JOINT IMPLEMENTATION PROJECT DESIGN DOCUMENT FORM
Version 01 - in effect as of: 15 June 2006

CONTENTS

Annexes

SECTION A. General description of the project

A.1. Title of the project:

Kreivenai Wind Power Park Joint Implementation Project
PDD version 01
01 October 2008

A.2. Description of the project:

Kreivenai wind power park Joint Implementation project (Project) was prepared by UAB „Energogrupe". It is foreseen to install 10 wind power plants with the total capacity of 20MW (2MW x 10). The Wind power park, in a conservative approach, will generate about 55 GWh of electric power per year.

The renewable electricity produced by the wind power plant will displace carbon intensive electricity produced from fossil fuel sources in the Lithuanian power network, thus contributing to the lowering of greenhouse gas emissions as well as other pollutants related to fossil fuel based power generation (CO, SO_2, NO_x , solid particles etc.). Furthermore Project will contribute to the new modern technology usage conception and promotion of renewable energy resources.

Lithuania's National Energy Strategy states that up to 7% of all electric power, produced in Lithuania, shall be produced using renewable energy resources by 2010. Use of renewable resources is promoted in Lithuania, but its related technology is to expensive and not always financially efficient, to be utilized without additional state support. It is foreseen that Kreivenai wind power park project will generate additional income from Emission Reduction Units (ERU) sale that will improve viability and financial figures of all wind power park project.

Project objectives:
• Reduction of anthropogenic greenhouse gas emissions;
• Reduction of other pollutants that related to fossil fuel based power generation;
• Promotion of wind energy and new modern technology usage in Lithuania;
• Creation of new jobs.

A.3. Project participants:

Table 1. Project participants

Party involved	Legal entity project participant (as applicable)	Please indicate if the Party involved wishes to be considered as project participant (Yes/No)
Lithuania (Host party)	Energogrupe, UAB	No
Switzerland (Investing party)	Ecocom BG, LTD	No

The company Energogrupe, UAB was established particularly for implementation of this wind power park project development in Lithuania as pilot project.

Investing party in this JI project is the company Ecocom BG Ltd, that activities are related with energy efficiency, environmental protection projects development.

A.4. Technical description of the project:

A.4.1. Location of the project:

Project will be implemented in western part of Lithuania, Taurages district, near village Kreivenai (Figure 1.).

Figure 1. Location of Kreivenai wind power park project

A.4.1.1. Host Party(ies):

Republic of Lithuania

A.4.1.2. Region/State/Province etc.:

Taurages district

A.4.1.3. City/Town/Community etc.:

Kreivenai village

A.4.1.4. Detail of physical location, including information allowing the unique identification of the project (maximum one page):

Planned location of Kreivenai wind power park is in Taurage district near of village Kreivenai. The wind park territory (80 ha) is leased under the long term agreement for 60 years. The lease agreement is registered into state enterprise Centre of registers. The area necessary for wind turbines erection is 1,5 ha, when one wind power plant and transformer substation occupies 0,15 ha.

The project site is situated in the rolling territory on above 70m over see level. The territory is on open space from all sides without near obstacles. The nearest forest is over 5 km from the wind park location place. This place may be characterized as high wind speed and windy.

Characteristics of wind take a significant role in installation of wind power park, especially in selection of the location. Referring to long term meteorological data and measurements of wind speed and strength, chosen location is well suited for project implementation.

Detailed layout of wind power plants is based on Riso laboratory date on area wind speed *(Baltic wind atlas).* Starting from July of 2007, on site wind parameters is under measurements by German company Enercon GmbH (wind turbine producer). Now wind parameters are meter at heights of 85, 66 and 42 meters. During wind power park place selection long term wind speed date from Taurage meteorological station was used as well.

Detailed layout of Kreivenai wind power-plants in the territory is shown in Figure 2.

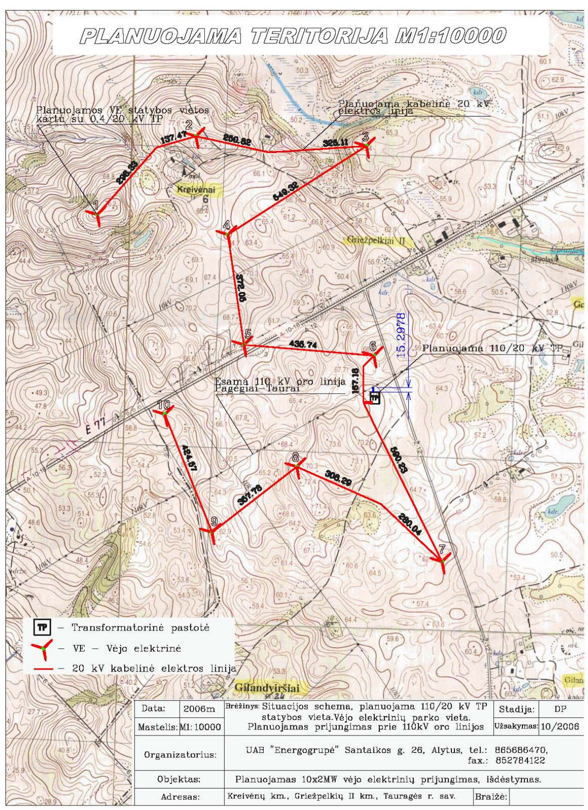

Figure 2. Detailed layout of Kreivenai wind power park project

A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project:

It is planned to install 10 units of Enercon E-82 type wind turbines manufactured by German company Enercon GmbH. According to turbines manufacturer data the turbines operation regime is on 2,5-28 m/s wind speed. The other technical data of Enercon E-82 turbines is presented in Table 2.

