (PDD) the new boiler would replace

approximately 70-80% of the annual thermal energy production produced presently by shale oil. The GHG emission reductions are planned to begin during the last quarter of 2003.

The Ministry of Environment of Finland (Ministry) has asked KPMG Wideri Oy Ab (KPMG) to validate the PDD of the Paide district heating project. Validation conclusions have an affect to the amount of the expected transferable emission reductions. Wärtsilä Finland Oy is responsible for the PDD. Wärtsilä Finland Oy was assisted by Elektrowatt-Ekono Oy in preparing the PDD.

Validation team consisted of the following persons:

- Tuomas Suurpää, team leader;
- Mats Hägerström, team member;
- Veiko Kullaste, team member;
- Eric Koudijs, team member.

## 2.1 Objective

The objective of the validation is to assess the project design and particularly, validate that the project PDD comply with:

- The requirements of Article 6 of the Kyoto Protocol (KP) to the United Nations Framework Convention on Climate Change (UNFCCC), the guidelines for the implementation of Article 6 of the KP as presented in the Marrakech Accords under decision 16/CP.7 and the annex to the decision (JI rules);
- Other relevant rules, including the host country legislation and JI criteria;
- The guidelines of the Finnish JI/CDM Pilot Programme, and the requirement that the Projects should generate emission reduction units (ERU's) that can be transferred to Finland in accordance with Article 6 of the KP.

## 2.2 Scope

The scope of this validation consists of assessing the PDD and other documents against the requirements set in paragraph 2.1 Objective. PDD consists of one document:

- Wärtsilä Finland Oy – Project Design Document Paide Bioenergy Project, Wärtsilä Finland Oy BioPower, PDD Paide Bioenergy Project, Draft Final, 21.10.2002, 60K03438-Q070-005f.

This document has been evaluated. Furthermore, other documents (Annex 7.1) have been reviewed and key persons relevant to the project have been interviewed in order to validate whether the project fulfils the criteria presented in paragraph 2.1 Objective.

## 2.3 GHG Project Description

Wärtsilä Finland Oy BioPower plans to deliver a new 8 MW biofuel boiler to the district heating system in Paide. The new biofuel boiler is planned to produce the base heat load in the city of Paide. The unit is using wood based waste but it is also capable of burning peat up to 30% of the total fuel consumption. According to the PDD, several aims will be reached with the installation of the boiler. From OÜ Pogi's (operator of the boiler) point of view, the installation aims to ensure profitability of the company in the long run. Simultaneously, this means more stable

prices and reduced SO<sub>2</sub> and NO<sub>x</sub> emissions. The project will also improve the competitiveness of district heating against other heating options that are often less environmentally friendly.

The contribution to GHG abatement is important as the new plant will replace local heat production based on shale oil and/or heavy fuel oil.

According to the BS, only the impact of the boiler and fuel change are considered, that is, changes in the emissions from combustion. Emissions from possible landfilling of the material used as a biofuel in the project are not taken into account in the study. Furthermore, emissions from transportation of the fuels (biofuel or shale oil) to the landfill or to the boilers are not considered in the study. The changes in the emissions from shale oil distillation are also not taken into account. The annual GHG emissions that can be avoided with the new biofuel boiler project are approximately 14 500 metric tons of carbon dioxide equivalents according to the BS.

### 3 METHODOLOGY

A risk based NFA methodology has been used. This enables validation activities to be concentrated on the issues of critical importance for the successful validation. Critical importance has been pre-evaluated based on the documents sent to KPMG prior to the interviews and site visits. The relevance and the reliability of the data provided by these documents (documents JIPA-1 and JIPA 16-18 in Annex 7.1) have been evaluated. The reliability of the data consists of the completeness, accuracy, consistency and transparency of the data. When evaluating the data following project issues have been taken into account:

- The relevance of the defined project boundaries, assuring that the covered greenhouse gas emissions appropriately reflect the greenhouse gas emissions of the project and that all relevant greenhouse gases have been taken into account;
- The completeness of assumptions, data, references and calculations applied in the definition of:
  - project boundaries;
  - the emission level to any that would otherwise occur;
  - inclusion of all greenhouse gas emission sources and activities within the defined project boundaries, with any exclusions stated and specified;
  - leakage – whether the project might affect in a net change of greenhouse gas emissions outside the project boundaries;
  - additionality – whether the project activity is expected to result in reduction of greenhouse gas emissions that are additional to any that would otherwise occur.
- The accuracy of the greenhouse gas emission calculations, ensuring that these have the precision needed for their intended use, including the possibility of performing a sensitivity analysis;
- The consistency of the applied methodology and input data with the requirements mentioned in 2.1 Objective;
- The transparency of the baseline study, based on:

- coherent and factual description and justification of all assumptions on the basis of which the baseline was calculated;
- the description and justification of all assumptions on the basis of which the emission levels after project completion were calculated;
- disclosure of underlying data and references that were used in compiling the baseline study.

The relevance and the reliability of the data have been evaluated on the scale of low-medium-high. For relevance the scale refers directly to the level of relevance of the data. For reliability the scale refers to the level of risk for misinformation associated with the data. The levels of relevance and reliability determine the level of gross risk. Those requirements with the level of high gross risk are primarily addressed in more detail during the interviews.

Applied PCF validation protocol (VP) has been used as part of this validation. The VP serves the following purposes:

- It organises, details and clarifies the requirements the project is expected to meet;
- It documents how a particular requirement has been validated and the result of the validation.

The validation protocol consists of one table. The different columns in these tables are described in the table 1 below. The complete VP is enclosed to Annex 7.2 of this report.

Requirement	Ref. 1	R1	R2	R3	MoV	T	Ref. 2	Finding by the VC	Reply to CARs	Conclusion by the VC
The requirements the project should meet.	Gives reference to the legislation, agreement or other documentation where the requirement is found.	Relevance of data	Reliability of data	Gross risk of data	Explains how conformance with the requirement is investigated. Examples of means of verification are document review (DR) or interview (I).	Target for the interview	Gives reference to the document where the answer to the requirement is found.	This is either acceptable based on evidence provided (OK), or requires a corrective actions presented as corrective action request (CAR). Clarifications are presented for a situation where the information is found to be insufficient, unclear or not transparent.	In case of a CAR, this is the reply to the CAR.	Final conclusion based on the original findings and/or replies to CARs.



### 3.1 Review of documents, visits and interviews

This validation has been performed through a desk review and site visits including discussions and interviews with selected experts and stakeholders. Reviewed documents can be divided in two categories:

- documents provided to KPMG prior to the site visits (JIPA-1 and JIPA 16-18);
- documents reviewed and/or acquired during and after the site visits (JIPA 2-15 and JIPA 19-JIPA 35).

