Industrie Service

Determination Report

Estonian SSC-JI-Project
"Vanaküla Wind Power JI Project"

Determination of the "Vanaküla Wind Power JI-Project", Estonia

Report No. 877 414 rev. 1

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Industrie Service

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Client:	Nordic Environment Finance Corporation (NEFCO) Fabianinkatu, 34 FI 00171 Helsinki Finland
Contract approved by:	Werner Betzenbichler
Report Title:	Determination of the SSC-JI-Project: "Vanaküla Wind Power JI Project, Estonia"
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Summary:

The Certification Body "Climate and Energy" of TÜV SÜD Industrie Service GmbH has been ordered by Nordic Environment Finance Corporation in Helsinki, Finland, to determine the above mentioned small scale project.

The determination of this SSC project has been performed by document reviews, an audit at the location of the project and interviews at the offices of the project owner and its technical advisor.

The need for corrective action request (CAR) and clarification requests (CR) is described in the report and the attached determination protocol.

As result of this procedure, it can be confirmed that the submitted project documentation is in line with all requirements set by the Marrakech Accords and the Kyoto Protocol.

Additionally the assessment team reviewed the estimation of the projected emission reductions.

However the eligibility criterion regarding Designated Focal Point and National JI-Guidelines of the host country is not fulfilled yet. Hence we can not state hitherto, that the project does comply with the National JI Guidelines. Complying with that eligibility criterion is pre-required to submit the project for registration at the JISC.

We can confirm that the indicated amount of 126.983 tons CO_2 (ERUs) during the intended crediting period from January 1st, 2008 – December 31st, 2012 represents a conservative estimation using the assumptions given by the project documents.

Work carried out by:	Klaus Nürnberger (Project manager), Thyge Weller (Technical Expert, GHG auditor) Ranno Mellis (Local Expert, GHG Trainee)	Internal Quality Control by: Werner Betzenbichler

Abbreviations

BM	Build Margin
CAR	Corrective action request
CR	Clarification request
DFP	Designated Focal Point
DP	Determination Protocol
EB	CDM Executive Board
EIA	Environmental Impact Assessment
EF_y	Operating margin emission factor of the Estonian electricity grid
ER	Emission reduction
ERU	Emission Reduction Unit
GHG	Greenhouse gas(es)
GSP	Global Stakeholder consultation Process
JI	Joint Implementation
JISC	JI Supervisory Committee
KP	Kyoto Protocol
MP	Monitoring Plan
MS	Management System
NEFCO	Nordic Environment Finance Corporation
OM	Operating Margin
PDD	Project Design Document
SCADA	Supervisory Control And Data Acquisition
SEI	Stockholm Environment Institute, Tallinn Centre
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change

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1 INTRODUCTION

1.1 Objective

Nordic Environment Finance Corporation in Helsinki, Finland, has commissioned TÜV SÜD Industrie Service (in short: TÜV SÜD) to make a determination of the "Vanaküla Wind Power JI project" with regard to the relevant requirements for SSC JI project activities. The determination serves as a design verification and is a requirement for all JI projects submitted to the JISC. The purpose of a determination is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Determination is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).

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

1.2 Scope

The determination scope is defined as an independent and objective review of the project design document (PDD), 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. TÜV SÜD has 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 NEFCO. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 GHG Project Description

The project foresees the erection of a wind farm at the north-west coast of Estonia, close to the village Vanaküla. The Vanaküla wind farm will have a capacity of 9 MW (3 WinWinD-3 turbines à 3,0 MW) and qualifies as a SSC-JI-project. It will feed into the Estonian national grid a total estimated supply of 25 397 MWh per year, resulting in a projected load factor of 32 percent. The electricity generation by the wind turbines will replace energy which is to its largest part produced in the oil shale plants in Narva, East-Estonia.

Vanaküla wind farm will be commissioned January 1, 2008. The generated ERUs are supplied by OÜ Intercon Energy, a private wind power development company, located in Tallinn, Estonia. The project documentation has been developed by the Estonian company LHCarbon OÜ, located in Tallinn, Estonia, with additional support by other institutions. LHCarbon OÜ acts as a technical advisor to the project, and is not formally a project participant.

2 METHODOLOGY

In order to ensure transparency, a determination protocol was customised for the SSC project. The protocol shows, in a 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 TÜV SÜD has documented how a particular requirement has been validated and the result of the determination.

The determination protocol for this SSC project consists of three tables. The different columns in these tables are described in Figure 1.

The completed determination protocol is enclosed in Appendix A to this report.

Determination Protocol Table 1: Mandatory Requirements			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the determination report. **O** is used in case of an outstanding, currently not solvable issue, **AI** means Additional Information is required.*	*Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent determination process.*

Determination Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in six different sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	*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). **Clarification** or **Additional Information** is used when the independent entity has identified a need for further clarification or more information.*

Determination Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action and additional Information 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 Corrective Action Request or a Clarification or Additional Information Request, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification or Additional Information Request is explained.*	*The responses given by the Client or other project participants during the communications with the independent entity should be summarised in this section.*	*This section should summarise the independent entity's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Determination protocol tables

2.1 Review of Documents

A first PDD (v.2) and additional background documents related to the project design and baseline were submitted to TÜV SÜD by LHCarbon September 21, 2006. Those documents were thoroughly reviewed. Comments were sent back to LHCarbon and served as input for a follow-on PDD version (v.3). As a result of the on-site visit (see section 2.2) a new PDD-version (v.4) was submitted to TÜV SÜD November 7, 2006. It served as the basis for GSP. Review of additional documents led to more changes in the PDD, resulting in PDD v.5 (issued December 19, 2006). This version is the basis of this determination report.

2.2 Follow-up Interviews

From October 30, 2006 to October 31, 2006 TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of the project applicant NEFCO, the wind farm owner OÜ Intercon Energy, the technical advisor LHCarbon OÜ, the Estonian Ministry for the Environment and the consultant SEI have been interviewed.

The main topics of the interviews are summarised in Table 1. The complete and detailed list of all persons interviewed is enclosed in Appendix B to this report.

Table 1: Interview topics

Interviewed organisation	Interview topics
NEFCO	Project design, environmental impacts, additionality, monitoring procedures, documentation
OÜ Intercon Energy	Project design, monitoring plan, stakeholder comments, additionality, monitoring procedures, measurement equipment, documentation, archiving of data
LHCarbon (technical advisor)	Project design, baseline, monitoring plan, environmental impacts, stakeholder comments, additionality (business plan)
SEI	baseline, environmental impacts, stakeholder comments, additionality
Estonian Ministry of the Environment	Approval of the project, stakeholder comments, national and sectoral policy; approval procedure

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination is to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for TÜV SÜD's positive conclusion on the project design.

Most findings and comments during the follow-on interviews were immediately resolved and the result included into PDD v.4. A validation protocol was sent to the LHCarbon with one CAR and two CRs. Two of those requests were resolved by additional information and by changes in the PDD (v.5). One CAR is still open.

To guarantee the transparency of the determination process, the concerns raised and the responses given are summarised in chapter 3 below. The whole process is documented in more detail in the determination protocol in Appendix A.

3 DETERMINATION FINDINGS

In the following sections the findings of the determination are stated. The determination findings for each determination subject are presented as follows:

1) The findings from the review of the PDD (v.4) and the findings from interviews during the follow up visit are summarised. A more detailed record of these findings can be found in the Determination Protocol in Appendix A.

2) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, has been issued. The Clarification, Corrective Action Requests and Additional Information Requests are stated, where applicable, in the following sections and are further documented in the Determination Protocol in Appendix A.

3) Where Clarification Requests and Additional Information Requests have been issued, the exchanges with OÜ Intercon Energy or its advisor LHCarbon OÜ to resolve these Clarification and Additional Information Requests will be summarized in the determination report.

4) The conclusions of the determination are presented consecutively.

3.1 Project Design

3.1.1 Findings

The planned wind turbines are of an innovative design (permanent magnets, planetary gear) and the first turbines of the 3-MW-class in Estonia. Hence, the employed technology goes even beyond established good practice in the host country. It is, moreover, not likely that the project technology will be substituted by a more efficient technology. The operation of the turbines is online monitored by the manufacturer's service center. On-site support is guaranteed by the manufacturer's specialists and - after a first period of 2 years – by local specialists, who will be thoroughly trained.

Estonia has appointed a national focal point to UNFCCC and has ratified the Kyoto Protocol. Also a DFP is officially nominated. The project is preliminary approved by the Estonian government, represented by the Ministry of the Environment. The project ERUs are included in the second reserve of the Estonian NAP (2008 – 2012).

NEFCO's role in the project is to act as Fund Manager to the Baltic Sea Region Testing Ground Facility (TGF). TGF has many investor countries and it is still unclear whether one country out of those investor countries wants to become a project participant and which country this will be. This decision is needed before the project can be registered with JISC.

The project starting date is clearly defined. The crediting period is defined as being from January 1, 2008 to December 31, 2012. Also the operational lifetime of the project is clearly defined and in accordance with international practice.

3.1.2 Issued CARs / CRs

Corrective Action Request 1 (CAR #1):

Before registration of the project the participation of one of the TGF investor countries has to be decided

Response:

According to the sixth JISC-Meeting it is sufficient when the LoA of the investor country will be submitted together with the first verification report for publication.

3.1.3 Conclusion

Regarding the investor country it is not clear hitherto which of the TGF members will be the designated project party of this project. Hence it is not yet clear whether a DFP is already officially nominated or not. Further no National JI-Guidelines from the investor country can be applied. These issues can be clarified according to the sixth JISC-Meeting at least when submitting the first verification report for publication.

The SSC project fulfils the prescribed requirements.

3.2 Baseline

3.2.1 Findings

The baseline of the Estonian SSC JI-project "Vanaküla Wind Power JI project" is established in a project specific manner. ACM 0002, version 06, has been used as baseline and monitoring methodology. An alternative option would have been the simplified baseline and monitoring methodology I.D for SSC-projects ("grid connected renewable energy generation". This is a simplified subset of ACM 0002 and insofar the audit team accepts the stricter and therefore more conservative ACM 0002 methodology.

The baseline is based on the assumption that the Narva power plants are upgraded and partially closed (refurbishing of 200 MW units at Eesti and Balti power stations from pulverized bed to circulating fluidized bed combustion technology by 2005/2006, and closing down of units 1 - 8 at Balti power station). These upgrades are contained in the National Fuel and Energy Development Plan. The baseline is a plausible assumption and appropriate.

The (implementation of the) envisaged wind park project is additional. Detailed financial modelling and sensitivity analysis shows that the existing Estonian feed-in tariff results in an inadequate rate of return. No large wind turbine exists in Estonia which is not supported by a JI-project or other grants. It is the sale of ERUs during 2008-12 which improves the very low IRR of the project by about 35% (1,3 percentage points) and thus makes the projects more viable. The PDD states an IRR-value with and without JI income. However, as there is no excel sheet available these figures cannot be checked without high effort.

The discussion and selection of the baseline methodology is transparent as all data used are specified and documented. Also the discussion and determination of the chosen baseline is transparent. Different approaches have been presented and plausible reasons for the approach chosen have been given.

The baseline is established in a project specific manner and refers to the characteristics of the Estonian power plants. The baseline does take into account the major national and/or sectoral policies, macro-economic trends and political developments. Relevant key factors are described and their impact on the baseline and the project risk is evaluated. The baseline determination is compatible with available data.

3.2.2 Issued CARs / CRs

Clarification Request 1 (CR #1):

The financial data have to be delivered in spreadsheet format to allow sensitivity analysis and checks of IRR consequences.

Response:

All relevant financial data were delivered by e-mail in spreadsheet format Nov. 29, 2006.

3.2.3 Conclusion

It could be verified that the spreadsheet data delivered November 29, 2006 are consistent with the statements in the PDD. Insofar the open issue was resolved by additional information provided.

Based on the financial data a further conclusion of the assessment team was that - given the limited experience with the planned wind turbine - the availability and O&M costs are not overly conservative.

The SSC project fulfils all prescribed requirements completely.

3.3 Monitoring Plan

3.3.1 Findings

No separate monitoring plan exists but a detailed description of monitoring activities in section D of the PDD. During the initial verification audit it should be checked that the PDD-description has been used as basis for a separate, detailed monitoring plan.

Section D.2. of the data lists only the data to be monitored during the operational phase of the wind farm (EG_y – net electricity supplied to the grid) but not the data needed to calculate the ex-ante emission margin.

The presented monitoring methodology does reflect current good practice and is supported by the monitored and recorded data. The project proponents decided to use the net energy production (energy which is fed into the grid minus energy which is taken from the grid in times where the wind farm does not produce enough energy to cover its auxiliary demand). Therefore no project emissions have to be taken into account for the externally provided auxiliary energy. No leakage exists. The baseline emission factor will not be changed during the crediting period. The only remaining variable to be monitored is therefore EG_y. This parameter will be monitored and measured in a re-traceable and plausible way. The monitoring provisions are in line with the

project boundaries. In case of meter malfunctions the internal metering system of the wind turbines (SCADA-systems) serves as back-up.

3.3.2 Issued CARs / CRs

Corrective Action Request No. 2 (CAR #2):

Add ex ante required data to PDD chapter D.2

Response:

The final version of the PDD (v.5) has been changed accordingly.

3.3.3 Conclusion

The SSC project fulfils all the prescribed requirements completely.

3.4 Calculation of GHG Emissions

3.4.1 Findings

The Baseline study (annex 2 of the PDD) describes that the simple OM approach has been used to calculate the Operating Margin (low cost / must run resources less than 50% of total generation). The OM is calculated ex-ante. The Build Margin is also calculated ex-ante on the basis of the power plants which constitute the most recent 20% of the system generation.

The clarification in the EB 23 session "that even if a part of the plant capacity enables meeting the requirement of 20% (of the generation capacity in the systems) for estimating the build margin emission factor, the total plant capacity should be considered in estimating the build margin emission factor" was taken into consideration and led to a different BM-approach than in previous JI determination projects.

EF_y, the operating margin emission factor of the grid, is calculated using the most recent information on the generation and the fuel consumption of the power plants in the Estonian grid. This implies some changes, which have been made retroactively by the Estonian government for former years. This leads to some small changes compared to previous EF_y values, used in other JI determination projects.

The project's spatial boundaries are clearly described. Regarding emission sources all aspects are covered. Only CO_2 emissions have correctly been identified as relevant for the project. Leakage calculations are not required.

3.4.2 Issued CARs / CRs

There are no CARs / CRs

3.4.3 Conclusion

The SSC project fulfils all the prescribed requirements completely.