Table 2. Technical parameters of the wind turbines

Type of wind turbine	E-82
Capacity, kW	2000
Rotor diameter, m	82
Rotor‘s rotation direction	Clockwise
Blade number	3
Total power plant height, m	119
Wight of power plant, t	336
Tower diameter at ground, m	4,6
Hub height, m	78
Cut-in wind speed	2,5 m/s

According to wind speed measurement results onsite (6,2 m/s) the wind power park should generate about 55 GWh electric power per year. It is planned to install a transformer substation which capacity is 20 MW with incoming/outgoing voltage of 20/110kV. Wind turbines Power Park will be manufactured, installed, adjusted and set into action by Enercon GmbH staff. After Wind Park's commissioning it is planed to sign additional agreement on turbines maintenance between companies.

A project implementation schedule is presented in Table 3.

Table 3. Project implementation schedule.

Project stage	Works period, day	Deadline
Technical project	90	2008 11
Building of roads	90	2008 12
Constructional works	150	2008 12
Transportation of wind turbines	30	2009 03
Installation of wind turbines	60	2009 03-09
Installation of substation	90	2009 03
Laying down the power cables	90	2009 04
Start-up works	30	2009 09

The obtained permits on wind power park erection are presented in table 4.

Table 4. The obtained permits on wind power park erection

No.	Permit/license	Date of issuance:	Valid before:
1.	Permit to enhance the energy generation capacity No. LP-0132	15.03.2007	15.03.2009 (may be extended for 6 month)
2.	Detailed plan on wind park and substation location	17.07.2008	term less
3.	Constructional permit on wind park and substation erection	It is planed to obtain before 01.11.2008	

Based on wind measurement results Project‘s power production forecast was performed by staff of company Enercon – 57840 MWh/year (2007m.). It is assumed that transmission and conversion losses usually compose about 5% from energy production level, thus prognosis on energy output supplied into national grid was reduced by this value (Table 5).

Table 5. Enercon‘s forecast on Kreivėnai wind power park power production

Project	Energy output, MWh/year
Kreivėnai wind power park	54948

The approach on 54948 MWh/year power production will be used in Kreivenai project further calculations.

A.4.3. Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances:

The renewable electricity produced by the wind power plants would displace carbon intensive electricity produced from fossil fuel sources in the Lithuanian power network. Lithuanian electric power network is being operated by AB Lietuvos Energija. Foremost, they purchase power quotas (on basis of the prior signed contracts) from electric power producers. The producers may also supply electric power, exceeding the quotas, at a lower price. The difference in national demand for the electric power and total production thereof (quotas and over-quotas) is being covered by AB Lietuvos Elektrine. Thus, if the implementation of this JI Project fails, the estimated electric power would be produced by AB Lietuvos Elektrine using fossil fuels – natural gas, heavy fuel oil and orimulsion. It was calculated that AB Lietuvos Elektrine, by generating 1 MWh of electric power, contributes to the pollution of atmosphere with 0,626 tones of CO2 (data of 2002-2005).

See chapter B.1. for more details of baseline calculation and next chapter for estimation of the GHG emission reductions of the JI Project which have been calculated conservatively on basis of the above carbon emission factor of 0,626 tCO2e/MWh and the expected power production.

The proposed JI Project supports Lithuania's objective to increase the share of renewable electricity from current ca. 3,5% to 7% by year 2010. To comply with this undertaking Lithuania would need to achieve 480 GWh electricity production only from wind energy. This would amount to ca. 200 MW of installed wind power capacity.

The Law of the Republic of Lithuania on Energy points out promotion of consumption of renewable energy resources as one of the principal objectives of regulation of state energy sector activities. The law provides that the state encourages the producers to generate electricity from renewable energy sources by imposing the "must carry" obligations. The Rules for Imposing the Public Interest Service Obligations provide that supply license holders are under the obligation to buy up electricity generated by producers (connected to the transmission system) by using renewable and spare energy resources, and to sell it to their customers.

In order to provide incentives for wind power development the government has issued legislation regulating obligatory purchase of wind power at a price of 0,30 LTL per kWh (0,087 EUR). Such a feed-in tariff is expected to remain until year 2020. In order to obtain the mentioned feed-in tariff the wind power plant must be built in one of the six zones for which tenders for grid connection are organized by Lietuvos Energija AB - the electricity Transmission System Operator in Lithuania.

The above feed-in tariff for wind power is unfortunately not sufficient for commercial development of the wind power sector. Thus all recent wind power developments (e.g. Rudaiciai wind power plant of UAB Veju Spektras and Benaiciai wind power plant of UAB Achema Hidrostotys) are being carried out under the JI scheme.

After the introduction of power spot market in Lithuania, the difference of power spot price and the feed-in tariff will be compensated for green power producers. The regulation envisages that the feed-in-tariff scheme will be replaced by green certificate scheme in 2021, hence the feed-in-tariffs are valid until 2021.

A.4.3.1. Estimated amount of emission reductions over the crediting period:

Table 6. Estimated emission reductions

Years (First crediting period)	**Estimate of annual emission reductions in tones of CO2 equivalent**
2009	8599
2010	34397
2011	34397
2012	34397
Total estimated emission reductions over the first crediting period (tones of CO2 equivalent)	**111792**
Annual average of estimated emission reductions over the first crediting period (tones of CO2 equivalent)	27948
Total number of crediting years	20 years

A.5. Project approval by the Parties involved:

The project idea (project idea note) was approved by Lithuanian DNA (Ministry of Environment of the Republic of Lithuania) and the Letter of Endorsement (LoE) was issued on 08.05.2008 No.(10-5)-D8-3946.

According to national Joint Implementation Project development rules, the final Project approval or Letter of Approval might be issued only after draft Project determination report submission to Lithuanian DNA.