The authors of PDD (Wärtsilä Finland Oy and Electrowatt-Ekono Oy) were interviewed at the KPMG premises. A site visit to Paide district heating plant was performed. Following persons have been interviewed face to face during the validation:

- Ilkka Heikkilä, business controller, Wärtsilä Finland Oy BioPower;
- Kari Hämekoski, senior consultant, Electrowatt-Ekono Oy;
- Rein Rebas, director, OÜ Pogi;
- Andres Alusalu, financial manager, OÜ Pogi;
- Heidi Hallik, senior officer, Ministry of the Environment of Estonia.

Furthermore discussions have been held with:

- Tiido Parve, sales manager, AS Hans Liising Eesti;
- Mika Sulkinoja, senior adviser, Ministry of the Environment of Finland;
- Ismo Ulvila, programme manager, Finnish Environment Institute.

The site visit took place on 4.12.2002.

### 3.2 Reporting of Clarifications and Corrective Action Requests

If the data provided is found to meet the requirements, it is acceptable and marked as “OK” in the section “Finding by the Validator” or “Conclusion by the Validator”. In case the data provided is found to be insufficient, unclear or not transparent, it is reported as “Clarification”. However, there is no need to provide further information for requirements reported solely as “Clarifications”, as these requirements or insufficient data to fulfil these requirements, are not regarded as significant for the validation. Non-fulfilment of significant validation protocol requirements or where a risk to the fulfilment of project objectives is identified, is reported as “Corrective Action Request (CAR)”. “Clarifications” are also used for describing the CAR’s. A “Corrective Action Request” in validation context would be where:

- Material mistakes have been made with a direct influence on project results;
- Significant validation protocol requirements have not been met;
- There is a risk that the project would not be accepted as a JI/CDM project or that emission reductions will not be certified.

If an answer is not provided in the case of "Corrective Action Request" or if the provided answer does not meet the original requirement, it has an affect to the formulation of the final validation opinion.

## 4 CONCLUSIONS

### 4.1 General

#### 4.1.1 Discussion

General criteria are those criteria that are not directly related to the baseline or monitoring and verification plan. These general criteria include mainly "administrative" criteria related to the eligibility of the project. Furthermore, one of the general criterias is the additionality criteria of the project, that is the "*determination of whether the project is additional to any that would otherwise occur*". Therefore, all likely scenarios for a baseline should be investigated and presented in detail in the PDD. Based on the details and argumentation presented in the PDD a most likely baseline is chosen.

#### 4.1.2 Corrective Action Requests

A **CAR 11.1:** Please provide detailed information how project's emission reductions are transferred to Finland, especially before 2008.

- Emission reductions are planned to be calculated starting 1.9.2003. How are these emission reductions planned to be verified and transferred to Finland? That is, what is the process for transferring the emission reductions?

A.1 **Reply:** In accordance with Guidelines for Article 6 of KP incorporated in the Marrakech Accords ("JI Rules"), projects started as of 1 January 2000 are eligible as Joint Implementation projects. However, Emission Reduction Units (ERUs) accruing from JI projects may only be transferred under Article 6 of KP to other Annex B Parties during the first commitment period commencing on 1 January 2008.

Provided that the validation of the Paide Project is successfully completed, Estonia and Finland aim to conclude an agreement whereby Estonia commits to issue ERUs corresponding to the verified emission reductions generated by the Paide Project during 2008-2012 and transfer such ERUs to Finland under Article 6 of KP.

As the validator has indicated, the Paide Project is expected to be operational and generate emission reductions also prior to the first commitment period under KP, i.e. during 2003 – 2007. The intention is to calculate and monitor also these emission reductions and to contract an independent third party to verify such amount in accordance with the MVP. The aim of Finland is to purchase an amount equal to emission reductions generated by the Paide Project during 2003-2007 from the Assigned Amount of Estonia through emission trading, i.e. under Article 17 of KP. Such procedure is consistent with the Kyoto Protocol as Annex B countries have the sovereign right to transfer and acquire Assigned Amount Units under Article 17 of KP provided that they fulfil the eligibility criteria defined in Marrakech Accords.

A.2 **Finding by the Validator Consultant:** Reply provides adequate information to fulfil requirement 11.

**B CAR 14.1:** Please provide final draft PDD to be validated with relevant annexes 1-10.

- VC has received three different version of the PDD. Version 21.10.2002 has been used during the determination. Only annexes 6 and 7 have been attached to these three versions.

**B.1 Reply:** Please refer to the final PDD provided.

**B.2 Finding by the Validator Consultant:** Final PDD (version 31.12.2002) provides adequate information to fulfil requirement 14.

**C CAR 15.1:** Please provide information that the project is in line with the conditions set in Initial approval of the Finnish CDM/JI Pilot Programme (Annex 2 of the PDD).

- According to the PDD emission reductions resulting from the project according to the PDD are smaller than those committed in the Initial Approval. Furthermore the price of the emission reductions according to the PDD is higher than that committed in the Initial Approval.

**C.1 Reply:** The Finnish CDM/JI pilot programme has granted an initial approval to the project indicating its willingness to purchase emission reductions from the project subject to a successful validation. However, the amounts specified in the initial approval are indicative and by no means binding. The final decision on the project approval will be made based on successful validation and negotiations both with the project sponsor and the host country.

**C.2 Finding by the Validator Consultant:** Reply provides adequate information to fulfil requirement 15.

**D CAR 16.1:** Please provide detailed information proving the additionality of the project.

- According OÜ Pogi personnel the baseline would be a replacement of the present shale oil production with a biofuel production. In other words, the most likely business as usual scenario is that the present shale oil production will be replaced with biofuel production regardless of the project. According to the OÜ Pogi personnel the main reason for the replacement is the expected stabilization of the heat prices. However, shale oil production will be used during the peak production periods on the top of the biofuel production unless another biofuel boiler will be acquired.

**D.1 Reply:** According to Guidelines for Article 6 of KP incorporated in the Marrakech Accords in the decision 16/CoP7 ("JI Rules", FCCC/CP/2001/13/add.2), "projects need to result in a reduction of anthropogenic emissions by sources or an enhancement of anthropogenic removals by sinks that is additional and to any that would otherwise occur". Consequently, the Finnish CDM/JI pilot programme considers financial additionality to be one of the relevant indicators in assessing the project's compatibility with regard to 16/CoP7, but not a *sine qua non* condition that would determine the additionality of the project.

Regarding the investment decision of the project, we refer to a statement from Pogi öü dated 18.12.2002 stating that "...intention to replace the existing shale oil plant is subject to our project being eligible for JI support...".

Furthermore, the difference in the investment IRR scenarios "with" or "without" JI support is 3,7 %. The experience from other countries in Central and Eastern Europe studied by the EU-funded Base project suggests that an average impact of JI-support to a JI project's IRR is roughly 2 %. This implies the investment being highly dependent on the JI-support.