3.5 Environmental Impacts

3.5.1 Findings

The description of the environmental impacts is sufficient. In accordance with local and national laws the siting of the wind turbines has been chosen in such a way that no residents will be disturbed. The analysis of the environmental impact has been described in a small scale EIA. This study was approved by authorities together with the Detailed Land Use Plan in August 2004. According to the EIA there are no adverse environmental effects

3.5.2 Issued CARs / CRs

There are no CARs / CRs

3.5.3 Conclusion

The SSC project fulfils all the prescribed requirements completely.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD started to publish the PDD and the baseline study on its homepage and on the UNFCCC JI project site November 22, 2006, open for comments till December 21, 2006. No comments have been received.

5 DETERMINATION OPINION

TÜV SÜD has performed a determination of the Estonian SSC JI Project "Vanaküla Wind Power JI Project, Estonia".

The determination was performed on the basis of UNFCCC criteria as well as criteria given to provide for consistent project operations, monitoring and reporting.

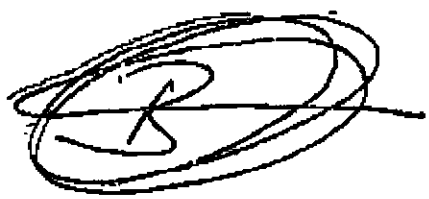
The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for JI.

By building a wind farm with state of the art wind turbines the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

However the eligibility criterion regarding Designated Focal Point and National JI-Guidelines of the host country is not fulfilled yet. Hence we can not state hitherto, that the project does comply with the National JI Guidelines. Complying with that eligibility criterion is pre-required to submit the project for registration at the JISC.

The determination is based on the experience of our own onsite visit and on the information made available to us and the engagement conditions detailed in this report. TÜV SÜD can not guarantee the accuracy or correctness of this information. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the determination opinion."

Munich, 2007-04-25



Werner Betzenbichler

Head of certification body "climate and energy"

Munich, 2007-04-25

Klaus Nürnberger

Project Manager

Industrie Service

Annex 1

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
A. General description of the project					
A.1. Title of the small-scale project:					
A.1.1.	Does the used project title clearly enable to identify the unique JI activity?	1,5	The project title clearly enables the identification of the JI activity. There are no other wind farms existing or being planned with a similar name.	☑	☑
A.1.2.	Are there any indication concerning the revision number and the date of the revision?	5	The revision number and the date of the issuance of this revision is correctly indicated (version 4, Nov. 7, 2006).	☑	☑
A.1.3.	Is this consistent with the time line of the project's history?	1,5	The given dates are in consistency with the time line of the project development.	☑	☑
A.2. Description of the small-scale project:					
A.2.1.	Is the description delivering a transparent overview of the project activities?	1,5,6, 7	The description of the project activity delivers a transparent overview of the project activities.	☑	☑
A.2.2.	What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	1,2,3, 4,5,6, 10,11, 13,20	A meeting with the Estonian focal point proved that the project is known and that it is included in the second reserve of the Estonian NAP (2008 – 2012). The building permit (issued August 11, 2006) and the building title agreement (land-lease contract, signed December 28, 2005) were presented. The (not yet signed) order for the wind turbines was presented. The business plan as well as the SEI Baseline Study were presented. Other supporting documents like the wind expertise by Enveco Steinfurt were presented.	☑	☑
A.2.3.	Is the information provided by these proofs consistent with the information provided by the PDD?	1,2,3, 4,5,6, 10,11,	The information provided by the PDD corresponds exactly with the information surveyed by the determination team.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
		13,20			
A.2.4.	Is all information provided consistent with details provided by further chapters of the PDD?	1,5	Detail information as well as summaries are consistent throughout the PDD.	☑	☑
A.3. Project participants:					
A.3.1.	Is the form required for the indication of project participants correctly applied?	5	Yes, all project participants are clearly indicated.	☑	☑
A.3.2.	Is the participation of all listed entities or Parties confirmed by each one of them?	1,2, 3,4	All responsible persons of all parties involved have been contacted directly. It is still unclear whether one country out of the investor countries of the TGF wants to become a project participant and which country this will be. **CAR #1:** Before registration of the project the participation of one of the TGF investor countries has to be decided	**CAR 1**	
A.3.3.	Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	5	Besides the restriction by above CAR #1 name and function of project participants is consistently used throughout the PDD, including annex 1.	☑	☑
A.4. Technical description of the small-scale project:					
A.4.1.	*Location of the small-scale project:*				
A.4.1.1.	Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	1,5	In the PDD there are overview and detail maps which indicate clearly the position of the wind farm and even of the individual turbines. This is important because there are also other existing and planned wind farms in the neighborhood of the project Vanaküla.	☑	☑
A.4.1.2.	How is it ensured and/or demonstrated, that the project proponents can implement	1,3, 13,19	The ground needed for the turbines has been leased by a 35-years contact from the land owner. The most important document,	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	the project at this site (ownership, licenses, contracts etc.)?		the building permit, has already been signed. This includes acceptance of the limited scale EIA which was required as part of the Detailed Land Use Planning. Other contracts like the activity license (from the Energy Inspection), the Usage permit (from the local municipality) and the PPA (from Eesti Energia) will be signed only later in 2007 but there are no indications of potential problems.		
A.4.2.	*Small-scale project type(s) and category(ies):*				
A.4.2.1.	To which category(ies) is the project activity belonging to? Is the category correctly identified and indicated?	1,5	The project belongs to type I SSC-projects (renewable energy projects). This is correctly identified and indicated.	☑	☑
A.4.3.	*Technology(ies) to be employed, or measures, operations or actions to be implemented by the small-scale project:*				
A.4.3.1.	Does the project design engineering reflect current good practices?	1,5, 11,12	The project reflects a professional standard small scale wind park as it can be found in many European countries (where – in contrast to Estonia - appropriate support mechanisms guarantee the profitability of such projects). In Estonia, those wind farms are still very rare.	☑	☑
A.4.3.2.	Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance?	10,11 ,12	The detailed data of the wind turbine, combined with the wind generation estimate, allow a reasonably solid estimation of the electricity production and thus the GHG reduction.	☑	☑
A.4.3.3.	Is the technology implemented by the project activity environmentally safe?	13	The small scale EIA, performed as part of the Detailed Land Use Planning, indicated no environmental problem. This is confirmed by the local environmental authority.	☑	☑
A.4.3.4.	Is the information provided in compliance with actual situation or planning?	1,5	The PDD reflects the actual situation correctly.	☑	☑
A.4.3.5.	Does the project use state of the art technology and / or does the technology result in a significantly better performance than	1,10, 11,12	The planned wind turbines are modern turbines representing the Multibrid-concept. This innovative leading-edge approach (permanent magnets, one planetary gear) has not yet been realized in	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
any commonly used technologies in the host country?		Estonia. As there are only few of these turbines installed world-wide it is still open to what extent their performance goes beyond the performance of other modern turbines.		
A.4.3.6. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1	It is not expected that today's highly efficient wind turbines will be substituted by better technologies within the project period.	☑	☑
A.4.3.7. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1,5	In the first two years the turbine manufacturer will be responsible for support and maintenance. Thereafter there will be a gradual phase-over between the turbine manufacturer and the wind farm operator. This includes training on-site and at the manufacturer's plant.	☑	☑
A.4.3.8. Is information available on the demand and requirements for training and maintenance?	1,5	Training for support and maintenance is already now being planned, even if it will be needed only after the 2 year's warranty period.	☑	☑
A.4.3.9. Is a schedule available for the implementation of the project and are there any risks for delays?	1,5,7	An implementation schedule exists. It is quite tight and there is some risk for delay: • The delivery contract with the turbine manufacturer needs to be signed latest end of January 2007. Otherwise re-negotiations are needed and delivery delays may arise. • The financing is not yet secured. Delay of this decision would prevent signing of above mentioned delivery contract. • Any delays leading to higher costs could impact the rather modest IRR of the project and therefore further jeopardize the financing negotiations. Clarification about possible delays can only be gained at the end of January 2007.	☑	☑
A.4.4. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed small-scale project, including why the emission reductions would not occur in the absence of the proposed small-scale project,				