SECTION B. Baseline

B.1. Description and justification of the baseline chosen:

Baseline - the amount of GHG that would be emitted to the atmosphere during the crediting period of the project, i.e. in 2009-2012, in case the Project was not implemented.

The baseline methodology was developed by consulting company COWI Baltic (2006) and is based on existing country‘s historical data on GHG emissions. Such principle is described in the BASREC Regional Handbook on Procedures for Joint Implementation in the Baltic Sea Region (Version 2 – June 2006) for baseline calculations.

BASREC Regional Handbook on Procedures for Joint Implementation in the Baltic Sea Region (Version 2 – June 2006) indicates three methods of baseline approach:

1. Existing actual or historical greenhouse gas (GHG) emissions, as applicable;
2. Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment;
3. Average emissions of similar projects undertaken in the previous 5 years, in similar social, environmental and technological circumstances, and whose performance is in the top 20 per cent of their category.

Taking into consideration the specifics of the Lithuanian power market, the methodology based on historical data are most suitable for country’s baseline estimation. Furthermore, the usage of described methodology allows to have united country’s baseline approach.

Based on this baseline methodology the JI PDD of Rudaiciai Wind Power Park (Reg. No. 0025) was developed. The used methodology was approved by AIE (issued final Determination report) and national DNA when the LoA was issued on 05 04 2007. JI PDD of Rudaiciai Wind Power Park project was published at the UNFCC website during the Global Stakeholder Process (11 Jan 2007 – 09 Feb 2007) but no comments were received. This project passed final Determination at JISC as well.

The baseline is calculated referring to historic data as this method is best suited for Lithuanian power market. Approved CDM ACM0002 methodology is not used for the baseline calculation due to the following reasons:

- Lietuvos Elektrine, power plant with the second largest installed capacity in Lithuania (after Ignalina nuclear power plant –INPP) is operating on the power gird 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. Hence, by simply including all these power plants operating on the grid (excl. INPP) would bias the Operating Margin emissions factor.

- There is an overcapacity of installed power in Lithuania, so only very few new power plants are built. Because of that, it is impossible to calculate properly the Build Margin emissions factor.

The used Baseline methodology is described below.

GHG emissions from production of electric power depend on type of fuel used and the efficiency of installations in which fuel is combusted. Thus, for baseline calculation it is important to know which power plants will reduce production due to the supply of additional electric power, generated in a JI project. This can be easily determined knowing the structure of Lithuanian power network. When the manufacturers of electric power supply all quota power to integrated Lithuanian power grid, the rest of power demand is covered by power produced in Lietuvos elektrine (Lithuanian

Power Plant). Taking this into consideration, we can say that in case of additional power supply to the grid, the production will be reduced in Lietuvos elektrine. Therefore, in order to calculate GHG emission reductions, resulting from implementation of JI projects related to production of electric power, it is necessary to know the amount of CO_2 released to the atmosphere while producing 1 MWh of electric power in Lietuvos elektrine.

For determination of the baseline we use fuel consumption and production efficiency data provided by AB Lietuvos elektrine as well as production of electric and thermal power in Lietuvos elektrine in 2002-2005[1] (Table 7).

Table 7. Energy production and fuel consumption in Lietuvos elektrine

Year	Electric power produced (MWh)	Thermal power produced (MWh)	Natural gas (1000nm3)	Fuel oil (t)	Orimulsion (t)
2002	736.604	202.060	199.104	7.355	52.534
2003	723.858	195.553	225.813	5.241	21.238
2004	745.372	212.399	207.690	2.750	55.501
2005	1.072.814	199.383	280.559	1.815	86.160

The amount of fuel consumed is transferred to oil equivalents using such factors: natural gas – 0,800 toe/1000nm3, fuel oil – 0,955 toe/t, orimulsion – 0,660 toe/t (Table 8).

Table 8. Fuel consumption at Lietuvos elektrine, expressed in oil equivalents

Year	Natural gas (toe)	Fuel oil (toe)	Orimulsion (toe)
2002	159,289	7,025	34,675
2003	180,657	5,005	14,018
2004	166,158	2,626	36,633
2005	224,455	1,733	56,869

Hereafter, we calculate the percentage of each type of fuel, being consumed in every year (Table 9).

Table 9. Proportion of fuels consumed at Lietuvos elektrine

Year	Natural gas (%)	Fuel oil (%)	Orimulsion (%)
2002	79,25%	3,49%	17,25%
2003	90,47%	2,51%	7,02%
2004	80,89%	1,28%	17,83%
2005	79,30%	0,61%	20,09%

According to calorific values of fuel (based on Fuel and Energy Balancing Technique, approved by the Order No D_-228 of Managing Director of Department of Statistics to the Government of the Republic of Lithuania of November 24, 2004 (Official Gazette 2004, No172-6363), CO_2 emission factors are estimated for fuel, expressed in tones of oil equivalents (Table 10).

[1] Official edition “Lietuvos energetika“ year 2002-2006

Table 10. CO2 emission factors

Natural gas	Fuel oil	Orimulsion
1.8960531 tCO2/1000 nm3	3,1028478 tCO2/t	2,2268399 tCO2/t
0,80002867 tne/1000 nm3	0,955065574 tne/t	0,660041566 tne/t
2,369981446 tCO2/tne	3,24883221 tCO2/tne (EF_{HFO})	3,373787295 tCO2/tne (EF_{Orm})

Total annual amount of CO2 emitted by Lietuvos Elektrine is calculated by multiplying the amount of each type of fuel consumed annually (expressed in toe) by the corresponding emission factor tCO2/toe (see Table 11).