**D.2 Finding by the Validator Consultant:** Reply provides adequate information to fulfil requirement 16, however explanation of the reasons behind the additionality question is needed. In the original PDD (21.10.2002) it was argued that “even though the project is profitable without JI-funding, OÜ Pogi is not able to finance the project without additional support due to lack of financing. Continued use of the existing plant is therefore the most likely baseline option.”

However, during the site visit, the representatives of OÜ Pogi answered several times that a replacement of the present shale oil production with a biofuel production will take place regardless of the project presented in the PDD. The representatives of OÜ Pogi indicated that they have a competitive offer for replacing the shale oil production with biofuel production from another boiler provider. If JI-funding is not available they will have to choose the competing offer although not technically as viable as the project presented in the PDD. Furthermore, they also indicated that outside funding is not a problem. However, it was not made clear who the other potential investors could be and it was also vaguely indicated that if the competitive offer was chosen, JI-funding would also be applied. For the reasons discovered during the site visit, CAR 16.1 was formulated.

The dilemma of additionality described above was seen as a question between financial additionality and baseline selection. According to the discussions with the representatives of the Finnish CDM/JI pilot programme financial additionality in this case “refers to whether project investment would have taken place in the absence of the credit gaining JI provisions” (Kevin A. Baumert, WRI, 1998). In other words, the project is financially additional if it can be demonstrated, through financial analysis, that the project would not have taken place without JI-funding. Altogether it is unclear where the limit between financial additionality and baseline selection is supposed to be drawn.

The Finnish CDM/JI pilot programme, being the author of the Finnish Operational Guidelines related to JI and CDM mechanisms, has nominated in its reply to CAR 16.1 “financial additionality to be one of the relevant indicators in assessing the project's compatibility with regard to 16/CoP7, but not a *sine qua non* condition that would determine the additionality of the project.”

In the reply to CAR 16.1 (letter to Validator Consultant from the active manager of OÜ Pogi dated 18.12.2002) it is stated that “the ability of the existing owners [of OÜ Pogi] to raise new share capital is limited and to take additional investors is not a preferred option”. In the letter to Validator Consultant (18.12.2002) it is also mentioned that “one could say that our general intention to replace the existing oil shale plant with a bio-plant is true, but subject to our project being eligible for JI-support, from Finland or from some other European country.”

According to the discussion with the representative of the Hansa Leasing & Factoring (the bank, which have provided the initial decision to finance the project), the other competitive offer would most likely not have been financed without own equity financing (JI-funding or outside investors in this case). According to the interview with the representative of the Hansa Leasing & Factoring a general rule in these kind of cases is that own equity financing has to cover 15% of the purchase price of the equipment, although every case is

separately evaluated. On the top of that 15% own equity financing has to cover also any local works, transportation, etc. According to the data presented in the yearly financial reports, it is likely that OÜ Pogi could not afford to invest in a new biofuel boiler without outside funding – not if the project is the one presented in the PDD nor when based on the competitive offer.

The present owners of OÜ Pogi do not prefer to have outside investors leading to the broadening of the ownership, which can be interpreted to support the choice of choosing existing plant as a baseline. In other words, if the only option for required equity funding would be outside investors, which in turn would lead to the broadening of the ownership, it is likely that an investment decision leading to biofuel production would not be made. As a result of the reply provided to the CAR 16.1 and the additionality interpretation discussion above, the project is seen additional for the following reasons:

- The Finnish JI/CDM pilot programme has stated that financial additionality does not determine the additionality;
- It is likely that OÜ Pogi could not afford to invest in a new biofuel production without outside equity funding;
- It is unlikely that an investment decision would be made if the outside equity financing would result in the broadening of the ownership;
- As broadening of the ownership is unlikely to happen, the only form of outside equity financing enabling the investment decision known to the Validator Consultant is JI-funding.

### 4.1.3 Conclusion

The final finding of the Validator Consultant is that the replies to CARs provide adequate information to fulfil the requirements 11, 14, 15 and 16. Therefore, nothing came to our attention that causes us to believe that the applied assumptions and methods do not provide a reasonable basis for the fulfillment of general requirements.

## 4.2 Baseline

### 4.2.1 Discussion

The baseline should be the most likely business as usual scenario. A baseline should cover all the GHG emissions and all emission sources within the project boundary. Project boundary should include all the emission sources under the control of the project participants that are significant and reasonably attributable to the project.

### 4.2.2 Corrective Action Requests

E **CAR 27.1:** Please provide the final spreadsheets for annexes 6 and 7.

- During the interview with the authors of the PDD, the final spreadsheet of annexes 6 and 7 were not shown. During the interview minor differences were detected between the project's emission reduction calculations presented by the authors of PDD and VC.

E.1 **Reply:** Please refer to the final PDD provided.

E.2 **Finding by the Validator Consultant:** Final PDD (version 31.12.2002) provides adequate information to fulfil requirement 27.

### 4.2.3 Conclusion

The final finding of the Validator Consultant is that the reply to CAR provides adequate information to fulfil the requirement 27. Therefore, nothing came to our attention that causes us to believe that the applied assumptions and methods do not provide a reasonable basis for the fulfillment of general requirements.

## 4.3 Monitoring and Verification Protocol

### 4.3.1 Discussion

The MVP defines a project-specific standard against which the project's performance in terms of its GHG reductions will be monitored and verified. Monitoring will be a continuous process, which will be the responsibility of the project entity. It is the responsibility of the host organisation to do the monitoring. Therefore, MVP should be clear, easy to understand and realistic compared to the resources of the host organisation. Monitoring should include procedures to enable the verification of the emission reductions as verification is the precondition for the transfer of any emission reductions. However, it is challenging to do a detailed and documented procedures for MVP before the project is operational.

### 4.3.2 Corrective Action Requests

F **CAR 40.1:** Please correct the equation in paragraph 6.2.

- Equation does not include a factor for altering MWh into MJ or the other way around.

F.1 **Reply:** Please refer to the final PDD provided.

F.2 **Finding by the Validator Consultant:** Final PDD (version 31.12.2002) provides adequate information to fulfil requirement 40.

G **CAR 40.2:** Please provide more detailed information on what data should be collected and archived and how it should be done.

- According to the site personnel monitoring of project emission reduction will be done according to the MVP. During the interviews of the authors of PDD and site personnel, it became clear that all the procedures for monitoring have not been described in detail, which would enable accurate follow-up of the MVP. Further details are required at least for the following items related to the MVP:
  - a) how is the biofuel heat production measured and separated from shale oil production? At the moment there is only one meter measuring the total heat production;
  - b) how is the biofuel heat production measured and separated from peat production? At the moment there is no accurate procedures for how this should be done;
  - c) how is the biofuel boiler efficiency measured or determined? During the interviews it was not clear whether warranty value is used or whether boiler efficiency is separately determined;
  - d) what documents are archived for the purpose of verification;

- e) what are the internal quality assurance and control procedures? At present, there was no mention in the MVP about internal procedures confirming the correctness of collected information on emission reductions;
- f) where are potential emission reductions reported? Although it is still uncertain how GHG emission reduction data is nationally collected in Estonia, MVP should imply how OÜ Pogi is to be informed of the proper procedures once they are finalized.