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
taking into account national and/or sectoral policies and circumstances:					
A.4.4.1.	Is the form required for the indication of projected emission reductions correctly applied?	5	The form is filled out correctly.	☑	☑
A.4.4.2.	Are the figures provided consistent with other data presented in the PDD?	5	The figures in the form correspond to the other data presented in the PDD.	☑	☑
A.4.5.	*Confirmation that the proposed small-scale project is not a debundled component of a larger project:*				
A.4.5.1.	Is there a registered SSC-JI project or an application to register which fulfills all of the following criteria? Comment at least every line answered with "Yes"	1,3	Applicability checklist / Yes / No Same project participants? / Not yet clear Same project category and technology / measure? / Yes Registered within the previous 2 years? / No Project boundary is within 1 km of the project boundary of the proposed small-scale? / No There is one other wind farm (Aulela) planned close to the Vanaküla site. It is expected to apply also for JI-support. The closest point of this project will be about 3 km from the Vanaküla site.	☑	☑
A.5. Project approval by the Parties involved:					
Open issues related to the approval of the Parties involved are covered in a separate "completeness checklist"					
B. Baseline					
B.1. Description and justification of the baseline chosen					
B.1.1.	Are reference number, version number, and title of the baseline and monitoring	5	Both methodologies (ACM 0002, version 06) are clearly indicated in section B.1 resp. D.1 of the PDD.	☑	☑

<table>
<tr><th colspan="2">CHECKLIST TOPIC / QUESTION</th><th>Ref.</th><th>COMMENTS</th><th>PDD in GSP</th><th>Final PDD</th></tr>
<tr><td></td><td>methodology clearly indicated?</td><td></td><td></td><td></td><td></td></tr>
<tr><td>B.1.2.</td><td>Is the applied version the most recent one and / or is this version still applicable?</td><td>20</td><td>ACM 0002, version 06, is the most recent version.</td><td>☑</td><td>☑</td></tr>
<tr><td>B.1.3.</td><td>Is the applied methodology considered being the most appropriate one?</td><td>1,5</td><td>An alternative option would have been the simplified baseline and monitoring methodology I.D for SSC-projects ("grid connected renewable energy generation". This is a simplified subset of ACM 0002 and insofar the audit team accepts the stricter and therefore more conservative ACM 0002 methodology.</td><td>☑</td><td>☑</td></tr>
<tr><td colspan="6">Fill in the required amount of sub checklists for applicability criteria as given by the methodology applied and comment at least every line answered with "No".</td></tr>
<tr><td>B.1.4.</td><td>Criterion 1:
Type of capacity addition by renewable energy</td><td>1,5</td><td><table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table></td><td>☑</td><td>☑</td></tr>
<tr><td>B.1.5.</td><td>Criterion 2:
Exclusion of fuel switching activities</td><td>1,5</td><td><table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table></td><td>☑</td><td>☑</td></tr>
<tr><td>B.1.6.</td><td>Criterion 3:
Defined electricity grid boundaries</td><td>1,5</td><td><table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table></td><td>☑</td><td>☑</td></tr>
</table>