$T_{CO2} = (F_{Gas} \times EF_{Gas}) + (F_{HFO} \times EF_{HFO}) + (F_{Orm} \times EF_{Orm})$

T_{CO2} - total annual amount of CO_2 emitted by Lietuvos elektrine;
F_{Gas} – annual consumption of natural gas at Lietuvos elektrine, 1000 m^3
F_{HFO} – annual consumption of Heavy Fuel Oil at Lietuvos elektrine, tonnes
F_{Orm} – annual consumption of Orimulsion at Lietuvos elektrine, tonnes
EF_{Gas} - CO2 emission factor for Natural gas, tCO2/toe
EF_{HFO} - CO2 emission factor for Heavy fuel oil,, tCO2/toe
EF_{Orm} - CO2 emission factor for Orimulsion, tCO2/toe

Table 11 shows the emissions from each type of fuel at Lietuvos elektrine.

Table 11. Fuel specific CO2 emissions at Lietuvos elektine

Year	Natural gas, tCO2	Fuel oil, tCO2	Orimulsion, tCO2	Total: tCO2
2002	377,512	22,821	116,985	517,318
2003	428,153	16,262	47,294	491,709
2004	393,791	8,533	123,592	525,916
2005	531,955	5,632	191,865	729,451

Amount of CO2 emissions, released while producing thermal power in Lietuvos elektrine, is calculated as follows:

$$H_{CO2} = \sum \frac{H_{LE}}{E_h \cdot K_{toe}} \cdot R_{\%} \cdot K_{tCO2/toe};$$

H_{CO2} – CO2 emissions, generated while producing thermal power;
H_{LE} – Annual amount of thermal power produced;
E_h - Average efficiency of thermal power production in Lithuania.(In 2002-2005 average thermal power production efficiency rate among power production units, participating in EU ETS trading scheme, was 84,7%);
K_{toe} – Coefficient for transfer of thermal power to conditional fuel (toe - tonnes of oil equivalents). It is equal to 11.63;
$R_{\%}$ - Percentage of each type of fuel within the annual fuel consumption;
$K_{tCO2/toe}$ – Emission factor for one unit of conditional fuel (tne - tonnes of oil equivalents) of different fuel types.

Results of measurements are presented in Table 12.

Table 12. Emissions attributable to thermal power production at Lietuvos elektrine

Year	Natural gas, tCO2	Fuel oil, tCO2	Orimulsion, tCO2	CO2 emissions, (t)
2002	38,528	2,329	11,939	52,796
2003	42,566	1,617	4,702	48,885
2004	41,335	896	12,973	55,204
2005	38,039	403	13,720	52,161

CO2 emissions released for production of electric power are calculated by deducting the amount of CO2 attributable to heat production from the total CO2 amount released by Lietuvos elektrine.

$P_{CO2} = T_{CO2} – H_{CO2}$

P_{CO2} – annual CO2 emissions attributable to power production at Lietuvos elektrine, tCO2
T_{CO2} - total annual amount of CO2 emitted by Lietuvos elektrine;
H_{CO2} – annual CO2 emissions attributable to heat production at Lietuvos elektrine, tCO2

To calculate emissions factor, CO2 emissions attributable to power production were divided by annual power production. The results are presented in Table 13.

Table 13. Emissions attributable to power production at Lietuvos elektrine

Year	Power production, MWh	Emissions, t CO2	tCO2/MWhe
2002	736,604	464,522	0,631
2003	723,858	442,824	0,612
2004	745,372	470,712	0,632
2005	1,072,814	677,290	0,631
Average:	**819,662**	**513,837**	**0,626**

To evaluate the correctness of the results obtained, we compared them to the results obtained and provided by AB Lietuvos Elektrine. Calculations made by the technicians of AB Lietuvos Elektrine gave such results: 0,667 tCO2/MWhe for 2005 and 0,726 tCO2/MWhe for the period before 2012 forecast.

To evaluate our results even further, we have considered the data for consumption of conditional fuel per 1 MWh of heat energy produced, presented by AB Lietuvos Elektrine. These figures were obtained by using an internal enterprise's methodology and are presented in Table 14.

Table 14. Consumption of conditional fuel to produce 1 MWh of heat energy at Lietuvos elektrine

Year	tce/MWhe
2002	0,136
2003	0,141
2004	0,141
2005	0,140

Fuel consumption was transferred to the efficiency of thermal power production (Table 15).

Table 15. Efficiency of thermal power production at Lietuvos elektrine

Year	Efficiency of thermal power production
2002	90,5%
2003	87,1%
2004	87,1%
2005	87,6%
Average:	**88,1%**

As it can be seen from the table, the average thermal power production efficiency rate in "Lietuvos elektrine" is 88%. If using thermal power production efficiency rate of 88% in our formula, CO2 baseline factor would be equal to 0,629 tCO2/MWhe.

Considering the calculation results that were presented by AB Lietuvos Elektrine it is possible to draw the conclusion that using emissions factor of 0,626 tCO2/MWhe (described previously) would represent a conservative approach to the baseline as it would result in fewer CO2 reductions compared to the one calculated by AB Lietuvos Elektrine methodology.

Lithuania's National allocation plan for 2005-2007 forecasts an increase in Orimulsion share from 20% (56,9 Ktoe) in 2005 to 40% by 2008 in the fuel mix of Lietuvos elektrine. The forecasted increase in the Orimulsion share, would definitely increase baseline emissions factor. Hence, the current emissions factor – 0,626 tCO2/MWhe is considered to be conservative and will be used to calculate CO2 reductions from Kreivenai Wind Power JI Project.

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 JI project:

JI project's additionally indicates the GHG reduction after implementation of JI project in comparison to the baseline. Usually financial efficiency of JI projects is low, thus ERU's help to promote their development and implementation. This economic promotion also reduces project's payback time.

