Industrie Service

Determination Report

Determination of the "Sudenai and Lendimai Wind Power Joint Implementation Project" Lithuania

Report No. 982879

2009-02-24

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Summary:

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

The determination of this 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.

We can confirm that the indicated amount of 79.012 tons CO_2 (ERUs) during the Kyoto crediting period from September 1st, 2008 – December 31st, 2012 represents a conservative estimation using the assumptions given by the project documents.

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Abbreviations

BM	Build Margin
CAR	Corrective action request
CR	Clarification request
DFP	Designated Focal Point
DP	Determination Protocol
EIA	Environmental Impact Assessment
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
NAP	National Allocation Plan due the EU Emissions Trading Scheme
OM	Operating Margin
PDD	Project Design Document
PIN	Project Idea Note
SCADA	Supervisory Control And Data Acquisition
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change

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1 INTRODUCTION

1.1 Objective

NEFCO Nordic Environment Finance Corporation, Finland, has commissioned TÜV SÜD Industrie Service (in short: TÜV SÜD) to make a determination of the "**Sudenai and Lendimai Wind Power Joint Implementation Project**" (in short: SL wind) with regard to the relevant requirements for 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 UAB Vejo Elektra. 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 near the west coast of Lithuania, Kretinga district, near to the villages Sudenai and Lendimai , close to Latvian border. The SL wind will have two wind power plants with a combined capacity of 14 MW (7 Enercon E-82-1 à 2,0 MW) and qualifies as a JI-project. It will feed into the Lithuanian national grid a total estimated supply of 28.988 MWh per year. The electricity generation by the wind turbines will replace energy which is produced in the “Lithuanian power plant (Lietuvos elektrine)”.

Sudenai Lendimai windfarm will be commissioned by August 2008. The generated ERUs are supplied by *UAB Vejo Elektra*, a private wind power development company, located in Kretinga, Lithuania. The project documentation has been developed by the project proponent, LH Carbon OÜ, located in Tallinn, Estonia, with additional support from other institutions.

2 METHODOLOGY

In order to ensure transparency, a determination protocol was customised for the 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 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 (Version 1 - February 2007) were submitted to TÜV SÜD by LH Carbon OÜ on 12.02.2007. The second PDD (Version 2 – March 2007) were submitted on 23.03.2007 for publishing on the TÜV SÜD website www.netinform.net and on JISC-website. The publishing on JISC-website was confirmed on 23.03.2007. As a result of the onsite-assessment the PDD was revised again (version 3, May 2007) and sent to TÜV SÜD on May 23, 2007.

After given comments from TÜV SÜD a renewed PDD-version (version 4 June 29 2007, Vejo Elekta JI PDD Sudenai-Lendimai June 29 2007.doc) was provided. After the quality assurance of certification body some comments raised, which was resolved with the updated PDD-version (version 6, November 6, 2007) which served as the basis of this determination report.

After submission to JISC for registration of the project few adjustments were requested. Therefore the PDD was once more revised accordingly and provided to TÜV SÜD (version 7, 22 February 2009).

2.2 Follow-up Interviews

On May 03, 2007 TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of the project proponent LH Carbon OÜ, the wind farm owner UAB Vejo Elektra, wind farm operator OÜ Nelja Energia and the Municapility of Kretinga 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
Vejo Elektra	Project design, monitoring plan, stakeholder comments, monitoring procedures, measurement equipment, documentation, archiving of data
Municipality Kretinga	Approval of the project, stakeholder comments, national and sectoral policy; approval procedure
LH Carbon	Project design, baseline, monitoring plan and procedures, environmental impacts, stakeholder comments, additionality, business plan

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. Still a determination protocol was sent to LH Carbon with 13 CARs. The most of the CARs were resolved by changes in the PDD version 3 (May 23 2007) and the CAR#2 and CAR#3 were resolved by additional information and adjustments regarding production figures finally in the PDD version 4 (June 29 2007).

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 (version 2) 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 LH Carbon 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 project reflects a professional standard scale wind park as it can be found in many European countries. The planned wind turbines are modern state-of-the-art turbines. It is, moreover, not likely that the project technology will be substituted by a more efficient technology.

The existing implementation schedule is realistic. There is sufficient time foreseen for the design, supply and construction of the turbines and auxiliary installations. At the time of the follow-up visit the design works were far advanced.

In the first two years the turbine manufacturer will be responsible for support and maintenance and the operation of the turbines is online monitored by the manufacturer's service centre in Germany. After the 2 years warranty period 4Energy will be responsible for the operation of the wind farms from the very begging. 4Energy has previous experience from operation of Estonian wind farms.

The wind farm erection is planned during quarters 2-3 2008 and commissioning by August 2008. Emission reductions would thus begin to be generated from 1st of September 2008. The operational lifetime of the project is mentioned with 20 years and this is in accordance with international practice.

High turbine towers and rotating blades will have following impacts to the surrounding environment: visual effect, noise and shadowing. First two are environmentally safe. The shadowing of the nearby Sudenai botanic-zoological reserve park is possible during morning hours in an isolated extent. Comments to the EIA report require corrective measures during preparation of further design documents. Brief interruption of operation of one turbine in order to avoid shadowing of nearby botanical – zoological reservation may cause a revision of forecasted production figures as well.

Lithuania has appointed a national focal point to UNFCCC and has ratified the Kyoto Protocol. Also a DFP is officially nominated. Further the Lithuanian JI-Guidelines are published on the JISC-Website. The project is approved by the Lithuanian government, represented by the Ministry of the Environment.

The NEFCO is the Fund Manager of the multinational Baltic Sea Region Testing Ground Facility (TGF), and has been authorised by the governments investing in the TGF to participate on their behalf in actions leading to the generation, transfer and acquisition of ERUs under Article 6 of the Kyoto Protocol.

Meanwhile Sweden within the TGF-Group is determined as investor country. Furthermore the Swedish JI-Guidelines are published on the JISC-Website. The project is approved by the Swedish government, represented by the Swedish Energy Agency and appointed as DFP.

3.1.2 Issued CARs / CRs

CORRECTIVE ACTION REQUEST #1:

The mentioned Technical data of sheet of turbines should be implemented in the PDD.

Response: Revised PDD (version 23, May 07) was provided. Technical data sheet was included in the PDD.

CORRECTIVE ACTION REQUEST #2:

The Feasibility Study and wind measurements should be mentioned, referenced and summaries of studies demonstrated.

Response: Revised PDD (v.3, 23, May 07) was provided. Par. A.4.3. was respectively updated. Energy yield estimate of EMD, Business Plan and feasibility calculations have been presented to the validator as separate documents.

However the mentioned energy yield figured of 33,7 GWh, which can not be considered as really conservative. It is a forecast with a probability of 50%.

Response: Revised PDD (v.4, 29, June 07) was provided. Par. A.4.3. was respectively updated. Energy yield estimate of EMD, Business Plan and feasibility calculations have been presented to the validator as separate documents

CORRECTIVE ACTION REQUEST #3:

It should be described and referenced how the shadowing avoidance can be resolved. A brief interruption of operation of one turbine in order to avoid shadowing of nearby botanical – zoological reservation may cause a revision of forecasted production figures as well.