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
B.1.7.	Criterion 4: Approved inclusion in other methodologies (if applied only)	1,5	According to a JI SC decision CDM-methodologies like ACM 0002 methodology can be used within JI methodologies.	☑	☑
B.2. Description of how the anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the small-scale project					
Description of how the baseline scenario is identified and description of the identified baseline scenario					
B.2.1.	Is it clearly described that the baseline is represented by the combined margin of the grid the activity will be connected to?	1,6	It is made clear that the baseline is computed on the basis of the Estonian power grid.	☑	☑
B.2.2.	In case of any modification or retrofit of existing facilities: Is data available to determine the historic production level?		Not applicable.		
B.2.3.	In case of any modification or retrofit of existing facilities: Have conservative assumptions been applied in order to estimate the point in time when the existing equipment needs to be replaced?		Not applicable.		
B.2.4.	Have all technically feasible baseline scenario alternatives to the project activity been identified and discussed by the PDD? Why can this list be considered as being complete?	1,6	ACM0002 defines a standard baseline scenario: "Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described below." This statement has been supported by discussing in more detail four different baseline scenario alternatives in the baseline study.	☑	☑
B.2.5.	Have realistic and credible alternatives been identified providing comparable outputs or services? (step 1a)	1,2, 5,6	According to our knowledge above mentioned alternatives are indeed the scenarios which have been discussed in Estonia. There are no further scenarios that might present attractive options to those ones presented.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
B.2.6.	Is the project activity without JI included in these alternatives? (step 1a)	5,6	Yes, scenario 3 is such an alternative.	☑	☑
B.2.7.	Is a discussion provided for all identified alternatives concerning the compliance with applicable laws and regulations? (step 1b)	5,6	Yes. Scenario 1 ("continuation of current production and operation of Balti and Eesti power plants") has been excluded as it does not comply with environmental regulations.	☑	☑
B.2.8.	In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement? (step 1b)		This argument is not used.	☑	☑
B.2.9.	In case of applying step 2 of the additionality tool: Is the analysis method appropriately identified (step 2a)?	5,6	Option III (benchmark analysis) is identified.	☑	☑
B.2.10.	In case of Option I (simple cost analysis): Is demonstrated that the activity produces no economic benefits other than JI income?		Not applicable.		
B.2.11.	In case of Option II (investment comparison analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?		Not applicable.		
B.2.12.	In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified?	5,6,7	The IRR (internal rate of return) has been used as financial indicator. This is the most suitable indicator for investors.	☑	☑
B.2.13.	In case of Option II or Option III: Is the calculation of financial figures for this indicator correctly done for all alternatives and the project activity?	5,6, 20	The various baseline scenario alternatives are supporting the standard baseline, defined by ACM0002. No financial comparison is made nor is it needed.	☑	☑
B.2.14.	In case of Option II or Option III: Is the analysis presented in a transparent man-		Not applicable.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	ner providing public available proofs for data?				
B.2.15.	In case of applying step 3 (barrier analysis) of the additionality tool: Is a complete list of barriers developed that prevent the different alternatives to occur?	5,6	Clear reasons are given to exclude two more scenarios: • Scenario 3 ("closure of Balti power plant and replacement by non-JI wind power") is excluded due to financial reasons. It is shown that none of the Estonian wind farms has been built without JI-support or donor grant support • Scenario 4 („close part of Balti power plant and replace with gas fired power") is excluded due to financial and political reasons (dependency on foreign resources)	☑	☑
B.2.16.	In case of applying step 3 (barrier analysis): Is transparent and documented evidence provided on the existence and significance of these barriers?	5,6	The importance and the effect of the barrier "investment" is clearly demonstrated.	☑	☑
B.2.17.	In case of applying step 3 (barrier analysis): Is it transparently shown that at least one of the alternatives is not prevented by the identified barriers?	5,6	It is shown that scenario 2 is financially viable and that current renovation projections follow this development path.	☑	☑
B.2.18.	Have other activities in the host country / region similar to the project activity been identified and are these activities appropriately analyzed by the PDD (step 4a)?	3,5,6	Other wind farm projects are being planned. A list of those projects was presented by the focal point and it was shown that all of them suffer from the same barriers and need therefore support by external grants or the JI-program.	☑	☑
B.2.19.	If similar activities are occurring: Is it demonstrated that in spite these similarities the project activity would not be implemented without the JI (step 4b)?	3,5,6	As mentioned above, it was demonstrated that none of the similar activities are expected to succeed without JI-support.	☑	☑
B.2.20.	Is it appropriately explained how the approval of the project activity will alleviate the economic and financial hurdles or other identified barriers (step 5)?	5,6	The PDD states an IRR-value with and without JI income. As there is no excel sheet available these figures cannot be checked with acceptable effort	CR 1	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Clarification Request #1: The financial data have to be delivered in spreadsheet format to allow sensitivity analysis and checks of IRR consequences.		
B.3. Description of how the definition of the project boundary is applied to the small scale project:				
B.3.1. Do the spatial and technological boundaries as verified on-site comply with the discussion provided by the PDD?	1,5	Spatial and technological boundaries comply with the statements in the PDD.	☑	☑
Description of the sources and gases included in the project boundary (Fill in the required amount of sub checklists for sources and gases as given by the methodology applied and comment at least every line answered with "No")				
B.3.2. Source: Fugitive Emissions from non-condensable gases (geothermal activities only) Gas(es): CO_2, CH_4 Type: Project Emissions		Not applicable.		
B.3.3. Source: Emissions from combustion of fossil fuels (geothermal activities only) Gas(es): CO_2 Type: Project Emissions		Not applicable.		
B.3.4. Source: Emissions from the reservoir (new hydroelectric activities only) Gas(es): CO_2, CH_4 Type: Project Emissions		Not applicable.		
B.3.5. Source: emissions from electricity generation in fossil fuel fired power plants of any connected electricity system	1,2, 5,6, 8,9	Boundary checklist: Source and gas(es) discussed by the PDD? Yes; Inclusion / exclusion justified? Yes; Explanation / Justification sufficient? Yes	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	Gas(es): CO2 Type: baseline emissions		Consistency with monitoring plan? Yes		
B.3.6.	Source: Emissions from electricity generation in fossil fuel fired power plants of imported electricity Gas(es): CO_2 Type: Baseline Emissions	5,6	Imports are from connected electricity systems located in another country and their emission factor is set to 0 tons CO2 per MWh.	☑	☑
B.4. Further baseline information, *including the date of baseline setting* and the name(s) of the person(s)/entity(ies) setting the baseline Emissions reductions					
B.4.1.	Is there any indication of a date when determining the baseline?	5,6	The date of the baseline setting is indicated (November 2006).	☑	☑
B.4.2.	Is this in consistency with the time line of *the PDD history*?	5,6	The date of the baseline study corresponds with the PDD date.	☑	☑
B.4.3.	Is information of the person(s) / entity(ies) responsible for the application of the baseline methodology provided in consistency with the actual situation?	5	Stockholm Environmental Institute (SEI) is named as responsible for the baseline study.	☑	☑
B.4.4.	Is information provided whether this person / entity *is also a project participant*?	5	This information is given; SEI is no project participant.	☑	☑
C. Duration of the project activity / crediting period					
C.1.	Are the project's starting date and operational lifetime clearly defined and reasonable?	5	The project's starting date and the operational lifetime are correctly indicated and reflect the envisioned schedule for the implementation.	☑	☑
C.2.	Is the assumed crediting time clearly defined and reasonable (crediting period between 2008 and 2012)?	5	The crediting period and its type are clearly defined (from Jan. 1, 2008 to Dec. 31, 2012).	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
D. Monitoring plan				
D.1. Description of monitoring plan chosen:				
D.1.1. Is the applied methodology considered being the most appropriate one?	5,20	The consolidated monitoring methodology ACM0002 "Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources" has been used. This is an integral part of the respective baseline methodology and therefore the most appropriate approach.	☑	☑
D.2. Data to be monitored:				
In the following "data checklists" are shown for all data which are fixed at determination time, and "monitoring checklists" for all data which have to be monitored during the life-time of the project.				
D.2.1. Is the list of parameters presented by chapter D.2. considered to be complete with regard to the requirements of the applied methodology?		PDD chapter D.2 covers only the data which are to be monitored during project operation (net electricity supplied to the grid). It is required that also other data which are determined just once ex ante, are covered. **Corrective Action Request #2:** Add ex ante required data to PDD chapter D.2 (see following sections D.2.2. to D.2.13.).	**CAR 2**	
D.2.2. Is the choice of ex-ante or ex-post vintage of OM and BM factors clearly specified in the PDD?	5	It is clearly stated that the ex-ante approach is used.	☑	☑
Fill in the required amount of sub checklists for fixed data parameter and comment any line answered with "No"				
D.2.3. Parameter Title: Annual electricity supplied to the grid prior to retrofit (applicable only for retrofit and modification activities)		Not applicable.		

<table>
<tr><th>CHECKLIST TOPIC / QUESTION</th><th>Ref.</th><th>COMMENTS</th><th>PDD in GSP</th><th>Final PDD</th></tr>
<tr><td>D.2.4. Parameter Title:
EF_y
Emission factor of the grid (CM)</td><td></td><td><table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Choice of data correctly justified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr></table>
The emission factor is calculated as weighted average of Operating Margin (D.2.5.) and Build Margin (D.2.6.).</td><td>See D.2.1.</td><td>☑</td></tr>
<tr><td>D.2.5. Parameter Title:
EF_{OM}
Operating Margin emission factor of the grid</td><td></td><td><table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Choice of data correctly justified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr></table>
EF_y is calculated using the most recent information on the generation and the fuel consumption of the power plants in the Estonian grid. This implies some changes, which have been made retroactively by the Estonian government for former years. This leads to some small changes compared to previous EF_y values, used in other JI determination projects.</td><td>See D.2.1.</td><td>☑</td></tr>
<tr><td>D.2.6. Parameter Title:</td><td></td><td></td><td>See</td><td>☑</td></tr>
</table>

<table>
<tr><th>CHECKLIST TOPIC / QUESTION</th><th>Ref.</th><th>COMMENTS</th><th>PDD in GSP</th><th>Final PDD</th></tr>
<tr><td>EF_{BM}
Build Margin emission factor of the grid</td><td></td><td>
<table>
<tr><th>Data Checklist</th><th>Yes / No</th></tr>
<tr><td>Title in line with methodology?</td><td>Yes</td></tr>
<tr><td>Data unit correctly expressed?</td><td>Yes</td></tr>
<tr><td>Appropriate description?</td><td>Yes</td></tr>
<tr><td>Source clearly referenced?</td><td>Yes</td></tr>
<tr><td>Correct value provided?</td><td>Yes</td></tr>
<tr><td>Has this value been verified?</td><td>Yes</td></tr>
<tr><td>Choice of data correctly justified?</td><td>Yes</td></tr>
<tr><td>Measurement method correctly described?</td><td>Yes</td></tr>
</table>