Additionality of the Kreivenai Wind Power project is proven using the *version 5.02* of the CDM *Tool for the Demonstration and Assessment of Additionality* as approved by the CDM Executive Board.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a. Define alternatives to the project activity:

- Alternative A - the proposed project activity not undertaken as JI project activity;

- Alternative B - continuation of the current situation (no project activity or other alternatives undertaken); the electric power in the Lithuanian network will be produced by existing and new power plants.

Sub-step 1b. Consistency with mandatory laws and regulations:

The both alternatives are in compliance with mandatory legislation and regulations.

The alternative's A development might be considered due to promotion of renewable energy sources use according national legislation. The Lithuania has obligation against EU to increase the share of renewable electricity from current 3,5% to 7% by year 2010[2]. To comply with this undertaking Lithuania would need to achieve ca. 480 GWh electricity production only from renewable energy sources and the wind is first priority. In order to give incentives for business of wind energy parks, the government has issued legislation regulating the obligatory purchase of wind power electricity for fixed feed-in tariff 0,30 LTL per kWh i.e. 8,69 EUR cents per kWh (1 EUR = 3,4528 LTL). Unfortunately the set feed-in tariff is not sufficient to realize the proposed project on a commercial basis. Additional income from the sale of ERUs under the Kyoto Joint Implementation scheme is thus required to turn the project attractive for the investors. It means that Alternative's A development is fully eligible but project payback time without carbon credit revenues become longer (the IRR of the project without ERUs revenues is lower).

The alternative's B development might be considered based on the fact that wind energy projects still are low financial attractive and with long payback period. Usually the power from the wind energy is more expensive comparison with other renewable energy sources (biomass, geothermal, hydro), and it means that expansion of wind energy generation will take negative impact for end users power price (increase of tariff for inhabitants and industry consumers). Furthermore the wind energy power generation is not stable and other generation capacity reserve is necessary always. Such facts influence small support from state side. The state's obligation on 7% "green energy" generation before 2010 might be achieved by supporting usage of biomass and small and medium scale cogeneration (expansion of CHP). The current legislation supports biomass and cogeneration usage. Moreover EU structural funds are available for new cogeneration plants but not for wind power projects in Lithuania. The practice shows that biomass or cogeneration projects has higher IRR and are more financial attractive. It means that Alternative's B development is fully eligible as well.

Result: Pass

Step 2. Investment analysis

Sub-step 2a. Determine appropriate analysis method

Simple cost analysis (option I) is not applicable for the project as the income from sale of 'carbon credits' is not the only source of revenues for the project.

Benchmark analysis (option III) is not applicable either as no investment benchmarks for power sector exist in Lithuania. The power market in Lithuania is still partly regulated. Power producers are given quotas to deliver power at a certain price. Over-quota power is delivered at the market price (lower than the quota price). Both, quota and the power price differ on a case by case basis.

The *investment comparison analysis (option II)* will be used for Kreivenai wind power park project as it is the only applicable method.

Sub-step 2b. – Option II. Apply investment comparison analysis

IRR (Internal Rate of Return), as the most common financial feasibility indicator will be used for investment comparison analysis. IRR estimates the discount rate used in order to obtain NPV (Net Present Value) equal to 0. IRR is commonly calculated on total investment (disregarding capital structure and depreciation rate) to compare the project with similar projects or on the equity part of investment, which is relevant indicator for investors.

[2] Communication from the Commission to the Council and the European Parliament. Green Paper follow-up action. Report on progress in renewable electricity. Brussels, 10.1.2007, p.8

Sub-step 2c. Calculation and comparison of financial indicators

According to project investments (102,7 mill.Lt with VAT), planed power generation amount (54,95 GWh/year) and the feed in tariff of 0,30 Lt/kWh it was calculated Kreivenai wind power park project's IRR – **7,47%** (without revenue from ERUs sale) (Alternative A).

Additional revenues from ERUs sale during crediting period increasing IRR of Kreivenai wind energy park project up to **7,70%** (when ERU sale price is 10€).

For comparison – the average IRR of new natural gas based cogeneration power plants is about 8-10%. However, EU structural funds are available for new cogeneration plants (up to 50% from all investments) but not for wind power projects in Lithuania. With the EU structural support IRR of new cogeneration plants jumps up to around 15%. This fact makes cogeneration option more attractive for the investors compared to the wind power. As concrete example may be used the new erected CHP plant example (Panevezys CHP) where the project IRR is **16,2%**[3] (Alternative B).

Sub-step 2d. Sensitivity analysis

The Kreivenai wind power park project's IRR sensitivity analysis depending on variable power production and ERU sale price is presented in the Tables 16-17.

Table 16. Project IRR variation depending from power production

Production margin	-10%	-5%	0%	5%	10%
Power production, MWh/year	49.453	52.201	54.948	57.695	60.443
Project IRR (excl. ERUs)	6,50	7,00	7,47	7,94	8,38

Table 17. Project IRR variation depending from ERUs sale price

ERUs sale margin	0%	10%	20%	30%	40%
Price of ERUs, €	10,00	11,00	12,00	13,00	14,00
Project IRR (excl. ERUs)	7,70	7,72	7,74	7,76	7,78

The sensitivity analysis shows that the annual power production is crucial factor for project economic. Furthermore the power production is variable and depends from on site wind conditions and wind turbines technical characteristics. The used power generation approach gives for project the capacity factor - 33%, that is better result like average in practice (25-30%)[4]. It means that probability that project financial figures may vary into negative side is higher then into positive side and it shall take Project less financially attractive than is assumed.

The additional revenue from ERUs sale gives more attractiveness and gives positive impact for Project additionallity. The ERUs sale price was estimated based on "carbon credits" market overview.

The sensitivity analysis confirms the fact that the project is not enough financially attractive and revenues from ERUs sale gives the chance to improve its financial figures. Moreover even Kreivenai wind power park project will generate 10% more electricity and ERUs revenues shall be based on 14,00 Euro level that shall be lower result in comparison with Alternative's B IRR (8,69% < 16,02%).