Response: Revised PDD (v.3, 23, May 07) was provided. Possible use of shadow shut-down system of Enercon was mentioned under chapter G.1 and a separate detailed document on the system presented to validator. In accordance with Enercon's opinion, there should be no shadow effect at the zoological reservation. It is explained that the relevant area is in the north and north west of the site. As far as the map shows, is the protected area more or less in the west of the site.

However a more detailed justification is needed. It should be confirmed by an expert opinion or at least by a respective letter of Enercon.

Response: Detailed calculations of the shadowing effect prepared by Enercon were been provided to the validator (presented 12.06.07). In the worst case the effect on annual energy yield is 1% as-suming that:

- the sun is shining all day from sunrise to sunset,
- the rotor plane is always perpendicular to the line from the wind turbine to the sun,
- the wind turbine is always operating.

The shadow avoiding software will be ordered to all the turbines to prevent problems with shadow flickering

3.1.3 Conclusion

The project itself fulfils the prescribed requirements completely. The planned wind turbines are modern state-of-the-art turbines and represent current good practice for generation of electricity using wind power. The technical data are consistent and plausible. It is not expected that planned highly efficient wind turbines will be substituted by better technologies within the project period.

The project time schedule is clear and there is sufficient time foreseen for the design, supply and construction of the turbines and auxiliary installations. The crediting period is clearly defined.

The PDD contains information how training, operating, controlling, maintenance will be organized and managed. The aspects regarding future responsibilities and quality assurance are fixed.

The mentioned production figures in the revised PDD are now consistent to the calculations of the Feasibility Study prepared by EMD International A/S. Though production estimate with 90% probability was recommended in the Study, project proponents preferred an estimate with 50% probability in the financial-economical calculations. A conservative estimate (P90 with 90% probability) was used for calculation of ERU-s.

If necessary, the project owners are ready to install shadow shutdown system of Enercon in order to reduce shadow flickering at the residential areas as well as at Sudėnai botanical–zoological reservation territory. This system is able to detect the lighting conditions and to decide whether periodical shadow flickering is possible. The system shuts down wind turbines during shadow casting periods at emmission sites taking weather conditions into consideration.

Detailed calculations of the shadowing effect prepared by Enercon indicate that in the worst case the possible reduction of the production would be 100 hours per year which equals ca. 1% of the annual production. The real reduction will be much lower as the worst case calculation assumes that: the sun is shining all day from sunrise to sunset; the rotor plane is always perpendicular to the line from the wind turbine to the sun and the wind turbine is always in operation.

The above mentioned issues are considered to be resolved.

3.2 Baseline

3.2.1 Findings

The Baseline methodology used is in accordance with BASREC JI Project Guidelines. Due to the country specific circumstances the CDM-Methodology ACM0002 is not proper to be applied. In SL wind project the baseline calculation is project specific and very similar to the already determined project of Rudaiciai Wind Power Park developed in December 2006.

The baseline is based on the facts that:

- Lietuvos Elektrine, power plant with the second largest installed capacity in Lithuania (after Ignalina nuclear power plant –INPP) is operating on the power grid as a marginal plant. It covers all power demand which is remaining after all other power producers have supplied their quota power to the grid.
- There is an overcapacity of installed power in Lithuania, so only very few new power plants are built.

Because of that, it can be assumed that Operating Margin and Build Margin emissions factor is identical with the emission factor of the power plant of Lietuvos Elektrine. The determined baseline emission factor for the electricity grid corresponds also to the indicated figures of the NAP II.

According to the PDD financial modelling proves that the financial income from sale of Emission Reduction Units during 2008-12 improves the IRR of the project by almost one percentage point and enables to generate a positive NPV of the investment, thus making the project attractive for the investors to undertake.

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.

In comparison to other support systems in Western Europe it is obvious that the existing Lithuanian feed-in tariff results in an inadequate rate of return and it is unsure whether the current feed-in-tariff is guaranteed for a longer term. No wind farm is operating in Lithuania which is not supported by a JI-project or other grants.

LS wind can result in double counting due to the feeding of generated electricity into the national electricity grid and due to the grid-connected power plants which are covered by the EU Emissions Trading Scheme. Hence we checked during our determination whether the project is preliminary approved by the Lithuanian Government, represented by the Ministry of the Environment in order to be sure that the project is known. The preliminary approval by the Lithuanian government was given (Letter of Endorsement of the project from Ministry of Environment, Nr. (10-5)-D8-1543, February 21, 2007). Therefore it remains at the Lithuanian Government to take care for considerable action reflecting this double counting issue either by linking this project activity to any existing JI reserve within the second NAP or by deleting the respective amount of EUAs.

3.2.2 Issued CARs / CRs

CORRECTIVE ACTION REQUEST #4:

It is stressed, that new cogeneration plants have higher IRRs than wind farms in Lithuania. But the higher IRRs of cogeneration plants (as stated in step 2c) should be clearly referenced or the audit team should be provided with additional information or proofs..

> Response: As calculations for Lithuanian co-generation plants are not available the Investment analysis of chapter B.2 has been revised. The focus of the analysis is on the feasibility of the project itself whereby the cash flows from sale of carbon credits are required to increase the NPV and IRR of project to an acceptable level for equity investors as well as in order to attract debt financing. PDD (v.3, 23, May 07) has been accordingly revised: comparison to cogeneration plants is replaced with the comparison of the project to the same project implemented without JI scheme.

CORRECTIVE ACTION REQUEST #5:

A documented evidence should be provided on the existence and significance of at least one of these barriers.

> Response: Revised PDD (v.3, 23, May 07) was provided. PDD has been accordingly revised.

CORRECTIVE ACTION REQUEST #6:

It is discussed that financing the project (no bank credit) can not be acquired without JI. A detailed list of those projects should be presented and it should be demonstrated that all of them suffer from the same barriers and need therefore support by external grants or the JI-program.

Response: A respective bank letter has been provided to the validator.

CORRECTIVE ACTION REQUEST #7:

In step 5 it should be demonstrated the impact on IRR due to additonal revenues for ERUs.

Response: Revised PDD (v.3, 23, May 07) was provided. PDD has been accordingly revised.

3.2.3 Conclusion

The additional explanations regarding baseline methodology are sufficient. The baseline is established in a project specific manner and refers to the characteristics of the Lithuanian power plants. The baseline does take into account the major national and/or sectoral policies, macroeconomic trends and political developments. The determined baseline emission factor for the electricity grid is consistent with the NAP. 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 and can be considered as conservative.

An excel file was provided where financial analysis including sensitivity analysis is elaborated. It is based on energy yields (P50 probability of 50% in 20 years) which are less conservative than the ones are used to forecast conservatively the amount of Emission Reduction Units according to the recent Feasibility Study (P90). This is acceptable because the decision to invest in the wind farm was done on the basis of P50 energy yield.