The clarification in the EB 23 session "that even if a part of the plant capacity enables meeting the requirement of 20% (of the generation capacity in the systems) for estimating the build margin emission factor, the total plant capacity should be considered in estimating the build margin emission factor" was taken into consideration and led to a different BM-approach than in previous JI determination projects.</td><td>D.2.1.</td><td></td></tr>
<tr><td>D.2.7.
Parameter Title:
F
fuel consumption: amount of each fossil fuel consumed by each power source / plant</td><td></td><td>
<table>
<tr><th>Data Checklist</th><th>Yes / No</th></tr>
<tr><td>Title in line with methodology?</td><td>Yes</td></tr>
<tr><td>Data unit correctly expressed?</td><td>Yes</td></tr>
<tr><td>Appropriate description?</td><td>Yes</td></tr>
<tr><td>Source clearly referenced?</td><td>Yes</td></tr>
<tr><td>Correct value provided?</td><td>Yes</td></tr>
<tr><td>Has this value been verified?</td><td>Yes</td></tr>
<tr><td>Choice of data correctly justified?</td><td>Yes</td></tr>
<tr><td>Measurement method correctly described?</td><td>Yes</td></tr>
</table>

Details of fuel consumption are available to the AIE, but otherwise confidential. Cumulated data are public.</td><td>See D.2.1.</td><td>☑</td></tr>
</table>

<table>
<tr><th colspan="2">CHECKLIST TOPIC / QUESTION</th><th>Ref.</th><th>COMMENTS</th><th>PDD in GSP</th><th>Final PDD</th></tr>
<tr><td>D.2.8.</td><td>Parameter Title:
COEF
CO2 emission coefficient of each fuel type</td><td></td><td><table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Choice of data correctly justified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr></table></td><td>See D.2.1.</td><td>☑</td></tr>
<tr><td>D.2.9.</td><td>Parameter Title:
GEN
electricity generation of each power source</td><td></td><td><table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Choice of data correctly justified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr></table></td><td>See D.2.1.</td><td>☑</td></tr>
<tr><td>D.2.10.</td><td>Parameter Title:
surface area of full reservoir level (for new hydroelectric activities only)</td><td></td><td>Not applicable.</td><td></td><td></td></tr>
<tr><td>D.2.11.</td><td>Parameter Title:
fraction of time with low costs /must run plant at the margin (for simple adjusted</td><td></td><td>Not applicable.</td><td></td><td></td></tr>
</table>

<table>
<tr><th>CHECKLIST TOPIC / QUESTION</th><th>Ref.</th><th>COMMENTS</th><th>PDD in GSP</th><th>Final PDD</th></tr>
<tr><td>OM only)</td><td></td><td></td><td></td><td></td></tr>
<tr><td>D.2.12. Parameter Title:
$GEN_{IMPORTS}$
electricity imports to the project electricity system</td><td></td><td><table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Choice of data correctly justified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr></table></td><td>See D.2.1.</td><td>☑</td></tr>
<tr><td>D.2.13. Parameter Title:
$COEF_{IMPORTS}$
CO2 emission coefficient of fuels used in connected electricity systems</td><td></td><td>CO2 emissions of imported electricity is set to 0 tons CO2 per MWh.</td><td>See D.2.1.</td><td>☑</td></tr>
<tr><td colspan="5">Fill in the required amount of sub checklists for monitoring parameter and comment any line answered with "No"</td></tr>
<tr><td>D.2.14. Parameter Title:
EG_y
Net electricity supplied to the grid</td><td></td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>See remark</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr></table></td><td>☑</td><td>☑</td></tr>
</table>

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		QA/QC procedures appropriate? — Yes The methodology uses the term "electricity production" instead of the term "net electricity production". Adding the term "net" clarifies the parameter better. The project annual energy production (AEP) is derived in the wind energy expertise from a computed, not measured power curve. During the on-site audit a very recent measured and certified power curve for the WinWind turbine was presented. Its application led to identical results (less than 1% deviation). Even if this certified power curve was measure for a rotor blade diameter of 90 m instead of 100m, it can be concluded, that the power curve is appropriate and reliable. The final metering structure is not yet decided. There will be either one dedicated transformer by which the generation of Vanaküla wind farm will be feed into the national 110 kV grid. In this case there will be one two-way meter on the high-voltage side of the transformer which is being used as metering point. The meter will be owned by Eesti Energia and will be calibrated and sealed with an accuracy of 0,5 or better. The other option is a transformer which is jointly used with the planned near-by wind farm Aulela. In this case there will be a separate meter for Vanaküla wind farm on the low-voltage side of the transformer. Also this meter will be a two-way meter, will be calibrated and sealed and will have an accuracy of 0,5 or better. The transformer losses will be split between the two wind farms and subtracted from the generation. In both cases the requirements are fulfilled.		

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		QA/QC procedures are well described and appropriate. As the substation and meters have not yet been built realization of QA/QC procedures has to be checked during the initial verification.		
D.2.15. Parameter Title: Quantity of steam produced (for geothermal projects only)		Not applicable.		
D.2.16. Parameter Title: Fraction of CO2 in steam produced (for geothermal projects only)		Not applicable.		
D.2.17. Parameter Title: Fraction of CH4 in steam produced (for geothermal projects only)		Not applicable.		
D.2.18. Parameter Title: Quantity of steam generated during well testing (for geothermal projects only)		Not applicable.		
D.2.19. Parameter Title: Fraction of CO2 in steam during well testing (for geothermal projects only)		Not applicable.		
D.2.20. Parameter Title: Fraction of CH4 in steam during well testing (for geothermal projects only)		Not applicable.		
D.2.21. Parameter Title: CO_2 emission coefficient of fuel used by the geothermal plant (for geothermal projects only)		Not applicable.		
D.3. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:				
This aspect is covered for the relevant data in section D.2.14 – D.2.21.				