Result: Pass

[3] UNFCCC webpage, JI Project - Rudaiciai wind power park, PDDs supporting documentation Enclosure3 – IRR for cogeneration plant Panevezys

[4] The capacity factor calculation http://www.windpower.org/en/tour/wres/annu.htm

Step 3. Barrier analysis

According to Tool for the Demonstration and Assessment of Additionality methodology "If after the sensitivity analysis it is concluded that the proposed CDM project activity is unlikely to be the most financially attractive (as per step 2c para 8a) or is unlikely to be financially attractive (as per step 2c para 8b), then proceed to Step 4 (Common practice analysis)".

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed project activity:

Currently only two wind energy parks (Rudaiciai and Benaciai) with total capacity 46MW and several individual wind turbines with total capacity 6,4 MW are under operation in Lithuania. The total installed capacity is 52,4 MW[5]. The Kreivenai wind energy park is not related with existing energy parks and will be developed individually. Based on the publications in the press during erection of wind energy parks the different legal, social, economical and technological problems raised and that has negative impact on widen wind energy projects development.

Sub-step 4b. Discuss any similar options that are occurring:

The practice shows that there are several main obstacles which have negative impact on widen project development in wind energy sector in Lithuania:

- Long wind energy projects pay back period. Due to big investments demand and constantly raising of prices of wind turbines (for ex. the Enercon turbines prices up approx. by 30% during last two years), raw materials (steel), civil works wages) the wind energy projects still are financially unattractive.
- Based on above mentioned reason the debt funding is complicated (the annual rate is increasing due to instable world economic situation).
- No financial support for wind electricity generation is foreseen under the EU structural funds or any other multilateral or bilateral sources.
- Tender rules for grid connection in dedicated zones require a significant initial down-payment.
- Approval of dedicated zones means that only limited land areas might be used for wind energy projects. Such reason influenced the strong rising of prices and scarcity of land for availability of such projects development;
- The know-how related to wind power technology and such kind of project implementation is still limited;
- There is insecurity regarding purchase of wind power when trading on hourly basis comes into effect after the establishment of the spot market. AB "Lietuvos energija" has the right to disconnect the wind power-plant park from the power network in case of the system overload.

Based on above mentioned reasons the JI revenue has been considered since the early stages of development of Kreivenai wind power park project and is an integral part of financing the Project. As explained in Step 2, the fixed price offered for wind power is not high enough to make the Project activity financial viable. If the project developer will be able to sell the ERUs from the project activity, then the additional revenue from these sales would improve the financial viability and make the project more attractive.

[5] According to data of national grid operator AB "Lietuvos energija" www.lpc.lt 2008 10 01

The first two wind farms (Rudaiciai and Benaiciai) were developed as JI projects as well. Unfortunately the economical figures from those projects is commercial secret and aren't' available publicly.

Moreover, the fact that during last 1,5 year (the last the auction for obtaining of license on connection to the national grid was organized on 21.12.2006)[6] no more wind parks were erected proves the fact that wind energy Projects aren't financially attractive and face with different barriers.

Result: Pass

B.3. Description of how the definition of the project boundary is applied to the project:

The BASREC JI Project Guidelines describes project boundaries as theoretical boundaries, determining the scope of project's impact on GHG emissions. The sources of GHG involved in project boundaries represent the sources involved in baseline calculations.

The project boundary is drawn around the physical boundary of the wind power plants (i.e. the wind turbines and generators) and the power plants of AB Lietuvos Elektrine, the power generation of which the wind power plants would replace. Other producers as well as consumers of electric power are not included into project boundary due to the structure of Lithuanian power grid (see section B1).

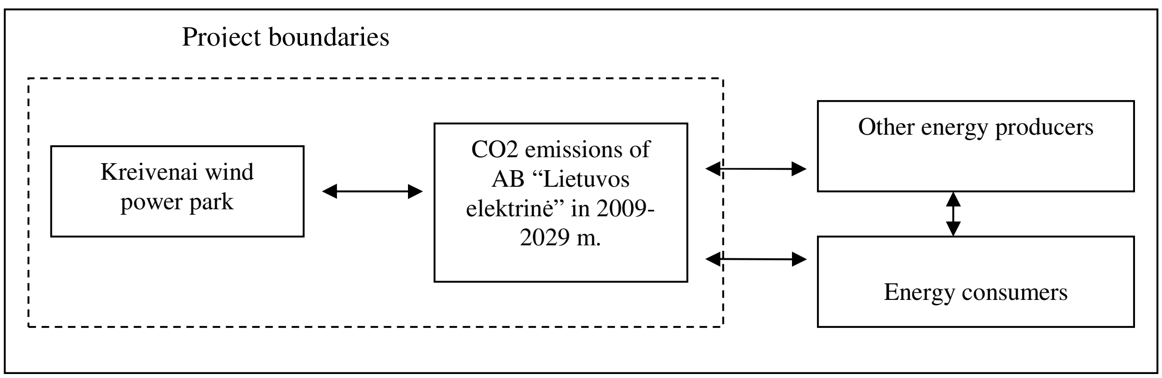

Figure 3 Project boundaries

B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline:

Date of Baseline setting: 01 October 2008
Prepared by: UAB „Energogrupė" (Project participant), represented by Director Justinas Vilpišauskas
Tel. +370 698 31024 Fax. +370 527 84122 E-mail. jv@windenergy.lt

The baseline methodology was developed by consulting company COWI Baltic. Based on this baseline methodology the few wind power parks JI project were developed and published at the UNFCC website. Two projects passed final Determination at JISC already.