G.1 **Reply:** Please refer to the final PDD provided.

G.2 **Finding by the Validator Consultant:** Final PDD (version 31.12.2002) provides adequate information to fulfil requirement 40.

### 4.3.3 Conclusion

The final finding of the Validator Consultant is that the reply to CAR provides adequate information to fulfil the requirement 40. Therefore, nothing came to our attention that causes us to believe that the applied assumptions and methods do not provide a reasonable basis for the fulfillment of general requirements.

## 5 VALIDATION STATEMENT

### Introduction

Ministry of the Environment of Finland requested KPMG Wideri Oy Ab to validate the Project Design Document (including the Baseline Study and Monitoring and Verification Plan for the Paide District Heating Project) of a possible Joint Implementation project for carbon dioxide equivalent emission reductions. The PDD consists of one document:

- Wärtsilä Finland Oy – Project Design Document Paide Bioenergy Project, Wärtsilä Finland Oy BioPower, PDD Paide Bioenergy Project, Draft Final, 21.10.2002, 60K03438-Q070-005f.

The Project Design Document is the responsibility of Wärtsilä Finland Oy and has been assisted by Elektrowatt Ekono Oy. The responsibility of KPMG Wideri Oy Ab is to issue a validation statement regarding the Project Design Document.

### Scope

The Project Design Document contains the assessments by Wärtsilä Finland Oy of the following items:

- 1 Conclusive Summary;
- 2 Project description;
- 3 Environmental impacts;
- 4 Stakeholder involvement;
- 5 Baseline study and assessment of additionality;
- 6 Monitoring and verification plan;
- 7 References.

Our validation was focused on:

- The assumptions and methods applied in the preparation/definition of the forecasted emission reductions;
- Compliance of the Project Design Document with Article 6 (A6) of the Kyoto Protocol (KP) to the United Nations Framework Convention on Climate Change (UNFCCC), the guidelines for implementation of A6 of the KP as presented in the Marrakesh Accords (Mar) under decision 16/CP.7, and the annex to the decisions;
- Compliance of the Project Design Document with other relevant rules, including the host country legislation and JI criteria;
- Compliance of the Project Design Document the guidelines for the Finnish JI/CDM Pilot Programme, and the requirement that the Projects should generate emission reduction units (ERUs) that can be transferred to Finland in accordance with A6 of the KP;
- Approval of this Joint Implementation project by the Parties involved.

### **Activities undertaken**

Our validation, planned and conducted by a mixed team of KPMG Sustainability Services from Finland, Estonia and the Netherlands was performed on a test basis and provides a moderate level of assurance. In the context of validation we recognise that non-financial data are, in general, subject to more inherent limitations than financial data due to their nature and methods used for determining, calculating or estimating such data.

Our activities included:

- Review of the relevant documents;
- On site interviews with the personnel of OÜ Pogi district heating plant in Paide, the author of the Project Design Document Wärtsilä Finland Oy (and Electrowatt-Ekono Oy) including a review of the underlying systems and procedures to collect and process the reported information;
- Discussion with the representative of Hansa Leasing & Factoring;
- Discussions with the representatives of Estonian and Finnish Ministries of the Environment and Finnish Environment Institute;
- Review of the internal documents used for preparing the Project Design Document;
- Review of the applied assumptions and methods of the forecasted emission reductions.

### **Opinion**

Based on our activities undertaken, nothing came to our attention that causes us to believe that the applied assumptions and methods do not provide a reasonable basis for the forecasted emission reductions compared to the selected most likely baseline scenario.

In our opinion, the Project Design Document have been prepared in line with the Article 6 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change, the guidelines for implementation of A6 of the Kyoto Protocol as presented in the Marrakesh Accords under



decision 16/CP.7, and the guidelines for the Finnish JI/CDM Pilot Programme, and the requirement that the Projects should generate emission reduction units that can be transferred to Finland in accordance with the Article 6 of the Kyoto Protocol.

Actual emission reductions may deviate from the forecasted emission reductions since anticipated events do not always occur as expected.

## **6 REPORT CLOSURE**

The Validator Consultant has exercised all reasonable skill, care and diligence in the carrying out the services.

Helsinki, 10 January 2003

Pauli Salminen  
Partner  
KPMG Wideri Oy Ab

Tuomas Suurpää  
Team leader  
KPMG Wideri Oy Ab

## 7 ANNEXES

### 7.1 Document Index

DOCUMENT INDEX OF THE VALIDATION OF TAMSALU AND KADRINA DISTRICT HEATING PLANTS 10.1.2003	
Document number	Document name
JIPA-1	Wärtsilä Finland Oy - Project Design Document Paide Bioenergy Project (draft final 21.10.2002)
JIPA-2	Ehitysloa Taotlus - building permit
JIPA-3	Table 1.A(b) Sectoral background data for energy - Estonia 2000/submission 2001
JIPA-4	Annex 1 (of PDD) letter of endorsement
JIPA-5	Annex 2 (of PDD) initial approval of Finnish CDM/JI Pilot Programme
JIPA-6	Sopimus no 2266 - osapuolet: Wärtsilä Finland Oy, Biopower ja: OU Pogi. Toimitus: Biograte 8 MW kattilalaitteet Tasuvusuuring; Paide linnas soojusenergia tootmise rekonstrueerimine. Paide keskkattlamaja kutteõililt biokuttele ulevimise tasuvusuuring (Feasibility study: renovation of the Paide central boiler house)
JIPA-7	
JIPA-8	Rendileping (PDD annex 9: Rental agreement for the DH-network)
JIPA-9	Turuluba (PDD annex 8: Heat production licence)
JIPA-10	-
JIPA-11	Kooskõlastus nr. 141 (formula for calculating heat prices)
JIPA-12	Soojusenergia hinnad Eesti linnades ja asulate seisuga mai 2002 (local prices of heat)
JIPA-13	Pre-agreements for biofuel supply
JIPA-14	Letter of interest (unofficial) from the bank
JIPA-15	Offer for terms of emission reductions purchase agreement
JIPA-16	Cashflow analysis
JIPA-17	Fuel supplier calculations
JIPA-18	Fuel quantity and price calculations
JIPA-19	Article: Volumes to recket in carbon market (Environmental Finance, November 2002)
JIPA-20	Memorandum of understanding
JIPA-21	Consultancy Contract (between Ministry and KPMG)
JIPA-22	Terms of reference (between Ministry and KPMG)
JIPA-23	General conditions for the consulting services (between Ministry and KPMG)
JIPA-24	CDM and JI Pilot Programme - Operational Guidelines (Ministry for Foreign Affairs)
JIPA-25	Validation notes by Tuomas Suurpää
JIPA-26	Validation notes by Mats Hägerström
JIPA-27	Emission calculations
JIPA-28	Correspondance during the project
JIPA-29	Majandusaaste aruanne (yearly reports) 2000 - 2002
JIPA-30	Answers to CARs
JIPA-31	Wärtsilä Finland Oy - Project Design Document Paide Bioenergy Project (draft final 30.12.2002)
JIPA-32	Draft validation report - validation of Paide district heating project, report no. 2003 - 3, revision no.1
JIPA-33	Draft final validation report - validation of Paide district heating project, report no. 2003 - 3, revision no.2
JIPA-34	Calculation of own equity financing of OU Pogi
JIPA-35	Wärtsilä Finland Oy - Project Design Document Paide Bioenergy Project (draft final 13.1.2003)