In Step 3 ”Barrier analysis” it is shown that the investment barriers are the main issue of realising such projects. These investment barriers are considerable, evidenced and well known for Lithuania. The prepayment from the sale of carbon credits can also be utilized as part of the equity capital, thus lowering the financial risk for the equity investors. This is confirmed by official letter of a bank institution.

Additionally to the demonstrated Step 3 ”barrier analysis” it is outlined in step 2 “financial analysis the financial modelling. The financial analysis shows also that the income from sale of Emission Reduction Units during 2008-12 improves the IRR of the project and enables to generate a positive NPV of the investment, thus making the project more attractive for the investors to undertake.

Taking to account the estimation of generation and the respective financial attractiveness the implementation of the wind park project can be considered as additional. The 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 whether 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 – amount of electric power 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 monitoring methodology is in accordance with the chosen methodology. The monitoring provisions are in line with the project boundaries.

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) can serve as back-up.

3.3.2 Issued CARs / CRs

CORRECTIVE ACTION REQUEST #8 :

The Recording frequency should be reasonable defined. (constant reporting would not be possible).

> Response: Revised PDD (v.3, 23, May 07) was provided. Table D.2. was respectively updated: monthly data will be recorded.

CORRECTIVE ACTION REQUEST #9:

Worksheets for calculations of ERU-s and log book for entering monitored data should be developed, referenced and provided to the audit team.

> Response: The project proponents argue that: “As chapter D.4 of PDD should only provide a brief description and to PDD authors’ opinion the details of the Monitoring Plan can be elaborated at a later stage (prior to project implementation), the chapter only includes the basic guidelines of the MP. Thus the final monitoring worksheets have not yet been developed. This has not been demanded with recently validated PDDs of similar projects.”

CORRECTIVE ACTION REQUEST #10:

Monitoring manual for the staff shall be provided to the audit team.

> Response: see response to CAR#9.

CORRECTIVE ACTION REQUEST #11

Mr. Zygimantas Beiga was not employed by Vejo Elektra UAB anymore, therefore the information in D.5. and in annex 1 should be updated.

> Response: Revised PDD (v.3, 23, May 07) was provided. Section D.5. and annex 1 were respectively updated: Mr. Dainius Kriaučiūnas is appointed as a responsible person.

3.3.3 Conclusion

The monitoring plan focuses on measurable parameter (annual power production). The parameter which are determined in advance and are valid for the whole crediting period are not mentioned separately. This approach is sufficient, as the current JI PDD format does not require indicating each parameter which is used to calculate baseline emissions.

It is clearly mentioned that annual power production means the net energy production (delivered electricity to the grid minus the demanded electricity from the grid).

The description of management structure is sufficiently described. All aspects regarding future responsibilities for registration, monitoring, measurement are already fixed in advance.
The monitoring plan in Annex 3 is not comparable with a monitoring manual for the monitoring personnel. A printout of a pre-prepared excel-spread-sheet to ease recording and reporting is not amended. This could be accepted as only very few figures have to be recorded and multiplied for calculation of emission reductions and because no further requirements exist for Annex 3. Nevertheless it remains a minor risk that the monitoring is not traceable. Also a respectively prepared logbook to write down the read values can be very helpful for the monitoring staff.

The above discussed issues are considered to be resolved. The project fulfils all the prescribed requirements completely.

3.4 Estimation of GHG Emission Reductions

3.4.1 Findings

The calculation is according to the approved methodology. Uncertainties in the GHG emissions estimates are addressed.

The project's spatial boundaries are clearly described. Regarding emission sources all aspects are covered. Only CO2 emissions have correctly been identified as relevant for the project. No aspects of leakage have been identified; hence a leakage calculation is not requested.

The project will definitely result in fewer GHG emissions than the baseline scenario. The used forecast of electricity generation is based on the delivered estimation by the turbine supplier. The calculation of emission reductions itself is correctly computed.

3.4.2 Issued CARs / CRs

CORRECTIVE ACTION REQUEST #12

In section E.4. it should be referred to the section B.1 in PDD instead of ACM0002.

> Response: Revised PDD (v.3, 23, May 07) was provided. Section E.4. was respectively updated.

3.4.3 Conclusion

The above discussed issues are considered to be resolved. The project fulfils all the prescribed requirements completely.

3.5 Environmental Impacts

3.5.1 Findings

The most relevant environmental impacts are sufficiently described in the PDD.

For Sudenai wind farm (4 turbines). A environmental impact assessment (EIA) has already been carried out which concluded that no negative local or global environmental effects are expected with the implementation of wind farm project. The consents of all nearby landowners were obtained. The EIA was approved by all related institutions. The approval was drawn with subsequent remarks and proposals:

1. Works of intense movement of land are possible only after archaeological research is made, and founded valuables are researched and moved into state storages.
2. Monitoring of noise should be performed.
3. Factual measurements of noise should be performed after the park of wind power stations is built. Additional measures for decreasing of noise shall be planned after estimating of exceeded maximum allowed levels of noise.
4. Following the item 127.9 of 12-05-1992 of the Decision of Government of the Republic of Lithuania No. 343 "Regarding setting the special conditions for usage of land and forest", normalized distances from water bank shall be maintained.
5. While preparing the detailed plan, in order to avoid shading of wind power stations in the morning hours crossing Sudėnai botanical – zoological reservation territory, it is necessary to examine the possibility to move wind power stations from the reservation border, as there is the distance of only 70 m. from the closest planned wind turbine generator to the border of Sudėnai botanical – zoological reservation.
6. The means for liquidation of negative shading effect shall be planned while arranging of the technical design.

Considering the remarks and proposals listed above, the Decision Regarding Admissibility of Planned Economic Activities in the Environmental Perspective, issued by the Klaipeda Region

Environmental Protection Department of the Ministry of Environment of the Republic of Lithuania gives consent to pursuing the wind power station park plan pursuant to the EIA Report.

If necessary, the project owners are ready to install shadow shutdown system of Enercon in order to reduce shadow flickering at the residential areas as well as at Sudėnai botanical–zoological reservation territory. This system is able to detect the lighting conditions and to decide whether periodical shadow flickering is possible. The system shuts down wind turbines during shadow casting periods at emmission sites taking weather conditions into consideration.

For Sudenai/Lendimai wind farm (3 turbines) an EIA was not necessary, which is confirmed by a letter from Ministry of Environment. The concerned municipality has also decided that an EIA is not necessary.

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.

It is not expected that there will be any adverse environmental effects. There are no transboundary environmental impacts by the wind farm project.

3.5.2 Issued CARs / CRs

CORRECTIVE ACTION REQUEST #13

Add discussion if there are any impacts on the Latvian side (e.g. settlements) which could be affected.

> Response: Revised PDD (v.3, 23, May 07) was provided. Section F.1. was respectively updated: the planned wind farms will have no significant transboundary effects in Latvia as not settlements across the border are established in the vicinity of the wind farm.

3.5.3 Conclusion

The project fulfils all prescribed requirements.