[6] According to data of of national grid operator AB "Lietuvos energija" www.lpc.lt 2008 10 01

SECTION C. Duration of the project / crediting period

C.1. Starting date of the project:

The Kreivenai Wind Power Park's energy generation is planed from October 2009.

C.2. Expected operational lifetime of the project:

Planned operational lifetime of wind power park is 20 years (2009-2029).

C.3. Length of the crediting period:

The starting date of the crediting period is set to 1st October, 2009. First crediting period consist 3 years and 3 months (2009–2012).
The end of the crediting period is chosen to be 30st September of 2029. Thus, the crediting period is 20 years (240 months).

SECTION D. Monitoring plan

D.1. Description of monitoring plan chosen:

The main requirements, being imposed on the monitoring plan, are pointed out in the Annex B of Chapter 6 of the Kyoto protocol (Decision 9/CMP.1, "Decisions adopted by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol"). The following points have to be considered in the monitoring plan:

- All the data necessary to the evaluation or the collection and storage of the data from all the sources of anthropogenic emissions and/or leakage. These data are being collected and stored during all the crediting period;
- The collection and storage of all the data necessary for the calculation of the baseline from all the anthropogenic sources and leakage during all the crediting period;
- The determination of all the potential sources, the collection of information about them and storage of it in case of increasing GHG emissions from the anthropogenic sources as well as leakage that have intense and significant impact on the project during its crediting period and that are outside the project boundaries. The project boundaries must involve all the sources and leakage of anthropogenic pollution under the maintenance of the participants of the project;
- The storage of the information about the state of environmental protection according to the requirements of the hosting country;
- The assurance of the quality of the monitoring and the procedures of control;
- The periodic calculation of the saved GHG, according to all the sources and leakage, if such are present.

The monitoring plan is attached as the Annex 3.

D.1.1. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario:

D.1.1.1. Data to be collected in order to monitor emissions from the project, and how these data will be archived:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

Wind power does not produce any greenhouse gas (GHG) emissions in operation, so project emissions are zero. Some GHG emissions are released due to transportation of wind turbines and other equipment as well as from the construction works but these emissions are negligible compared to project emission reductions. Some CO2 will be released to the atmosphere while performing the maintenance (transportation, etc.) of the wind turbines, however the amounts will be minute. Hence, according to BASREC Regional Handbook these GHG sources can be considered as insignificant and should not be taken into consideration.

D.1.1.2. Description of formulae used to estimate project emissions (for each gas, source etc.; emissions in units of CO_2 equivalent):

Wind power does not produce any greenhouse gas emissions in operation, so project emissions are zero.

D.1.1.3. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment
1	E_{VP} – Net electricity supplied to the grid	Project proponent	kWh	Measured. Directly measured with electricity meter	Constant recording	100% hourly measurement	Electronic and in paper form	Data will be aggregated monthly (yearly) and double checked with receipt of sales, with the SCADA system as back-up

D.1.1.4. Description of formulae used to estimate baseline emissions (for each gas, source etc.; emissions in units of CO_2 equivalent):

Baseline emissions will be monitored using the following formulae.

$BE = E_{VP} \times EF_{LE}$

Where:
BE - baseline emissions

E_{VP} – power dispatched to the grid from Kreivenai wind power park, kWh
EF_{LE} – emission factor for power production at Lietuvos elektrine, 0,626tCO2/MWh

See baseline study and methodology for detail on how EF_{LE} is calculated (B.1.)

D. 1.2. Option 2 – Direct monitoring of emission reductions from the project (values should be consistent with those in section E.):

D.1.2.1. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

Not applicable.

D.1.2.2. Description of formulae used to calculate emission reductions from the project (for each gas, source etc.; emissions/emission reductions in units of CO_2 equivalent):

Not applicable

D.1.3. Treatment of leakage in the monitoring plan:

D.1.3.1. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project:

ID number *(Please use numbers to ease cross-referencing to D.2.)*	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Proportion of data to be monitored	How will the data be archived? (electronic/ paper)	Comment

No leakage.

D.1.3.2. Description of formulae used to estimate leakage (for each gas, source etc.; emissions in units of CO_2 equivalent):

Not applicable

D.1.4. Description of formulae used to estimate emission reductions for the project (for each gas, source etc.; emissions/emission reductions in units of CO_2 equivalent):

Because there are no project emissions and no leakage, the emissions reductions are the same as the baseline emissions (calculation is based by D.1.1.4 formulae).

D.1.5. Where applicable, in accordance with procedures as required by the host Party, information on the collection and archiving of information on the environmental impacts of the project:

The environmental impact monitoring is not required by the host Party.

D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:

Data *(Indicate table and ID number)*	Uncertainty level of data (high/medium/low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.
Evp (D.1.1.3)	*Low*	QA/QC procedures are not necessary as *Evp will be monitored via the commercial power metering device that is regularly calibrated*

D.3. Please describe the operational and management structure that the project operator will apply in implementing the monitoring plan:

It is planed that the operation and maintenance (O&M) works of Kreivenai wind power park will be done by company Enercon Gmbh that will have an agreement on such services with UAB “Energogrupe”.
The monitoring report based on monitoring plan will be prepared by UAB “Energogrupe” staff based on monthly energy output reports data received from national operator’s AB Lietuvos energija side. Monitoring of power production will be measured by the commercial power meter (s). Based on power sale-purchase agreement the national operator obliges to send monthly reports to the UAB “Energogrupe”. Moreover data on energy output into national grid will be published officially on AB Lietuvos energija website.

For the quality assurance, an audit company will be contracted to revise company's financial results including the monitoring reports. Revision will include verification of the data sources and calculations. Power dispatch documents will be archived at UAB "Energogrupe" for later reference for the proof of the monitoring results. AB Lietuvos energija is responsible for the calibration of the commercial power metering device.