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
D.4. Please describe the operational and management structure that the project operator will apply in implementing the monitoring plan:				
D.4.1. Is the operational and management structure clearly described and in compliance with the envisioned situation?	1,5	The operational and management structure is clearly described and matches with the envisioned situation.	☑	☑
D.4.2. Are responsibilities and institutional arrangements for data collection and archiving clearly provided?	1,5	The responsibilities are with the manager of Intercon Energy OÜ, the wind farm operator.	☑	☑
D.4.3. Does the monitoring plan provide current good monitoring practice?	1,5	There is no separate monitoring plan, but a rather detailed description in the PDD and the business plan. The operator is also involved in other wind farms and has therefore ample experience. Check of a separate monitoring document will be done during the initial verification.	☑	☑
D.4.4. If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?		Not applicable.		
D.5. Name of person(s)/entity(ies) establishing the monitoring plan:				
D.5.1. Is information of the person(s) / entity(ies) responsible for the monitoring methodology provided in consistency with the actual situation?	1,5	The information is consistent with the actual situation.	☑	☑
D.5.2. Is information provided whether this person / entity is also a project participant?	1,5	This information is indirectly given, as OÜ Intercon Energy is named as project participant.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
E. Estimation of greenhouse gas emission reductions					
E.1. Estimated project emissions and formulae used in the estimation					
Explanation of methodological choices					
E.1.1.	Is it explained how the procedures provided by the methodology are applied by the proposed project activity?	5,6	The Baseline study (annex 2 of the PDD) describes that the simple OM approach has been used to calculate the Operating Margin (low cost / must run resources less than 50% of total generation). The OM is calculated ex-ante. The Build Margin is also calculated ex-ante on the basis of the power plants which constitute the most recent 20% of the system generation. The clarification in the EB 23 session "that even if a part of the plant capacity enables meeting the requirement of 20% (of the generation capacity in the systems) for estimating the build margin emission factor, the total plant capacity should be considered in estimating the build margin emission factor" was taken into consideration and led to a different BM-approach than in previous JI determination projects. The Combined Margin is calculated with the default weights w_{OM} = 0.75 and w_{BM} = 0.25, as indicated for wind projects.	☑	☑
E.1.2.	Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	5,6	It could be verified that the methodology has been properly applied.	☑	☑
E.1.3.	Are the formulae required for the determination of project emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	5,6	The project proponents decided to use the net energy production (energy which is fed into the grid minus energy which is taken from the grid in times where the wind farm does not produce enough energy to cover its auxiliary demand). Therefore no project emissions have to be taken into account for the externally	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
			provided auxiliary energy.		
Ex-ante calculation of emission reductions					
E.1.4.	Is the projection based on the same procedures as used for future monitoring?	5,6	The projection is done by the same algorithms as used for later monitoring.	☑	☑
E.1.5.	Are the GHG calculations documented in a complete and transparent manner?	5,6	The detailed calculation of operating margin and build margin up to the combined margin can be checked transparently in the spreadsheet provided by SEI as part of the Baseline study. The calculation of the emission reduction is clearly demonstrated in the PDD and the business plan.	☑	☑
E.1.6.	Is the data provided under this section in consistency with data as presented by other chapters of the PDD?	5,6	The estimated value of the wind farm production is consistently used throughout the PDD and attached documents.	☑	☑
E.1.7.	Is the choice of options to determine the emissions factor (OM, BM) justified in a suitable and transparent manner?	5,6	The choice of options to calculate the emission factors is suitable and takes also recent EB / JISC-decisions into account	☑	☑
E.1.8.	In case of alternative weighing factors for the Combined Margin: Is the quantification of the alternative weighing factor justified in a suitable and transparent manner?	5,6	The standard weighting factor for wind energy projects has been used.	☑	☑
E.1.9.	In case of alternative weighing factors for the Combined Margin: Is the guidance for the PDD concerning the acceptability of alternative weights considered in the discussion?		Not applicable.		
E.2. Estimated leakage and formulae used in the estimation, if applicable:					
E.2.1.	Are formulae required for the estimation of leakage emissions correctly presented, enabling a complete identification of pa-	5,6	There are no leakage emissions in this wind power project.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	rameter to be used and / or monitored?				
E.3. The sum of E.1. and E.2.:					
E.3.1.	Is the data provided under this section in consistency with data as presented by other chapters of the PDD?	5,6	The section is correctly filled out; the data are consistent with other data in the PDD and associated documents.	☑	☑
E.4. *Estimated baseline emissions and formulae used in the estimation:*					
E.4.1.	Are formulae required for the estimation of baseline emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	5,6	The formulae in the PDD and especially in the baseline study by SEI are correctly presented and allow the identification of parameters used / monitored.	☑	☑
E.5. Difference between E.4. and E.3 representing the emission reductions of the project:					
E.5.1.	Are formulae required for the determination of emission reductions correctly presented?	5,6	The formulae are correctly presented.	☑	☑
E.6. Table providing values obtained when applying formulae above:					
E.6.1.	Will the project result in fewer GHG emissions than the baseline scenario?	5,6	The project activity will result in emission reductions.	☑	☑
E.6.2.	Is the form/table required for the indication of projected emission reductions correctly applied?	5,6	The form is correctly applied.	☑	☑
E.6.3.	Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	5,6	The projection of emission reductions corresponds with the envisioned time schedule and the *indicated crediting period.*	☑	☑
E.6.4.	Is the data provided under this section in	5,6	The data are consistent with other data in the PDD and associated	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	consistency with data as presented by other chapters of the PDD?		documents.		
F. Environmental impacts					
F.1. Documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party:					
F.1.1.	Has an analysis of the environmental impacts of the project activity been sufficiently described?	1,3, 5,13	The analysis of the environmental impact has been described in a small scale EIA. This study was approved by authorities together with the Detailed Land Use Plan in August 2004.	☑	☑
F.1.2.	Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1,3, 5,13	The concerned municipality has decided that a "limited scale EIA" is sufficient. Such a study was performed, approved and presented to the auditing team.	☑	☑
F.1.3.	Will the project create any adverse environmental effects?	1,3, 5,13	According to the EIA there are no adverse environmental effects	☑	☑
F.1.4.	Are transboundary environmental impacts considered in the analysis?	1,3, 5,13	There are no transboundary environmental impacts by the wind farm project.	☑	☑
F.2. If environmental impacts are considered significant by the project participants or the host Party, provision of conclusions and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:					
F.2.1.	Have identified environmental impacts been addressed in the project design?	1,13	In accordance with local and national laws the siting of the wind turbines has been chosen in such a way that no residents will be disturbed.	☑	☑
F.2.2.	Does the project comply with environmental legislation in the host country?	1,13	The approval of the EIA by the relevant authorities can be taken as proof that the project complies with the environmental legislation in the host country.	☑	☑

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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
G. Stakeholders' comments				
G.1. Information on stakeholders' comments on the project, as appropriate:				
G.1.1. Have relevant stakeholders been consulted?	14 - 18	There was a full stakeholder process according to the rules of the Estonian "Detailed Land use Planning" process. As part of this process all stakeholders have been consulted.	☑	☑
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	14 – 18	The local newspaper has been used to inform local stakeholders on the process, including one public hearing and one call for public comments	☑	☑
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	14 – 18	The stakeholder consultation process has been carried out in accordance with host country regulations/laws. This was supported by copies of the relevant newspaper announcements and meeting minutes.	☑	☑
G.1.4. Is the undertaken stakeholder process described in a complete and transparent manner?	14 – 18	The stakeholder process is described completely, including all individual events and activities.	☑	☑
G.1.5. Is a summary of the stakeholder comments received provided?	14 – 18	It is documented that no negative comments were received.	☑	☑
G.1.6. Has due account been taken of any stakeholder comments received?	14 - 18	No stakeholder comments were received.	☑	☑

H. Annexes 1 – 4					
Annex 1: Contact Information					
H.1.1.	Is the information provided in consistency with the one given under section A.3?	5	OK.	☑	☑
H.1.2.	Is information on all private participants and directly involved Parties presented?	1,5	OK.	☑	☑
Annex 2: Baseline study					
H.1.3.	If additional background information on baseline data is provided: Is this information in consistency with data presented by other sections of the PDD?	5,6	The information in the baseline study is an expanded version of the summary in the PDD. All information is consistent with the PDD-information.	☑	☑
H.1.4.	Is the data provided verifiable? Has sufficient evidence been provided to the determination team?	5,6	The data provided have been checked against recent publications and against company-internal data which were made available for the Estonian NAP-process. Generation data are made public per power plant. Fuel use data per power plant are confidential; they are available to the AIE but are not to be disclosed to the public. Cumulated data, however, are made public. Additionally plausibility checks have been applied. No discrepancies were found.	☑	☑
H.1.5.	Does the additional information substantiate statements given in other sections of the PDD?	5,6	All information is consistent with the PDD-information and supports many statements about the renewable energy policy of Estonia and wind farm barriers.	☑	☑
Annex 3: Monitoring information					
H.1.6.	If additional background information on monitoring is provided: Is this information in consistency with data presented by		Not applicable.		

	other sections of the PDD?				
H.1.7.	Is the information provided verifiable? Has sufficient evidence been provided to the determination team?		Not applicable.		
H.1.8.	Do the additional information / procedures substantiate statements given in other sections of the PDD?		Not applicable.		