3.6 Local stakeholder process

3.6.1 Findings

Beginning of preparation of project's detailed plans of Sudenai/Lendimai wind farm (3 turbines) were announced in newspaper „ Švyturys": Num. 35 (7746) " on May 10, 2006. The public consideration of the project detailed plan was announced in the newspaper „ Švyturys" Num. 48 (7777)", June 23, 2006. Public display of detailed plans took place at Municipality of Kretinga county (Savanoriu str. 29A, Kretinga) from June 23, 2006 to June 27, 2006. Stakeholders have not expressed any objections. The detailed plans were finally approved on June 29 2006 by the Council of the Kretinga District Municipality decisions No. T2-188 and No. T2-187.

Beginning of preparation of project's detailed plans of Sudenai wind farm (4 turbines) were announced in newspaper „ Švyturys": Num. 98 (7725) " on Dec 14, 2005. The public consideration of the project detailed plan was announced in the newspaper „ Švyturys" Num. 25 (7754)", April 1, 2006 and additionally on (No. 35 (7764)) on May 10, 2006. Public display of detailed plan took place from April 1 to April 14, 2006 and from May 10 to May 22, 2006 at the Municipality of Kretinga county. Stakeholders have not expressed any objections. Public meeting of the draft detailed plans took place on April 15, 2006. The public meeting was announced in the regional newspaper "Svyturys" (No. 25 (7754)) on April 1, 2006. No planning suggestions or objections

from the public were received. The meeting was held at the Department of Architecture-Urbanistics of Kretinga county municipality. Another public meeting of the detailed plan took place on May 22, 2006. The meeting was announced in the regional newspaper “Svyturys” (No. 35 (7764)) on May 10, 2006. No planning suggestions or objections from the public were received . The meeting was held at the county municipality of Kretinga. The detailed plans were finally approved on June 29 2006 by the Council of the Kretinga District Municipality decisions No. T2-189.

There have been no comments, which would have required any further action.

Provided information deems that the consultation process was carried out according the national regulations. The conducted stakeholder process is sufficiently described.

3.6.2 Issued CARs/CRs

No such requests have been issued.

3.6.3 Conclusion

The project fulfils all the prescribed requirements.

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 on March 23, 2007 and was open for comments until April 22, 2007.

Within this period no comments have been received.

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5 DETERMINATION OPINION

TÜV SÜD has performed a determination of the "Sudenai and Lendimai Wind Power Joint Implementation Project".

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 itself 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.

The eligibility criterion regarding National JI-Guidelines and DFP of the host and investor country is meanwhile fulfilled. Required approvals by the host country and buyer country are available.

After submission to JISC for registration of the project few adjustments were requested on 23. December 2008. Therefore the PDD was once more revised accordingly and provided to TÜV SÜD (version 7, 22 February 2009). The requested corrections were sufficiently resolved.

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, 2009-02-24

Javier Castro
Head of certification body "climate and energy"

Munich, 2009-02-24

Klaus Nürnberger
Project Manager

Industrie Service

Annex 1

Industrie Service

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

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
1. The project shall have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a)	LoA is available from all Parties involved. ☑	
2. Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur	Kyoto Protocol Article 6.1 (b)	☑	Table 2, Section B.2
3. The sponsor Party shall not aquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7	Kyoto Protocol Article 6.1 (c)	☑	Lithuania has submitted its fourth national communication in December 2005 and its Progress Report in February 2006.
4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3	Kyoto Protocol Article 6.1 (d)	The Lithuanian JI Guidelines are available. ☑	The Lithuanian JI Guidelines are available.
5. Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects	Marrakech Accords, JI Modalities, §20	Lithuanian DFP is designated. ☑	
6. The host Party shall be a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24, 21	☑	Lithuania has ratified the Kyoto Protocol the January 3, 2003
7. The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts	Marrakech Accords, JI Modalities, §21(b)/24	☑	Lithuania has submitted its Initial Report and the National Inventory Report in December 2006, too.
8. The host Party shall have in place a national registry in accordance with Article 7, paragraph 4	Marrakech Accords, JI Modalities, §21(d)/24, 10	☑	The GHG Registry is implemented at the Lithuanian Environmental Investment

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
			Fund
9. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination	Marrakech Accords, JI Modalities, §31	☑	
10. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments	Marrakech Accords, JI Modalities, §32	☑	The PDD was open for comments from March 23, 2007 until April 22, 2007. No comments were received.
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out	Marrakech Accords, JI Modalities, §33(d)	☑	Table 2, Section F
12. The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project	Marrakech Accords, JI Modalities, Appendix B	☑	Table 2, Section B.2
13. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, JI Modalities, Appendix B	☑	Table 2, Section B.2
14. The baseline methodology shall exclude to earn ERUs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, JI Modalities, Appendix B	☑	Table 2, Section B.2
15. The project shall have an appropriate monitoring plan	Marrakech Accords, JI Modalities, §33(c)	☑	Table 2, Section D

Table 2: Checklist for Determination of JI-Projects

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?	2, 3 39, 40, 42	Yes	☑	☑
A.1.2.	Are there any indication concerning the revision number and the date of the revision?	2, 3 39, 40, 42	Yes	☑	☑
A.1.3.	Is this consistent with the time line of the project's history?	2, 3 39, 40, 42	Yes	☑	☑
A.2. **Description of the small-scale project:**					
A.2.1.	Is the description delivering a transparent overview of the project activities?	1, 40, 42	Yes See below A.4. technical description	☑	☑
A.2.2.	What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	1, 40, 42; 4, 5, 6, 9, 10, 11, 12, 13, 14, 18, 20, 21, 22, 23 – 31, 35	Sufficient proofs for demonstration compliance of project description with actual situation are available. Such as: detail planning approvals, land lease agreements, supply contracts with Enercon GmbH, grid connection agreement etc.	☑	☑
A.2.3.	Is the information provided by these proofs consistent with the information provided by the PDD?		Yes	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
A.2.4.	Is all information provided consistent with details provided by further chapters of the PDD?		Yes	☑	☑
A.3. Project participants:					
A.3.1.	Is the form required for the indication of project participants correctly applied?	2, 3, 39, 40, 42	Yes	☑	☑
A.3.2.	Is the participation of all listed entities or Parties confirmed by each one of them?		Yes. NEFCO ordered TÜV SÜD to determine the project. The project owner expressed his participation during audit, orallly.	☑	☑
A.3.3.	Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?		Yes.	☑	☑
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, 2, 3, 39, 40, 42	Yes	☑	☑
A.4.1.2.	How is it ensured and/or demonstrated, that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	1, 40, 42; 4, 5, 6, 9, 10, 11, 12, 13, 14, 18, 20, 21, 22, 23 – 31, 35, 36	The project proponents are capable to implement the proposed project. It is demonstrated by the following: - Ministry of Economy has issued the Permit to develop the wind park - Long term land lease agreements are signed - Detail plans for the sites are prepared and approved - Supply and installation contracts with Enercon have been signed - Grid Connection Agreement is signed	☑	☑
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 identi-	2, 3, 39, 40,	Type I JI SSC project: Renewable energy project with a maximum output capacity of less than 15 MW(e).	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	fied and indicated?	42	The category 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?	2, 3, 4, 23, 24, 39, 40, 42	The project reflects a professional standard scale wind park as it can be found in many European countries. The planned wind turbines are modern state-of-the-art turbines. It is, moreover, not likely that the project technology will be substituted by a more efficient technology.		☑
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?	2, 3, 4, 23, 24, 39, 40, 42	**Corrective Action Request:** The mentioned Technical data sheet should implemented in the PDD. **Corrective Action Request:** The Feasibility Study and wind measurements should be mentioned, referenced and summaries of studies demonstrated.	**CAR#1** **CAR#2**	☑
A.4.3.3.	Is the technology implemented by the project activity environmentally safe?	1, 2, 3, 15, 16, 17, 39, 40, 42	Mainly yes. High turbine towers and rotating blades will have following impacts to the surrounding environment: visual effect, noise and shadowing. First two are environmentally safe. The shadowing of the nearby Sudenai botanic-zoological reserve park, is possible during morning hours in an isolated extent. Comments to the EIA report require corrective measures during preparation of further design documents. **Corrective Action Request:** It should be described and referenced how the shadowing avoidance can be resolved..	**CAR#3**	☑
A.4.3.4.	Is the information provided in compliance with actual situation or planning?	1, 2, 3, 39, 40, 42	Yes	☑	☑
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 any commonly used technologies in the host country?	2, 3, 4, 23, 24, 39, 40, 42	The planned wind turbines are modern state-of-the-art turbines. Turbines. In Lithuania such there are up to now very few wind turbines erected which are all quite new and therefore comparable to the planned turbines.	☑	☑
A.4.3.6.	Is the project technology likely to be substi-		It is not expected that today's highly efficient wind turbines will be subs-	☑	☑

	CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
	tuted by other or more efficient technologies within the project period?		tituted 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, 23, 24, 40, 42	Yes If O&M will not be outsourced, training shall be provided to the O&M personnel before the end of 2 year warranty period	☑	☑
A.4.3.8.	Is information available on the demand and requirements for training and maintenance?	1, 23, 24, 40, 42	Design, delivery, construction and commissioning contracts of wind turbine generators with Enercon GmbH: - Include maintenance of during the 2 years warranty period - do not include training of the personnel of projectcompanies Service and maintenance of the wind farms during the first 2 years will be taken care of by Enercon. After the 2 years warranty period O&M should be either outsourced or organized by the means of project companies. 4Energy is responsible for the operation of the wind farms from the very begging. 4Energy has previous experience from operation of Estonian wind farms.	☑	☑
A.4.3.9.	Is a schedule available for the implementation of the project and are there any risks for delays?	1, 40, 42	Yes, time schedule is provided. There is sufficient time foreseen for the design, supply and construction of the turbines and auxiliary installations.	☑	☑
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, 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?	2, 3, 39, 40, 42	Yes	☑	☑
A.4.4.2.	Are the figures provided consistent with other data presented in the PDD?	2, 3, 39, 40, 42	Yes, but shall be reviewed after Feasibility study (by EMD) Brief interruption of operation of one turbine in order to avoid shadowing of nearby botanical – zoological reservation (see F.1.3) may cause a revision of forecasted production figures as well. See CAR#1 and CAR#2	☑	☑
A.4.5. Confirmation that the proposed small-scale project is not a debundled component of a larger project:					

