MONITORING PLAN

OF

SUDENAI AND LENDIMAI WIND POWER

JOINT IMPLEMENTATION PROJECT

PREPARED BY:

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1. General

The monitoring plan is based on:

- Monitoring methodology as defined in chapter D of PDD ”Sudenai and Lendimai Wind Power Joint Implementation Project”, Version 8, 26 May 2009.
- Requirements and recommendations as set out in verification report issued by Bureau Veritas “Initial and first periodic verification of the Sudenai and Lendimai wind power Joint Implementation Project”, covering period 1.01.2008-31.12.2009, rev. no. 2, issued on 25.06.2010

The monitoring plan defines a systematic surveillance and measurement of aspects related to implementation and performance of the project which enables measurement or calculation of emission reductions. Every factor influencing project performance must be included in the MP. It should clearly identify frequency of, responsibility and authority for registration, monitoring and measurement activities. The indicators to be monitored may relate to actual project performance, validity of project performance, validity of project baseline or possible leakage effects.

Monitoring of project performance is crucial in ensuring that Emission Reduction Units can be claimed from a JI project. Monitoring must be conducted in such a way that the indicators related to emission level from the project can be compared with the baseline emission scenario. Subsequently, the difference in actual and baseline emissions can be claimed as GHG emission reductions. Monitoring and recording of indicators will also provide a foundation for verification of emission reductions by an independent entity, and ultimately end up in reporting of verified emission reductions to the parties involved in the project and towards the UNFCCC.

2. Grid connection

The Sudenai and Lendimai wind farm connection to the Main Grid (110kV) is established via one coupling point to the national electricity transmission system operator (TSO) Litgrid AB.

3. Monitoring methodology and responsibilities

In accordance with the PDD, the amount of electricity supply to the grid is defined as the key activity to monitor. The main grid meter is connected to the TSO SCADA and monitored remotely by TSO. The meter is backed up with a backup meter. Totally there are 7 wind turbines. There are 3 20kV lines on the 20kV side of the 110/20kV transformer - 2 lines have 2 turbines each connected and 3rd line has 3 turbines connected. These lines are equipped with separate power meters, that are owned by TSO and read as needed, to verify if any deviation from data of the main meter exists. If it was then data from the backup meter would be read.

Net power production is calculated as a difference between actual power production and active power consumption.

Active power consumption is measured with the same measuring equipment (as mentioned above) as used for measuring of actual power production. The equipment has 2 separate

electronic registers (1 (one) for actual power production and 1 (one) for active power consumption). The overall delivered and consumed power amount is divided up between Lariteksas UAB and Vejo Elektra UAB using ratio 4:3.

The two commercial power meters belong to TSO. Calibration of measuring meters is processed according to Lithuanian legislation and standards, and the TSO, owner of the meters is responsible for the calibration and maintenance. According to the national legislation the calibration of the meters is required every 8 years.

Two commercial electric power meters installed:

- VJ-3.T-101 (commercial accounting): serial number 289132, calibrated on Sep 29, 2005;
- VJ-3.T-101/D (duplicated commercial accounting): serial number 379391, calibrated on Aug 16, 2006.

The contractual party of purchase of power generated by Sudenai and Lendimai wind farms is Lietuvos Energija AB and LITGRID AB (purchaser of the public obligation services (POS) part).

The management and operation of the project is the responsibility of Lariteksas UAB and 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 accurate ERs. Lariteksas UAB and Vejo Elektra UAB outsource the daily monitoring and verification tasks to 4energia UAB which is also responsible for operation of the wind turbines.

TSO issues monthly electricity supply and consumption reports to Lariteksas UAB and Vejo Elektra UAB via e-mail. Based on these reports electricity sales invoices are being issued. Production data is entered and stored by 4energia UAB and TSO. Monthly electricity production reports issued by TSO are being checked and printed out by 4energia UAB project assistant. TSO reports signed by managing director of 4energia UAB are scanned and stored in a hard disk. Hard copies of all reports and invoices are archived.

The project assistant of 4energia UAB transfers data on a monthly basis from the reports provided by the TSO and data obtained from SCADA database to MS Excel Monthly data worksheet (Annex 2). Based on this the project assistant generates the Annual production reports (Annex 3) which are updated electronically immediately after receiving the monthly reports. Annual reports are also issued as a printout document. The annual production reports in turn form basis for filling out the Monitoring protocol (Annex 4) i.e. for the periodic GHG emission reduction calculations for the JI project.

All records are being maintained in hard copy and electronic format at least until the end of 2014 for verification. Monitoring and verification reports will be archived together with electricity production and consumption reports.

4energia UAB manager Tadas Navickas is in charge of and accountable for the generation of ERs including monitoring, record keeping, computation of ERs and verification. He officially signs-off all monitoring reports that are prepared by 4energia UAB.

All JI project related data entry, review and archiving is performed by 4energia UAB project assistant. All reports received and data entries performed are verified by project manager, who is responsible for handling the electricity production data and compilation of monitoring reports.