## 7.2 Validation Protocol

Requirement	Ref. 1	R1	R2	R3	Mov	T	Ref. 2	Finding by the VC	Reply to the CARs	Conclusion by the VC
GENERAL										
1. The Article 6 project should be implemented in such a way as to minimize adverse effects.	KP, A 2, PA 3; Gui, P 11, PA 5.1.2; Gui, P 12, PA 5.3.1.	H	L	L	DR	-	PDD/P 8/PA 2.4	OK.		
2. The acquisition of emission reduction units shall be supplemental to domestic actions.	KP, A 6, PA 1d.	H	M	M	DR, I	FM E	KI, P 13-15.	OK.		
3. Projects starting as of the year 2000 may be eligible as Article 6 projects.	Mar, P 6, PA 5.	H	L	L	DR	-	PDD/P 29/PA 5-6; Gui/P 12/PA 5.2	OK.		
4. Parties are included in Annex 1 with a commitment inscribed in Annex B.	Mar, P 12, PA 21; Gui, P 10, PA 5.1.1.	H	L	L	DR	-	Con/A N 1; KP/A N B	OK.		
5. Parties are Parties to the Kyoto Protocol.	Mar, P 12, PA 21a; Gui, P 10, PA 5.1.1.	H	L	L	DR	-	<a href="http://unfccc.int/resolution/kyoto/kyoto.pdf">http://unfccc.int/resolution/kyoto/kyoto.pdf</a>	OK, both countries have ratified the KP.		
6. Parties' assigned amounts have been calculated and recorded.	Mar, P 12, PA 21b.	H	L	L	DR	-	<a href="http://ghg.unfccc.int/">http://ghg.unfccc.int/</a>	OK.		
7. Parties have in	Mar, P	H	L	L	DR	-	<a href="http://g">http://g</a>	OK.		

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place a national system for the estimation of anthropogenic emissions.	12, PA 21c; KP, A 6, PA 1c; Gui, P 10, PA 5.1.1.						<a href="http://hg.unfccc.int/">hg.unfccc.int/</a>			
8. Parties have in place a national registry.	Mar, P 12, PA 21d; Gui, P 10, PA 5.1.1.	H	H	H	I	FM E, EM E	Mar, P 56, PA 2.	OK, requirement is that registries have to be in place prior to 1 January 2000 or one year after the entry into force of the Kyoto Protocol.		
9. Parties have submitted annually the most recent required inventory.	Mar, P 12, PA 21e; Gui, P 10, PA 5.1.1.	H	L	L	DR	-	<a href="http://hg.unfccc.int/">http://hg.unfccc.int/</a>	OK.		
10. Parties submit the supplementary information on assigned amounts and make any additions to, and subtractions from, assigned amounts.	Mar, P 12, PA 21f; KP, A 6, PA 1c; Gui, P 10, PA 5.1.1.	H	H	H	DR	-	<a href="http://unfccc.int/resourcetable.html">http://unfccc.int/resourcetable.html</a>	OK, as reporting and registration procedures are under development.		
11. The host Party may only issue and transfer ERUs upon meeting the requirements in paragraphs 21 (a), (b) and (d).	Mar, P 12, PA 24.	H	H	H	I	FM E, EM E		CAR 11.1: Please provide detailed information how project's emission reductions are transferred to Finland, especially before 2008. Emission reductions are planned to be calculated starting 1.9.2003. How are these emission reductions planned to be verified and transferred to Finland? That is, what is the process for transferring the emission reductions?	Provided that the validation of the Paide Project is successfully completed, Estonia and Finland aim to conclude an agreement whereby Estonia commits to issue ERUs corresponding to the verified emission reductions generated by the Paide Project during 2008-2012 and transfer such ERUs to Finland under Article 6 of KP. The aim of Finland is to purchase an amount equal to emission reductions generated by the Paide Project during 2003-2007 from the Assigned Amount of Estonia through emission trading, i.e. under Article 17 of KP. Such procedure is consistent with the Kyoto Protocol as Annex B countries have the sovereign right to transfer and acquire Assigned Amount Units under Article 17 of KP	OK.

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									provided that they fulfil the eligibility criteria defined in Marrakech Accords.	
12. A party involved in the Article 6 project shall inform the secretariat of its designated focal point for approving projects.	Mar, P 11, PA 20a; Gui, P 8-9, PA 4.1.	H	M	H	DR, I	FM E, EM E	PDD/P 7/PA 2.2.3	OK, presently there is a bill to be finalised for formal establishing of designated focal point in Estonia.		
13. A party involved in an Article 6 project shall inform the secretariat of its national guidelines and procedures for approving Article 6 projects.	Mar, P 11, PA 20b; Gui, P 8-9, PA 4.1.	H	H	H	I	EM E	PDD/P 7/PA 2.2.3	OK, procedures exist in both countries. Presently there is a bill for formal guidelines and procedures to be finalized in Estonia.		
14. Project participants shall submit to an accredited independent entity a project design document.	Mar, P 14, PA 31.	H	H	H	DR, I	PDD , FM E	PDD	CAR 14.1: Please provide final draft PDD to be validated with relevant annexes 1-10. VC has received three different version of the PDD. Version 21.10.2002 has been used during the determination. Only annexes 6 and 7 have been attached to these three versions.	Please refer to the final PDD provided.	OK.
15. Project design document contains information needed for the determination of whether the project has been approved by the Parties involved.	Mar, P 14, PA 31a/33a; Gui, P 8, PA 4; Gui, P 12-13, PA 5.3.1.	H	H	H	DR, I	PDD , FM E, EM E	PDD/ AN 1-2	CAR 15.1: Please provide information that the project is in line with the conditions set in Initial approval of the Finnish CDM/JI Pilot Programme (Annex 2 of the PDD). According to the PDD emission reductions resulting from the project according to the PDD are smaller than those committed in the Initial Approval. Furthermore the price of the emission reductions according to the PDD is higher than that committed in the Initial Approval.	The Finnish CDM/JI pilot programme has granted an initial approval to the project indicating its willingness to purchase emission reductions from the project subject to a successful validation. However, the amounts specified in the initial approval are indicative and by no means binding. The final decision on the project approval will be made based on successful validation and negotiations both with the project sponsor and the host country.	OK, although the answers to CARs were signed by the representative of Finnish Environment Institute, not Ministry of the Environment. It was however indicated by the Ministry of Environment that Finnish Environment Institute is the party to negotiate with.
16. Project design document contains information needed for the determination of	Mar, P 14, PA 31b/33b; Gui, P 11; PA	H	H	H	DR, I	PDD , Site	PDD/P 18-29/PA 5, I	CAR 16.1: Please provide detailed information proving the additionality of the project. According to the OÜ Pogi personnel the baseline would be a replacement of the	According to Guidelines for Article 6 of KP incorporated in the Marrakech Accords in the decision 16/CoP7 ("JI Rules", FCCC/CP/2001/13/add.2), "projects need to result in a reduction of	OK, however explanation of the reasons behind the additionality question is needed. In the original PDD (21.10.2002) it was argued that "even though the project is profitable without JI-funding,