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
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, 2, 3, 39, 40, 42	Bundling checklist: Yes / No same project participants? No Registered within the previous 2 years No project boundary of other project is within 1 km of the project boundary of the proposed small-scale activity at the closest point. No the same project category and technology/measure yes	☑	☑
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 methodology clearly indicated?	2, 3, 39, 40, 42	Yes. The Baseline methodology is indicated as BASREC JI Project Guidelines (see section B.1). The version number is mentioned.	☑	☑
B.1.2.	Is the applied version the most recent one and / or is this version still applicable?	2, 3, 39, 40, 42	Yes, the applied version is still applicable	☑	☑
B.1.3.	Is the applied methodology considered being the most appropriate one?	2, 3, 32, 39, 40, 42	Yes	☑	☑
B.1.4.	Does baseline methodology apply to electricity capacity additions from wind sources?	2, 3, 39, 40, 42	Yes, the used methodology is in principle applicable for additional capacity from wind power plants. See above B.1.1	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
B.1.5. Can the geographic and system boundaries for the relevant electricity grid clearly be identified and is the information on the characteristics of the grid available	1, 2, 3, 39, 40, 42	Yes, the geographic and system boundaries for the Lithuanian electricity grid can clearly be identified. Relevant information on the characteristics of the grid are available but not to this extent as required by CDM-methodology ACM0002. See above B.1.3	☑	☑
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. 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?	2, 3, 39, 40, 42, 43, 44, 45	Yes. There are no other realistic alternatives	☑	☑
B.2.2. Have realistic and credible alternatives been identified providing comparable outputs or services? (step 1a)		Yes	☑	☑
B.2.3. Is the project activity without JI included in these alternatives? (step 1a)		Yes	☑	☑
B.2.4. Is a discussion provided for all identified alternatives concerning the compliance with applicable laws and regulations? (step 1b)		Yes	☑	☑
B.2.5. In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement? (step 1b)		Not applicable	☑	☑
B.2.6. In case of applying step 2 of the additionality tool: Is the analysis method appropriately identified (step 2a)?		Yes	☑	☑
B.2.7. In case of Option I (simple cost analysis): Is demonstrated that the activity produces no economic benefits other than JI income?		Not applicable	☑	☑
B.2.8. In case of Option II (investment comparison analy-		Not applicable	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
sis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?				
B.2.9. In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified?		Yes.	☑	☑
B.2.10. 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?		Yes. It is stressed, that new cogeneration plants have higher IRRs than wind farms in Lithuania. **Corrective Action Request:** The higher IRRs of cogeneration plants (as stated in step 2c) should be clearly referenced or the audit team should be provided with additional information or proofs.	**CAR#4**	☑
B.2.11. In case of Option II or Option III: Is the analysis presented in a transparent manner providing public available proofs for data?	2, 3, 34, 39, 40, 42, 41	**Corrective Action Request:** The investment analysis should be done excluding ERU-s (step 2d)	**CAR#5**	☑
B.2.12. 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?		Yes. 7 relevant barriers are mentioned.	☑	☑
B.2.13. In case of applying step 3 (barrier analysis): Is transparent and documented evidence provided on the existence and significance of these barriers?	33, 38	Yes. It is discussed that financing the project (no bank credit) can not be acquired without JI. **Corrective Action Request:** A documented evidence should be provided on the existence and significance of at least one of these barriers	**CAR#6**	☑
B.2.14. 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?		Yes, fossil fuel based power generation in Lithuania does not face the limitations on availability of finance and EU structural funds are available for cogeneration power plants.	☑	☑
B.2.15. 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)?	37	Yes, no commercial scale wind farms in Lithuania are in operation,without having JI support.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
B.2.16.	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)?	37	Yes	☑	☑
B.2.17.	Is it appropriately explained how the approval of the project activity will alleviate the economic and financial hurdles or other identified barriers (step 5)?	2, 3, 33, 34, 38, 40, 42, 41	Yes: **Corrective Action Request:** In step 5 it should be demonstrated the impact on IRR due to additonal revenues for ERUs.	**CAR#7**	☑
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, 2, 3, 39, 40, 42	Yes	☑	☑
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: Emissions from electricity generation in fossil fuel fired power plants of any connected electricity system Gas(es): CO2 Type: baseline emissions		Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? Yes Inclusion / exclusion justified? Yes Explanation / Justification sufficient? Yes Consistency with monitoring plan? Yes	☑	☑
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?	2, 3, 39, 40, 42	The date of the baseline setting is indicated (February 12, 2007)	☑	☑
B.4.2.	Is this in consistency with the time line of the PDD history?		Yes, baseline study was conducted 1 month before issuance of the PDD	☑	☑
B.4.3.	Is information of the person(s) / entity(ies) responsible for the application of the base-		Nelja Energia OÜ and LHCarbon OÜ, represented by Hannu Lamp, is	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	line methodology provided in consistency with the actual situation?		named as responsible for the baseline study		
B.4.4.	Is information provided whether this person / entity is also a project participant?		This information is given; Nelja Energia OÜ and LHCarbon OÜ are not project participants and therefore they are not mentioned in Annex I.	☑	☑
C.	***Duration of the project activity / crediting period***				
C.1.	Are the project's starting date and operational lifetime clearly defined and reasonable?	1, 2, 3, 39, 40, 42	Yes	☑	☑
C.2.	Is the assumed crediting time clearly defined and reasonable (crediting period between 2008 and 2012)?	1, 2, 3, 39, 40, 42	Yes, start of the crediting period is September 2008 and end is December 2012, which is 4 months and 4 years.	☑	☑
D.	***Monitoring plan***				
D.1.	**Description of monitoring plan chosen:**				
D.1.1.	Is the applied methodology considered being the most appropriate one?	2, 3, 39, 40, 42	The used methodology is not based on any CDM methodology like ACM0002. The main requirements of the Kyoto-Protocol, Annex B of Chapter 6 are mentioned in the PDD. The requirements are in principle fulfilled.	☑	☑
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?	2, 3, 39, 40, 42	Yes. Net electricity supplied to the grid is the relevant parameter to be monitored. No project emissions are expected. Hence there is no need to monitor project emissions.	☑	☑
D.2.2.	Parameter Title: EG_y		Monitoring Checklist | Yes / No		☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
Net electricity supplied to the grid		Title in line with methodology? Yes Data unit correctly expressed? Yes Appropriate description? Yes Source clearly referenced? Yes Correct value provided for estimation? Yes Has this value been verified? Yes Measurement method correctly described? Yes Correct reference to standards? Yes Indication of accuracy provided? Yes QA/QC procedures described? Yes QA/QC procedures appropriate? Yes **Corrective Action Request:** The Recording frequency should be reasonable defined. (constant reporting would not be possible)	**CAR#8**	
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.				
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?	2, 3, 23,24, 39, 40, 42,	Yes, it is described. O&M will be most probably outsourced after 2 year warranty period. Nevertheless the management and operation of the project is the responsibility of Vejo Elektra UAB i.e. ensuring the environmental credibility of the project through accurate and systematic monitoring of the project's implementation and operation for the purpose of achieving trustworthy ERs.	☑	☑
D.4.2. Are responsibilities and institutional arrangements for data collection and archiving clearly provided?		Yes, see comment above: **Corrective Action Request:** Worksheets for calculations of ERU-s and log book for entering monitored data should be developed, referenced and provided to the audit team..	**CAR#9**	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
D.4.3. Does the monitoring plan provide current good monitoring practice?		Yes.	☑	☑
D.4.4. Is there any monitoring manual for the personnel elaborated which describes detailed procedures and useful information enabling a better understanding and the implementation of the envisioned monitoring provisions?		**Corrective Action Request:** Monitoring manual for the staff shall be provided to the audit team.	**CAR# 10**	☑
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 plan provided in consistency with the actual situation?	2, 3, 39, 40, 42	No, because Mr. Beiga is not employed anymore. **Corrective Action Request:** The information in D.5. and in annex 1 should be updated.	**CAR# 11**	☑
D.5.2. Is information provided whether this person / entity is also a project participant?		Yes	☑	☑
E. Estimation of greenhouse gas emission reductions				
E.1. Estimated project emissions and formulae used in the estimation				
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 parameter to be used and / or monitored?	2, 3, 39, 40, 42	There are no leakage of emissions in wind power utilities, therefore formulae are not required	☑	☑
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?	2, 3, 39, 40, 42	Yes	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
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?	2, 3, 39, 40, 42	Yes	☑	☑
Explanation of methodological choices					
E.4.2.	Is it explained how the procedures provided by the methodology are applied by the proposed project activity?		**Corrective Action Request:** It should be referred to the section B.1 in PDD instead of ACM0002	**CAR# 12**	☑
E.4.3.	Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?		Not applicable	☑	☑
E.4.4.	Are the formulae required for the determination of project emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?		Yes	☑	☑
Ex-ante calculation of emission reductions					
E.4.5.	Is the projection based on the same procedures as used for future monitoring?		Yes, EMD expert opinion may review the forecasts See CAR#1 and CAR#2	☑	☑
E.4.6.	Are the GHG calculations documented in a complete and transparent manner?	2, 3, 32, 39, 40, 42	Yes	☑	☑
E.4.7.	Is the data provided under this section in consistency with data as presented by other chapters of the PDD?		Yes	☑	☑
E.4.8.	Is the choice of options to determine the emissions factor (OM, BM) justified in a suitable and transparent manner?		Not applicable as ACM0002 is not used	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
E.4.9.	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?		Not applicable as ACM0002 is not used	☑	☑
E.4.10.	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 as ACM0002 is not used	☑	☑
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?	2, 3, 39, 40, 42	Yes	☑	☑
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?	2, 3, 39, 40, 42	Yes, the project emissions and leakages are zero. Hence in comparison to the baseline scenario the project results in fewer GHG emissions.	☑	☑
E.6.2.	Is the form/table required for the indication of projected emission reductions correctly applied?		Yes	☑	☑
E.6.3.	Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?		Yes	☑	☑
E.6.4.	Is the data provided under this section in consistency with data as presented by other chapters of the PDD?		Yes	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
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, 2, 3, 39, 40, 42, 151 6, 19	Yes, an environmental impact assessment (EIA) has already been carried out for the Sudenai wind farm and EIA was not necessary in the course of planning the Lendimai wind farm	☑	☑
F.1.2.	Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?		Yes, the EIA was approved by the Klaipeda district Environmental Protection Department of the Ministry of Environment of the Republic of Lithuania on May 9 2006.	☑	☑
F.1.3.	Will the project create any adverse environmental effects?	15, 17	Yes, limited adverse environmental effects as shading in the morning hours crossing Sudenai botanical – zoological reservation territory as there was the distance of only 70 m from the closest planned wind turbine generator to the border of the botanical – zoological reservation. This effect could be minimized by stopping and turning the blades during the morning hours in question.	☑	☑
F.1.4.	Are transboundary environmental impacts considered in the analysis?		There is no explanation regarding transboundary environmental impacts as sites are very close to the Latvian border they could have visual transboundary effect. **Corrective Action Request:** Add discussion if there are any impacts on the Latvian side (e.g. settlements) which could be affected.	**CAR# 13**	☑
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?	2, 3, 39, 40, 42, 151 6, 19	Yes, the distance between the nearest wind turbine and the border of the botanical – zoological reservation is extended to 83 m in order to minimize shadowing impact	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
F.2.2.	Does the project comply with environmental legislation in the host country?		Yes, EIA and Detail Land Use Plans are approved by the relevant Lithuanian authorities	☑	☑
G. Stakeholders' comments					
G.1. Information on stakeholders' comments on the project, as appropriate:					
G.1.1.	Have relevant stakeholders been consulted?	1, 2, 7, 8, 39, 40, 42	Yes, the Municipality and Klaipeda district Environmental Protection Department of the Ministry of Environment were involved in preparation of EIA and Detail Land Use Plans	☑	☑
G.1.2.	Have appropriate media been used to invite comments by local stakeholders?		Yes, according to Lithuanian law stakeholders were informed about possibility to participate in detailed planning process, pretence giving order and public exposition and public consideration place and date in the regional newspaper "Svyturys"	☑	☑
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?		Yes	☑	☑
G.1.4.	Is the undertaken stakeholder process described in a complete and transparent manner?		Yes	☑	☑
G.1.5.	Is a summary of the stakeholder comments received provided?		Yes, comments to EIA from Klaipeda district Environmental Protection Department is presented in chapter F1. There were no public comments to the Detail Land Use Plans	☑	☑
G.1.6.	Has due account been taken of any stakeholder comments received?		There were no comments received.	☑	☑