4energia may subcontract third parties to assist with quality assurance in the process (LHCarbon OÜ, represented by Hannu Lamp).

4. Data back-up

4.1 Measuring meters

In case of failure of measuring meters, electricity production data is also available in the SCADA system database of the wind turbine supplier Enercon. The data is available at Enercon computer at wind park substation and at 4energia UAB office. The data from SCADA is used monthly to verify the production. As SCADA measures the production at the turbines, it gives slightly higher production values compared to the measuring meter values in Grid Connection Point (GCP). The difference is due to the losses in the grid between turbine and GCP and own consumption in wind park.
In case measuring meters in Main Grid are not functioning, the electricity production data as indicated with SCADA system (minus estimated grid losses) will be used to calculate achieved emission reductions. According to the actual data during 2008-2009 the annual grid losses have been calculated to be 1.9-1.6%.

	2008	**2009**
Electricity sold to the Main Grid in Jan-Dec (MWh)	1836560	27701587
Electricity production in Jan-Dec according to SCADA (MWh)	1872686	28163314
Difference (grid losses)	1.9%	1.6%

To take conservative account of grid losses, it is considered to be sufficient to deduct 2.0% from the SCADA electricity production figure in order to obtain the electricity production at GCP during periods of all measuring meters' failure.

4.2. Data storing

Production data history is stored electronically as received from TSO and also hardcopies as described above. Data is also stored in:

1) TSO, as the owner of the main measuring meter, the backup meter and the meters at 20kV lines,
2) TSO Litgrid AB and Lietuvos energija AB in form of electricity sales invoices issued by Lariteksas UAB and Vejo Elektra UAB,
3) Lariteksas UAB and Vejo Elektra UAB bookkeeping as issuer of electricity sales invoices,
4) Enercon SCADA.

4energia UAB also performs regular backups of the computer hard drives.

5. Training

4energia UAB is responsible for initial and periodic operational staff training on the power accounting and control activities defined in the Monitoring Plan. Initial staff training was provided by 4energia UAB before the project started operating and generating ERs. All new staff member trainings and periodic/follow up trainings are carried out by 4energia UAB that may also subcontract third party (LHCarbon OÜ, represented by Hannu Lamp). See Annex 1 for the past trainings and training records template.

6. Emission reduction calculation

The formula for calculation of achieved emission reductions is the following:

$$ERy\ (tCO2e) = EGy\ (MWh) \times EFy\ (tCO2/MWh)$$

See Annex 4 for the monitoring protocol. 4energija UAB annually fills out the fields in monitoring protocol related to net power generation of the wind farm and the monitoring protocol automatically calculates the achieved emission reductions on basis of the emission factors for CO2 in accordance with the validated PDD.

7. Annexes:

1. Internal staff training records template
2. Monthly data worksheet template
3. Annual production form template
4. Monitoring protocol template
5. Information flow diagram

The monitoring plan is approved by Lariteksas UAB and Vejo elektra UAB managing director.

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Tadas Navickas

Annex 1. Internal staff trainings records/template

The below table includes trainings as of the date of preparing this Monitoring Plan as of July 15 2010.

Date	Training by	Participants	Topic
September 2008	Hannu Lamp, 4energia JI consultant	Tadas Navickas, 4energia UAB Managing Director	Introduction to JI Project requirements. Produced electric power accounting and control.
November 2008	Hannu Lamp, 4energia JI Consultant	Julius Mikalauskas, 4energia UAB Project Manager	Introduction to JI Project requirements. Produced electric power accounting and control.
June-July 2010	Hannu Lamp, 4energia JI consultant	Tadas Navickas, 4energia UAB Managing Director Julius Mikalauskas, 4energia UAB Project Manager	Preparation of improved Monitoring Plan on basis of monitoring procedure as defined in project PDD and on basis of FARs as stated in verification report of BV.

Annex 2. Monthly data worksheet template

Date	Period	VE kW to Grid	LAR kW to Grid	kW/month to Grid	kW/month SCADA	Difference	Difference %	VE kW from Grid	LAR kW from Grid	kW/month from Grid	Net prod VE	Net prod LAR

Annex 3. Annual production report form (separate for Sudenai and Lendimai wind farms)

	Actual power production (kWh)*	Active power consumption (kWh)*	Net power production (kWh)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Total for year			

* Data according to TSO Litgrid AB power meter.

Annex 4. Monitoring Protocol 2008-2012

	2008	2009	2010	2011	2012
Project constants					
Emission factor EFy, tCO2/MWh	0.629	0.629	0.629	0.629	0.629
Actual data					
Net power generation EGy, kWh, Sudenai	1106070	15820969			
Net power generation EGy, kWh, Lendimai	715134	11867113			
Annual Emission reduction, tCO2, Sudenai	695,718	9951,390			
Annual Emission reduction, tCO2, Lendimai	449,819	7464,414			
Total emission reduction, tCO2e, Sudenai and Lendimai	**1146**	**17416**			
Cumulative emission reduction of the JI project, tCO2e	**1146**	**18562**			

Annex 5. Information flow diagram