Table 2 Resolution of Corrective Action and Clarification Requests

Clarifications and corrective action requests by determination team	Ref. to table 1	Summary of project owner response	Validation team conclusion
Corrective Action Request #1: Before registration of the project the participation of one of the TGF investor countries has to be decided	A.4.2.		**open**
Clarification Request #1: The financial data have to be delivered in spreadsheet format to allow sensitivity analysis and checks of IRR consequences.	B.2.20.	[the complete financial data were delivered by e-mail in spreadsheet format Nov. 29, 2006]	• The spreadsheet data are consistent with the statements in the PDD. Insofar the CR has been fulfilled. • Given the limited experience with the planned wind turbine the validation team considers the availability and O&M costs as not overly conservative. The open issue was resolved by additional information provided.
Corrective Action Request #2: Add ex ante required data to PDD chapter D.2 (see sections D.2.2. to D.2.13.).	D.2.1.	[a new PDD version was delivered by e-mail December 14,2006]	All required parameter have been added to PDD chapter D.2. The open issue was resolved by changes in the PDD.

Table 3 Unresolved Corrective Action and Clarification Requests (in case of denials)

Clarifications and / or corrective action requests by determination team	Id. of CAR/CR	Explanation of Conclusion for Denial
-	-	-

Table 4 Completeness Checklist for Submission for Registration

REQUIREMENT	COMMENT	CONCLUSION (at time of issuing validation report)	CONCLUSION (at time of requesting registration)
1. The host country shall be a Party to the Kyoto Protocol	Estonia is Annex I party and has ratified the Kyoto Protocol 14 October 2002	☑	☑
2. Parties participating in the JI shall designate a national authority for the JI	On JISC website Estonia has not published yet the designated focal point. Also the Estonian JI-Guidelines are not published yet on the JISC-website. Regarding the investor country it is not clear hitherto which of the TGF members will be the designated project party of this project. Hence it is not yet clear whether a DFP is already officially nominated or not. Further no National JI-Guidelines from the investor country can be applied. These issues can be clarified according to the sixth JISC-Meeting at least when submitting the first verification report for publication.	☑	
3. The host country's DNA shall issue a confirmation that the project assists in achieving sustainable development.	Letter of Approval is not yet issued. Outstanding issue	☑	
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved. (LoA)	Letter of Approval is not yet issued. Outstanding issue	☑	

REQUIREMENT	COMMENT	CONCLUSION (at time of issuing validation report)	CONCLUSION (at time of requesting registration)
5. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	PDD is published. The comment period ended of 21. December 2006. No comments have been received.	☑	☑
6. Is the version of methodology applied the most recent one or still valid?	ACM0002 CDM methodology is used.	☑	☑
7. Is it necessary to repeat a GSP due to changes of the revision of the methodology applied or a change of the methodology itself.	There is no need at this moment.	☑	☑
8. The project design document shall apply the most recent UNFCCC JI-PDD format or a version still valid at the date of submission for registration.	At this moment the used PDD form is valid.	☑	☑
9. The project participants shall submit a letter on the modalities of communication (MoC) before submitting a request for registration.	This requirement is not applicable for JI projects	☑	☑
10. Is the indicated starting date of the crediting period after the estimated date of registration?	Kyoto crediting period starts with beginning of 2008.	☑	☑
11. In case of bundled small scale activities: Is a bundling form duly filled and attached to the documents?	SSC-JI Format is used. The project is not a debundled project.	☑	☑

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Annex 2

Information Reference List

Project Title: Vanaküla Wind Power JI Project, Estonia
Date of Completion: April 25, 2007
Number of Pages: 2

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Reference No.	Document or Type of Information
1.	On-site interview in Estonia with the project developer and the JI-consultant at the office of LHCarbon OÜ in Tallinn, at the site of the Vanaküla wind park in Vanaküla, and at the office of Intercon Energy OÜ in Tallinn at October 31, 2006, by auditing team of TÜV SÜD Industrie Service GmbH Validation team on-site: Dr. Thyge Weller — TÜV SÜD Industrie Service GmbH Ranno Mellis — OÜ Projektkeskus, Tallinn, Estonia Interviewed persons: Markku Tarkiainen — Intercon Energy OÜ (Managing Director), Tallinn, Estonia Hannu Lamp — LH Carbon OÜ, Tallinn, Estonia Further participant: Janika Blom — Legal Counsel, Testing Ground Facility (TGF) Carbon Fund, Helsinki, Finland
2.	On-site interview with representative of the Stockholm Environment Institute (SEI), Tallinn Centre, at SEI's office in Tallinn at October 30, 2006 by auditing team of TÜV SÜD Industrie Service GmbH Validation team on-site: Dr. Thyge Weller — TÜV SÜD Industrie Service GmbH Ranno Mellis — OÜ Projektkeskus, Tallinn, Estonia Interviewed person: Valdur Lahtvee — SEI, director Tallinn Centre, Tallinn, Estonia Further participant: Hannu Lamp — LH Carbon OÜ, Tallinn, Estonia
3.	On-site interview with representative of the national focal point for JI at the Estonian Ministery for the environment at October 30, 2006 by auditing team of TÜV SÜD Industrie Service GmbH Validation team on-site: Dr. Thyge Weller — TÜV SÜD Industrie Service GmbH

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Reference No.	Document or Type of Information
	Ranno Mellis OÜ Projektkeskus, Tallinn, Estonia Interviewed person: Karin Radiko Ministry of the Environment (JI - Officer), Tallinn, Estonia Further participant: Hannu Lamp LH Carbon OÜ, Tallinn, Estonia
4.	Telephone interview with Kommunalkredit Public Consulting GmbH, Climate and Energy, Vienna, Austria, November 08, 2006 Interviewed person: Wolfgang Diernhofer JI/CDM Team Leader
5.	Project Design Document for JI Project "Vanaküla Wind Power JI Project", version 4, November 7, 2006
6.	JI Project Development Baseline Study for JI Project "Vanaküla Wind Power JI Project", SEI, November 2006, with appendix "Estonia combined margin 2006" [excel-file]
7.	Business Plan of the Vanaküla Wind Power JI project in Estonia, LHCarbon OÜ, Ver. 1.0, Oct. 06, 2006 (including calculation spreadsheet, updated November 7, 2006) [confidential]
8.	Energiabilanss 2004 / Energy Balance 2004, yearbook, Statistical Office of Estonia, ISBN 9985-74-358-X
9.	Energiabilanss 2005 / Energy Balance 2005, yearbook, Statistical Office of Estonia, ISBN 9985-74-358-X
10.	Power performance Measurement of the WinWinD WWD-3 wind turbine, Research report VTT-S-08048-06; 05.09.2006
11.	Wind energy expertise („Bestimmung des Windpotentials und des Windenergieertrags für 3 Windanlagen des Typs Winwind WWD-3/100 3000 kW" by Enveco Steinfurt GmbH & Co. KG, April 27,2006
12.	WinWinD WWD-3 Technical Information
13.	Building permit / Approval of detail plan of landuse (August 2006)
14.	Stakeholder involvement: announcement of public hearing; newspaper Lääne-Elu, March 16, 2004
15.	Stakeholder involvement: announcement of detail planning being open for public comments, March 22, 2004
16.	Stakeholder involvement: minutes of public hearing at March 25, 2004; including participants list
17.	Stakeholder involvement: announcement of detail planning being open for public comments; newspaper Lääne-Elu, June 26, 2004
18.	Stakeholder involvement: announcement of result of detail planning process; newspaper Lääne-Elu, July 28, 2004
19.	Building Title agreement (land lease of wind park area); 28.12.2005
20.	Internet-site unfccc.int