H. Annexes 1 – 4					
Annex 1: Contact Information					
H.1.1.	Is the information provided in consistency with	1, 2, 3,	No, because Mr. Beiga is not employed anymore	☑	☑

	the one given under section A.3?	39, 40, 42	See also CAR#11		
H.1.2.	Is information on all private participants and directly involved Parties presented?		Yes	☑	☑
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?	1, 2, 3, 39, 40, 42	No additional information given. The mentioned data are consistent with B.1.	☑	☑
H.1.4.	Is the data provided verifiable? Has sufficient evidence been provided to the determination team?		See above B.1.	☑	☑
H.1.5.	Does the additional information substantiate statements given in other sections of the PDD?		Not applicable	☑	☑

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Table 3 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
CAR#1 The mentioned Technical data sheet should implemented in the PDD.	A.4.3.2	Technical data sheet has been included in the PDD.	Issue closed. ☑
CAR#2 The Feasibility Study and wind measurements should be mentioned, referenced and summaries of studies demonstrated.	A.4.3.2	Par. A.4.3. has been respectively updated. Energy yield estimate of EMD, Business Plan and feasibility calculatins have been presented to the validator as separate documents. In ER estimate now the most conservative P90 energy yield figure (28,988 GWh) is used.	The energy yield was originally 33,7 GWh which could not be considered as really conservative. It was a forecast with a probability of 50%. The revised PDD (v.4) is using P90energy yield figure for ERU estimate, therefore this issue is considered resolved. ☑
CAR#3 It should be described and referenced how the shadowing avoidance can be resolved. Brief interruption of operation of one turbine in order to avoid shadowing of nearby botanical – zoological reservation (see F.1.3) may cause a revision of forecasted production figures as well.	A.4.3.3	Possible use of shadow shutdown system of Enercon has been mentioned under chapter G.1 and a separate detailed document on the system presented to validator. If necessary, the shadow shutdown system of Enercon will be utilized in order to reduce shadow flickering at the residential areas as well as at Sudėnai botanical–zoological reservation territory. This system is able to detect the lighting conditions and to decide whether periodical shadow flickering is possible. The system shuts down wind turbines during shadow casting periods at emmission sites taking weather conditions into consideration. Detailed calculations of the shadowing effect prepared by Enercon have been provided to the validator. In the worst case the effect on annual energy yield is 1% assuming that: - the sun is shining all day from sunrise to sunset, - the rotor plane is always perpendicular to the line from the wind turbine to the sun, - the wind turbine is always operating.	There are measures available to address the shadowing issue. The shadowing calculations prepared by Enercon GmbH were presented At 12.06.07. Issue closed. ☑

CAR#4 The higher IRRs of cogeneration plants (as stated in step 2c) should be clearly referenced or the audit team should be provided with additional information or proofs.	B.2.10	As calculations for Lithuanian co-generation plants are not available the Investment analysis of chapter B.2 has been revised. The focus of the analysis is on the feasibility of the project itself whereby the cash flows from sale of carbon credits are required to increase the NPV and IRR of project to an acceptable level for equity investors as well as in order to attract debt financing. PDD has been accordingly revised	Issue closed ☑
CAR#5 The investment analysis should be done excluding ERU-s (step 2d)	B.2.11	PDD has been accordingly revised. Letter of equity investors, which shows that the decision to invest in the wind farm was done on the basis of P50 energy yield, was provided to the audit team.	An excel file was provided where financial analysis including sensitivity analysis is elaborated. It is based on energy yields (P50 probability of 50% in 20 years) which are less conservative than the ones are used to forecast conservatively the amount of Emission Reduction Units according to the recent Feasibility Study (P90). This is acceptable because the decision to invest in the wind farm was done on the basis of P50 energy yield. Issue closed. ☑
CAR#6 A documented evidence should be provided on the existence and significance of at least one of these barriers	B.2.17	A respective bank letter has been provided to the validator.	Issue closed ☑
CAR#7 In step 5 it should be demonstrated the impact on IRR due to additonal revenues for ERUs.	B.2.13	The PDD text has been accordingly revised.	Issue closed ☑
CAR#8 The Recording frequency should be reasonable defined. (constant reporting would not be possible)	D.2.2	The PDD text has been accordingly revised.	Issue closed ☑

CAR#9 Worksheets for calculations of ERU-s and log book for entering monitored data should be developed, referenced and provided to the audit team.	D.4.2	As chapter D.4 of PDD should only provide a brief description and to PDD authors' opinion the details of the Monitoring Plan can be elaborated at a later stage (prior to project implementation), the chapter only includes the basic guidelines of the MP. Thus the final monitoring worksheets have not yet been developed. This has not been demanded with recently validated PDDs of similar projects.	The monitoring plan in D.4.4 and Annex 3 is not comparable with a monitoring manual for the monitoring personnel. This could be accepted as only very few figures have to be recorded and multiplied for calculation of emission reductions and because no further requirements exist for Annex 3. Issue closed ☑
CAR#10 Monitoring manual for the staff shall be provided to the audit team.	D.4.4	As chapter D.4 of PDD should only provide a brief description and to PDD authors' opinion the details of the Monitoring Plan can be elaborated at a later stage (prior to project implementation), the chapter only includes the basic guidelines of the MP. Thus the Monitoring manual has not yet been developed. This has not been demanded with recently validated PDDs of similar projects.	See comment above: Issue closed ☑
CAR#11 The information in D.5. and in annex 1 should be updated.	D.5.1 H.1.1	The PDD has been accordingly updated	Issue closed ☑
CAR#12 It should be referred to the section B.1 in PDD instead of ACM0002	E.4.2	The PDD has been accordingly updated	Issue closed ☑
CAR#13 Add discussion if there are any impacts on the Latvian side (e.g. settlements) which could be affected.	F.1.4	The PDD has been accordingly updated	Issue closed ☑