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<p>whether the project is additional to any that would otherwise occur.</p>	<p>5.1.2; Gui, P 16; PA 5.4.2.</p>							<p>present shale oil production with a biofuel production. In other words, the most likely business as usual scenario is that the present shale oil production will be replaced with biofuel production regardless of the project. According to the OÜ Pogi personnel the main reason for the replacement is the expected stabilization of the heat prices. However, shale oil production will be used during the peak production periods on the top of the biofuel production unless another biofuel boiler will be acquired.</p>	<p>anthropogenic emissions by sources or an enhancement of anthropogenic removals by sinks that is additional and to any that would otherwise occur".</p> <p>Consequently, the Finnish CDM/JI pilot programme considers financial additionality to be one of the relevant indicators in assessing the project's compatibility with regard to 16/CoP7, but <u>not</u> a <i>sine qua non</i> condition that would determine the additionality of the project.</p> <p>Regarding the investment decision of the project, we refer to a statement from Pogi oü dated 18.12.2002 stating that "...intention to replace the existing shale oil plant is subject to our project being eligible for JI support..."</p> <p>Furthermore, the difference in the investment IRR scenarios "with" or "without" JI support is 3,7 %. The experience from other countries in Central and Eastern Europe studied by the EU-funded Base project suggests that an average impact of JI-support to a JI project's IRR is roughly 2 %. This implies the investment being highly dependent on the JI-support.</p>	<p>OÜ Pogi is not able to finance the project without additional support due to lack of financing. Continued use of the existing plant is therefore the most likely baseline option."</p> <p>However during the site visit, the representatives of OÜ Pogi answered several times that a replacement of the present shale oil production with a biofuel production will take place regardless of the project presented in the PDD. The representatives of OÜ Pogi indicated that they have a competitive offer for replacing the shale oil production with biofuel production from another boiler provider. If JI-funding is not available they will have to choose the competing offer although not technically as viable as the project presented in the PDD. Furthermore, they also indicated that outside funding is not a problem. However, it was not made clear who the other potential investors could be and it was also vaguely indicated that if the competitive offer was chosen, JI -funding would also be applied. . For the reasons discovered during the site visit, CAR 16.1 was formulated.</p> <p>The dilemma of additionality described above was seen as a question between financial additionality and baseline selection. According to the discussions with the representatives of the Finnish CDM/JI pilot programme financial additionality in this case "refers to whether project investment would have taken place in the absence of the credit gaining JI provisions" (Kevin A. Baumert, WRI, 1998). In other words, the project is financially additional if it can be demonstrated, through financial analysis, that the project would not have taken place without JI-funding.</p>
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										<p>Altogether it is unclear where the limit between financial additionality and baseline selection is supposed to be drawn.</p> <p>The Finnish CDM/JI pilot programme, being the author of the Finnish Operational Guidelines related to JI and CDM mechanisms, has nominated in its reply to CAR 16.1 “financial additionality to be one of the relevant indicators in assessing the project's compatibility with regard to 16/CoP7, but <u>not</u> a <i>sine qua non</i> condition that would determine the additionality of the project.”</p> <p>In the reply to CAR 16.1 (letter to Validator Consultant from the active manager of OÜ Pogi dated 18.12.2002) it is stated that “the ability of the existing owners [of OÜ Pogi ] to raise new share capital is limited and to take additional investors is not a preferred option”. In the letter to Mr Salminen (18.12.2002) it is also mentioned that “one could say that our general intention to replace the existing oil shale plant with a bio-plant is true, but subject to our project being eligible for JI -support, from Finland or from some other European country.”</p> <p>According to the discussion with the representative of the Hansa Leasing &amp; Factoring (the bank, which have provided the initial decision to finance the project), the other competitive offer would most likely not have been financed without own equity financing (JI-funding or outside investors in this case). According to the interview with the representative of the Hansa Leasing &amp; Factoring a general rule in these kind of cases is that own equity financing has to cover 15% of the purchase price of the equipment, although every case is separately evaluated. On the</p>
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											<p>top of that 15% own equity financing has to cover also any local works, transportation, etc. According to the data presented in the yearly financial reports, it is likely that OÜ Pogi could not afford to invest in a new biofuel boiler without outside funding – not if the project is the one presented in the PDD or nor when based on the competitive offer.</p> <p>The present owners of OÜ Pogi do not prefer to have outside investors leading to the broadening of the ownership, which can be interpreted to support the choice of choosing existing plant as a baseline. In other words, if the only option for required equity funding would be outside investors, which in turn would lead to the broadening of the ownership, it is likely that an investment decision leading to biofuel production would not be made.</p> <p>As a result of the reply provided to the CAR 16.1 and the additionality interpretation discussion above, the project is seen additional for the following reasons:</p> <ul style="list-style-type: none"> <li>- the Finnish JI/CDM pilot programme has stated that financial additionality does not determine the additionality;</li> <li>- it is likely that OÜ Pogi could not afford to invest in a new biofuel production without outside equity funding;</li> <li>- it is unlikely that an investment decision would be made if the outside equity financing would result in the broadening of the ownership;</li> <li>- as broadening of the ownership is unlikely to happen, the only form of outside equity financing enabling the investment decision known to the Validator Consultant is JI-funding.</li> </ul>
17. The accredited independent entity shall make the	Mar, P 14, PA 32; Mar,	H	H	H	I	FM E	CC	OK.			