Table 4 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
-	-	-

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Annex 2

Reference No.	Document or Type of Information
1	On-site interview at UAB Veju Spektras (Kretinga) on May 3, 2007 by auditing team of TÜV SÜD: **Validation team on-site:** Klaus Nürnberger — TÜV SÜD Industrie Service GmbH Madis Maddison — OÜ Projektkeskus **Interviewed persons:** Dainius Kriaučiūnas — UAB Vejo Elektra and UAB Lariteksas, director (United Partners Corporate Finance AS) Hannu Lamp — LH Carbon OÜ, JI Consultant Martin Kruus — OÜ Nelja Energia, CEO, representative for 4Energyas operator of the wind farm Andrus Zavadskis — OÜ Nelja Energia, Technical manager Gintautas Maciruskas — United Partners Corporate Finance AS, analyst Jonas Petrulis — Administration of Kretinga municipality, architect Valerijonas Kubilius — Mayor of Kretinga
2	Project Design Document, version 1, February 2007
3	Project Design Document, version 2, March 2007
4	Energy Yield Assessment for: Sudenai, Lithuania; EMD International A/S — May 2007
5	Letter of Endorsement of the project from Ministry of Environment, Nr. (10-5)-D8-1543, February 21, 2007
6	Business Plan of the Sudenai/Lendimai Wind Power Plant. Commissioned NEFCO TGF. Prepared by United Partners Corporate Finance AS. Ver. 1.0, January 2007 (including digital Excel sheets for financial (IRR) calculations)
7	Minutes of the public meeting of the Detail Planning procedure 27.06.06
8	Minutes of the public meeting of the Detail Planning procedure 25.05.06
9	Detail plan of Sudenai (Lariteksas) Wind Park, UAB Archstudija, 2006
10	Kretinga County Council Resolution for approval of land use detail planning for Sudenai (Lariteksas) Wind Park, Nr.03 from 31.05.06
11	Detail plan of Sudenai (Vejo Elektra) Wind Park, R. Ato II architekturos studija, 2006

Reference No.	Document or Type of Information
12	Kretinga County Council Resolution for approval of land use detail planning for Sudenai (Vejo Elektra) Wind Park, Nr.03.1 from 07.06.06
13	Detail plan of Lendimai (Vejo Elektra) Wind Park, R. Ato II architekturos studija, 2006
14	Kretinga County Council Resolution for approval of land use detail planning for Lendimai (Vejo Elektra) Wind Park, Nr.03 from 07.06.06
15	Environmental Impact Assessment report, University of Klaipeda, Klaipeda 2005 (for Lariteksas)
16	Lithuanian Ministry of Environment Klaipeda Department Resolution about approval of environmental impact assessment on planned economical activities (for Laritekstas), Nr. (9.14.5.)-V4-2642 from 2006.05.09
17	Shutdown System to limit Periodical Shadow Casting, Technical Description of shadow avoiding software by Enercon, 10.11.2005
18	Share purchase agreement of the project companies Vejo Elektra and Lariteksas by Freenergy and Vardar (July 2006)
19	Lithuanian Ministry of Environment Klaipeda Department Resolution about environmental impact assessment on planned economical activities (for Vejo Elektra), Nr. (9.14.5.)-V4-3168 from 2005.09.06
20	Permit to develop wind park for Vejo Elektra. Ministry of Economy, Nr. LP-0060, from 27.09.2004
21	Letter of extension of the permit to develop wind park for Vejo Elektra. Ministry of Economy, Nr. (27.4-51)-3-1744, from 15.03.2007
22	Permit to develop wind park for Lariteksas. Ministry of Economy, Nr. LP-0083, from 01.07.2005
23	Contract agreement between UAB Lariteksas and Enercon GmbH for design,delivery, construction and commissioning of 4 wind turbine generators. 17.10.2006
24	Contract agreement between UAB Vejo Elektra and Enercon GmbH for design,delivery, construction and commissioning of 3 wind turbine generators. 21.08.2006
25	Agreement for the lease of the parcels of land between UAB Pireka and UAB Vejo Elektra, signed 22.08.06
26	Agreement for the lease of the parcel of land between UAB Pireka and UAB Vejo Elektra, signed 23.08.06
27	Agreement for the lease of the parcels of land between Mr. Dainius Jurenas and UAB Lariteksas, signed 18.09.06
28	Agreement for the lease of the parcels of land between Mr. Dainius Jurenas and UAB Lariteksas, signed 18.09.06
29	Grid Connection Agreement between UAB Vejo Elektra, UAB Lariteksas and AB Lietuvos Energia Nr. 701-06 signed 23.08.2006
30	Leasing contract of the turbine generators between UAB Vejo Elektra and Hansa Lizingas Nr.LT046912, signed 05.03.2007

Reference No.	Document or Type of Information
31	Leasing contract of the turbine generators between UAB Lariteksas and Hansa Lizingas Nr.LT046911, signed 05.03.2007
32	LITHUANIA'S NATIONAL ALLOCATION PLAN FOR GREENHOUSE GAS EMISSION ALLOWANCES FOR THE PERIOD 2008 TO 2012, English version 07.06.06,
33	Letter from Hansa Lizingas about the importance of JI revenues in order to finance the project, 16.05.2007
34	Financial projection and sensitivity analysis, Sudenai-Lendimai sensitivity 070201.xls, status Feb. 2007
35	Single line diagram of the substation, Sudenai Substation single line diagram.pdf, provided on 3. May 2007
36	Contractor agreement about the construction works of 110/20 kV substation of Sudenai and Lendimai Wind power park and 20 kV cable connection between wind power turbines and substation,
37	Project list of LEIF institute which shows that Sudenai/Lendimai project is covered by the set a side reserve for JI-Projects. Sent by email , 4. May 2007
38	Letter of equity investors, which shows that the decision to invest in the wind farm was done on the basis of P50 energy yield, July 2007
39	Project Design Document, version 3, May 2007
40	Project Design Document, version 4, June 2007
41	Financial Projection and Sensitivity Analysis, Sudenai Lendimai sensitivity May 23 2007.xls, status 23. May 2007
42	Project Design Document, version 6, October 2007
43	Statistique data of AB Lietuvos Elektrine about electricity production, May 10, 2006
44	Statistique data of AB Lietuvos Elektrine about fuel consumption, June 23, 2006
45	Lietuvos Energetika 2004 (Energy in Lithuania 2004), Lietuvos energetikos institutas 2005, ISBN 9986-492-83-1
42	Project Design Document, version 7, 22 February 2009