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project design documents publicly available and receive comments.	P 13, PA 28; Gui, P 14, PA 5.3.4.										
18. The accredited independent entity shall determine whether project participants have submitted to the accredited independent entity documentation on the analysis of the environmental impacts of the project activity.	Mar, P 14, PA 33d; Gui, P 11; PA 5.1.2; Gui, P 16; PA 5.4.2; Gui, P 12-13; PA 5.3.1; Gui, P 14; PA 5.3.3.	H	L	L	DR	-	PDD/P 17/PA 3	OK.			
19. The accredited independent entity shall make its determination publicly available, including a summary of comments received and a report of how due account was taken of these.	Mar, P 14, PA 34-35.	H	H	H			CC	Clarification 19.1: According to the agreement between the Ministry of the Environment of Finland (FME) and VC, FME is responsible for making PDD and Draft Final Report publicly available.			OK. PDD was made publicly available by the Ministry on 5.12.2002.
20. Greenhouse gas emissions are measured in metric tones of carbon dioxide equivalent emissions (tCO <sub>2</sub> -eq.).	Gui, P 6, PA 3.1	M	L	L	DR	-	PDD/AN 6	OK.			
21. Different gases are converted into carbon dioxide equivalents using their global warming	Gui, P 6, PA 3.1	M	M	M	DR	-	PDD/AN 6	OK.			

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potentials.										
22. A specific payment schedule will be negotiated for each project.	Gui, P 7, PA 3.2.	H	H	H	DR, I	PDD , Site	PDD/P 13/PA 2.6.2; JIPA- 16	OK.		
23. JI project cycle: a. PIN b. LoE c. Steering Committee d. PDD e. determination	Gui, P 12, Figure 1; Gui, P 8, PA 4.1-4.2; Gui, P 11, PA 5.2.	H	L	H	DR, I	PDD , FM E	PDD/ AN 1- 2	OK.		
24. The project and the transfer of the resulting emission reductions have to be approved by the host country's government.	Gui, P 8, PA 4	H	L	H	DR, I	PDD , FM E	PDD/ AN 1	OK.		
25. A project cannot be included in the Pilot Programme's project pipeline unless its financial structure is clearly presented.	Gui, P 8-9, PA 4.1	H	H	H	DR, I	PDD , Site	PDD/P 13/PA 2.6.1, I	OK, according to the interview financing of the project will consist of equity financing from the FME (advance payment of JI-support) and OÜ Pogi. Loan financing will be granted by the bank of Hansa Leasing.		
26. Eligibility criteria for JI projects: a. projects must be technically, financially and economically sound; b. the project must comply with the host country legislation, as well as with any criteria and requirements	Gui, P 11, PA 5.1.2; Gui, P 8, PA 3.3; Mar, P 14, PA 31a/33a; KP, A 2, PA 3; Gui, P 7, PA 3.1; Mar, P 14; PA	H	H	H	DR, I	PDD , FM E, EM E, Site	a. PDD/P A 2.5; PDD/P 13/PA 2.6.1; PDD/P 8/PA 2.4; JIPA- 19; I b. PDD/P 7/PA	a. OK; b. OK; c. OK; d. <b>please see CAR 16.1</b> ; e. OK; f. OK; g. OK.		

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<p>that the host country may have established for JI projects;  c. the project must produce real, measurable and long-term benefits related to the mitigation of the climate change;  d. the mitigation benefits must be additional to any that would occur in the absence of the project;  e. the benefits must be produced in a cost-effective way;  f. the projects must undergo an environmental assessment and provisions must be made for public participation in the project cycle;  g. the project must not have significant negative environmental impacts and it must be supportive of the Finnish Policy on environmental co-operation with neighboring countries.</p>	<p>33d; KP, A 2, PA 3.</p>						<p>2.2.3; I c.  PDD/AN 6; I  d.  PDD/P 18-29/PA 5; I  e.  PDD/AN 6; JIPA-19; I  f.  PDD/P 17/PA 1; I  g.  PDD/P 17/PA 3</p>			
<p>BASELINE</p>										
<p>27. The baseline for an Article 6</p>	<p>Mar, P 18, AP</p>	<p>H</p>	<p>H</p>	<p>H</p>	<p>DR, I</p>	<p>PDD</p>	<p>PDD/AN 6;</p>	<p>CAR 27.1: Please provide the final spreadsheets for annexes 6 and 7.</p>	<p>Please refer to the final PDD provided.</p>	<p>OK.</p>

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project is the scenario that reasonably represents the anthropogenic emissions by sources or anthropogenic removals by sinks of greenhouse gases that would occur in the absence of the proposed project.	B, PA 1.					Site	PDD/P 28/PA 5.4.3; JIPA-7	During the interview with the authors of the PDD, the final spreadsheet of annexes 6 and 7 were not shown. During the interview minor differences were detected between the project's emission reduction calculations presented by the authors of PDD and VC.		
28. A baseline shall cover emissions from all gases, sectors and source categories listed in Annex A and anthropogenic removals by sinks, within the project boundary.	Mar, P 18, AP B, PA 1; Gui, P 13, PA 5.3.2.	H	L	L	DR	-	PDD/P 20-23;PA 5.1.2; PDD/AN 6.	OK.		
29. A baseline shall be established on a project-specific basis and/or using a multi-project emission factor.	Mar, P 18, AP B, PA 2a.	H	L	L	DR	-	PDD/P 28/PA 5.4.3	OK.		
30. A baseline shall be established in a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, data sources and key factors.	Mar, P 18, AP B, PA 2b; Gui, P 13, PA 5.3.2; Gui, P 7, PA 3.1.	H	M	M	DR	-	PDD	OK, although some arguments were given without any reference (for instance the selection of baseline). References were clarified during the interviews, if it was seen necessary.		
31. A baseline shall be	Mar, P 18, AP	H	H	H	DR, I	PDD	PDD/P 13-	OK.		

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established taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector.	B, PA 2c.					Site	16/PA 2.6.3-2.7; PDD/P 26/PA 5.3			
32. A baseline shall be established in such a way that ERUs cannot be earned for decreases in activity levels outside the project activity or due to force majeure.	Mar, P 18, AP B, PA 2d.	H	L	L	DR	-	PDD/P 18-29/PA 5	OK.		
33. A baseline shall be established taking account of uncertainties and using conservative assumptions.	Mar, P 18, AP B, PA 2e; Gui, P 7, PA 3.1.	H	H	H	DR, I	PDD a, Site	PDD/P 13-29	OK.		
34. Project participants shall justify their choice of baseline.	Mar, P 18, AP B, PA 3; Gui, P 13, PA 5.3.1; Gui, P 13, PA 5.3.2.	H	H	H	DR, I	PDD a, Site	PDD/2 7-28/PA 5.4.1-5.4.2	<b>Please see CAR 16.1.</b>		
35. The main parts of the PDD are: a. project summary;	Gui, P 12, PA 5.3.1.	H	L	L	DR	-	PDD/P 2-3	OK.		

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b. project description; c. environmental impacts; d. stakeholder involvement; f. baseline study and assessment of additionality; h. monitoring and verification plan; i. references.										
36. The Finnish Pilot Programme is using the preliminary PDD presented in Annex V of the Guidelines (as standardized PDD for JI has not entered into force).	Gui, P 13, PA 5.3.1	H	L	L	DR	-	PDD/P 2-3	OK.		
37. The baseline must be developed for the whole lifetime of the project and it must include any foreseeable future changes.	Gui, P 13, PA 5.3.2.	H	L	L	DR	-	PDD/P 29/PA 5.6	OK.		
38. The baseline study must include the following parts: a. GHG and system boundary analysis; b. description of the current situation, c. key factors; d. baseline options and additionality; e. estimation of baseline emissions;	Gui, P 13, PA 5.3.2.	H	L	L	DR	-	a. PDD/P 20-23/PA 5.1.2; b. PDD/P 23-25/PA 5.2 c. PDD/P 26/PA 5.3 d.	a. OK; b. OK; c. OK; d. <b>please see CAR 16.1;</b> e. OK; f. OK; g. OK.		

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f. estimation of project emissions; g. estimations of emission reduction and lifetime analysis.							PDD/P 26-28/PA 5.4 e. PDD/P 29/PA 5.5 g. PDD/P 29/PA 5.6			
39. The baseline study must qualitatively explain all the changes in the direct emissions and sinks – both on-site and off-site – and set a system boundary. The baseline study must consider any significant leakage or spill-over impact it may have.	Gui, P 14, PA 5.3.2	H	L	L	DR	-	PDD/P 18-23/PA 5.1	OK.		
MONITORING										
40. Project participants shall include a monitoring plan that provides for the collection and archiving of all relevant data necessary for estimating or measuring anthropogenic emissions by sources and/or anthropogenic removals by sinks	Mar, P 19, AP B, PA 4a; Gui, P 13, PA 5.3.1; Gui, P 13, PA 5.3.5.	H	M	H	DR, I	PDD a, Site	PDD/P 31-32/PA 6.2-6.3; PDD/AN 7.	CAR 40.1: Please correct the equation in paragraph 6.2. Equation does not include a factor for altering MWh into MJ or the other way around.  CAR 40.2: Please provide more detailed information on what data should be collected and archived and how it should be done. According to the site personnel monitoring of project emission reduction will be done according to the MVP. During the interviews of the authors of PDD and site personnel, it became clear that all the procedures for monitoring	CAR 40.1: Please refer to the final PDD provided.  CAR 40.2: Please refer to the final PDD provided.	OK.

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<p>of greenhouse gases occurring within the project boundary during the crediting period.</p>								<p>have not been described in detail, which would enable accurate follow-up of the MVP. Further details are required at least for the following items related to the MVP:</p> <ul style="list-style-type: none"> <li>a. how is the biofuel heat production measured and separated from shale oil production? At the moment there is only one meter measuring the total the production;</li> <li>b. how is the biofuel heat production measured and separated from peat production? At the moment there is no accurate procedures how this should be done;</li> <li>c. how is the biofuel boiler efficiency measured or determined? During the interviews it was not clear whether warranty value is used or whether boiler efficiency is separately determined;</li> <li>d. what documents are archived for the purpose of verification;</li> <li>e. what are the internal quality assurance and control procedures? At present there was no mention in the MVP about internal procedures confirming the correctness of collected information on emission reductions;</li> <li>f. where are potential emission reductions reported? Although it is still uncertain how GHG emission reduction data is nationally collected in Estonia, MVP should imply how OÜ Pogi is to be informed of the proper procedures once they are finalized.</li> </ul>		
<p>41. Project participants shall include a monitoring plan that provides for the collection and archiving of all relevant data necessary for determining the</p>	<p>Mar, P 19, AP B, PA 4b; Gui, P 13, PA 5.3.1; Gui, P 13, PA 5.3.5.</p>	<p>H</p>	<p>M</p>	<p>H</p>	<p>DR, I</p>	<p>PDD a, Site</p>	<p>PDD/ AN 7</p>	<p><b>Please see CAR 27.1.</b></p>		



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baseline of anthropogenic emissions by sources and/or anthropogenic removals by sinks of greenhouse gases within the project boundary during the crediting period.										
42. Project participants shall include a monitoring plan that provides for the identification of all potential sources of, and the collection and archiving of data on increased anthropogenic emissions by sources and/or reduced anthropogenic removals by sinks of greenhouse gases outside the project boundary that are significant and reasonably attributable to the project during the crediting period.	Mar, P 19, AP B, PA 4c; Gui, P 13, PA 5.3.1; Gui, P 13, PA 5.3.5.	H	L	L	DR		PDD/P 20-23/PA 5.1.2	OK.		
43. Project participants shall include a monitoring plan that provides for the collection and archiving of information on environmental	Mar, P 19, AP B, PA 4d; Gui, P 13, PA 5.3.1; Gui, P 13, PA 5.3.5.	H	H	H	DR	PDD a, Site	PDD/P 17/PA 3; PDD/AN 7	OK.		

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impacts, in accordance with procedures as required by the host Party, where applicable.										
44. Project participants shall include a monitoring plan that provides for quality assurance and control procedures for the monitoring process.	Mar, P 19, AP B, PA 4e; Gui, P 13, PA 5.3.1; Gui, P 13, PA 5.3.5.	H	H	H	DR, I	PDD a, Site	PDD/P 31-32/PA 6.2	<b>Please see CAR 40.2e.</b>		
45. Project participants shall include a monitoring plan that provides for procedures for the periodic calculations of the reductions of anthropogenic emissions by sources and/or enhancements of anthropogenic removals by sinks by the proposed Article 6 project, and for leakage effects, if any.	Mar, P 19, AP B, PA 4f; Gui, P 13, PA 5.3.1; Gui, P 13, PA 5.3.5.	H	H	H	DR, I	PDD a, Site	PDD/P 31-32/PA 6.2; PDD/AN 7	<b>Please see CARs 40.1-40.2.</b>		
46. Project participants shall include a monitoring plan that provides for documentation of all steps involved in the calculations referred to in subparagraphs (b)	Mar, P 19, AP B, PA 4g; Gui, P 13, PA 5.3.1; Gui, P 13, PA 5.3.5.	H	H	H	DR, I	PDD a, Site	PDD/P 31-32/PA 6.2; PDD/AN 6-7.	<b>Please see CAR 40.2.</b>		

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and (f) above.										
47. It [MVP] should clearly identify frequency of, responsibility and authority for registration, monitoring and measurement activities.	Gui, P 14, PA 5.3.5	H	H	H	DR, I	PDD a, Site	PDD/P 31-32/PA 6.2.	<b>Please see CAR 40.2.</b>		

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