D.4. Name of person(s)/entity(ies) establishing the monitoring plan:

Prepared by: UAB „Energogrupė" (Project participant), represented by Director Justinas Vilpišauskas Tel. +370 698 31024 Fax. +370 527 84122 E-mail. jv@windenergy.lt

SECTION E. Estimation of greenhouse gas emission reductions

E.1. Estimated project emissions:

Wind power does not create any anthropogenic greenhouse gas emissions in operation, so Project emissions are zero.

E.2. Estimated leakage:

There are no direct or indirect emissions outside the project boundary attributable to the project activity.

E.3. The sum of E.1. and E.2.:

E.1.+ E.2.= 0

E.4. Estimated baseline emissions:

Baseline emissions (BE) are calculated as following:

$BE = E_{VP} \times EF_{LE}$

Where,
BE = Baseline emissions in year x (tCO2)
E_{VP} = Net Electricity supplied to the grid by the project in year X (MWh)
EF_{LE} = Emission factor of the power plants of AB Lietuvos Elektrine (0,626 tCO2/MWh)

Calculation of EF_{LE} is presented in B1 and monitoring in D.1.1.4.

Total baseline emissions for period 2009-2012 are 89433 tCO2 or 27518 tCO2 for full calendar year.

Year	2009	2010	2011	2012	Total:
Baseline emissions = Project emission Reductions, tCO2	8599	34397	34397	34397	**111792**

E.5. Difference between E.4. and E.3. representing the emission reductions of the project:

Because project emissions are zero, the emissions reductions are the same as the baseline emissions.

Year	2009	2010	2011	2012	Total:
Baseline emissions = Project emission Reductions, tCO2	8599	34397	34397	34397	**111792**

E.6. Table providing values obtained when applying formulae above:

Table 18. Project emission reductions

Year	Estimated project emissions (tonnes of CO2 equivalent)	Estimated leakage (tonnes of CO2 equivalent)	Estimated baseline emissions (tonnes of CO2 equivalent)	Estimated emission reductions (tonnes of CO2 equivalent)
2009	0	0	8599	8599
2010	0	0	34397	34397
2011	0	0	34397	34397
2012	0	0	34397	34397
Total 2009-2012	**0**	**0**	**111792**	**111792**

Year	Estimated project emissions (tonnes of CO2 equivalent)	Estimated leakage (tonnes of CO2 equivalent)	Estimated baseline emissions (tonnes of CO2 equivalent)	Estimated emission reductions (tonnes of CO2 equivalent)
2013	0	0	34397	34397
2014	0	0	34397	34397
2015	0	0	34397	34397
2016	0	0	34397	34397
2017	0	0	34397	34397
2018	0	0	34397	34397
2019	0	0	34397	34397
2020	0	0	34397	34397
2021	0	0	34397	34397
2022	0	0	34397	34397
2023	0	0	34397	34397
2024	0	0	34397	34397
2025	0	0	34397	34397
2026	0	0	34397	34397
2027	0	0	34397	34397
2028	0	0	34397	34397
2029	0	0	25798	25798
Total 2013-2029	**0**	**0**	**576150**	**576150**

SECTION 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:

According to the Communications No (9.14.2.)-V4-4117 of Klaipeda Regional Department of Environment of Lithuanian Ministry of Environment of October 13, 2004, the conclusion, concerning the environmental impact of the planned economic activity, was drawn that the environmental impact assessment of the planned economic activity – installation and maintenance of wind power plants – is not required. The above stated conclusion was drawn because (the extract from the above mentioned documents):

- There are no residential areas near the location of planned economic activity;
- National Energy Strategy approved by the resolution No.IX-1130 of Seimas of the Republic of Lithuania of October 10, 2002 (Official Gazette., 2002, No 99-4397) schedules, that aiming to the best use local resources, including wind energy, and at the same time to reduce the import of fuel and to establish new work places as well as to improve the state of environmental protection, the State will promote the implementation of the projects on use of wind, water and sun power and the experience of installation and maintenance will be collected;
- In the territory of planned economic activity it is not forbidden to install and maintain the equipment of planned economic activity.

Potential environmental impacts are described below.

Atmosphere

The project is considered to result not only in reduction of GHG but also in reduction of other pollutants such as SO2 and NOx. These pollutants are released to the atmosphere while generating electric power at Lietuvos elektrine. To calculate reductions of SO2 and NOx, the following formulas are used:

$E_{SO2} = P_{MWh} \times EF_{SO2}$

Where:
P_{MWh} - is the electric power produced in the park annually, MWh;
EF_{SO2} – is the emissions factor, defining how many tones of SO2 is emitted to the atmosphere while producing 1 MWh of electric power.

$E_{NOx} = P_{MWh} \times EF_{NOx}$

Where:
P_{MWh} - is the electric power produced in the park annually, MWh;
EF_{NOx} - is the emissions factor, defining how many tones of NOx emerge, while producing 1 MWh of electric power.

The results of projected SO2 and NOx reduction during period 2009-2012 are given in Table 19.

Table 19 SO2 and NOx emission reductions

Pollutant	kg of pollutant/MWh	Amount of pollutant saved during the crediting period
SO2	0.45	24,73 t
NOx	0.95	52,20 t

Water

There are no open water pools within the project area. There is no risk to pollute the surface and/or ground water during the maintenance of the wind power park project. Water is not used for technological purposes in the wind power park so the wastewater will not be formed. Surface run-off from the wind power park territory will be drained away. For this purpose, drainage systems are reconstructed within the project area.

Soil

There will not be any significant impact on soil. The project area mainly consists of farmlands. During the construction process, in the power plant fundament areas, road construction areas and cable laying areas the upper layer of the soil which is 0.2-0.3m thick, will be separated and stored apart from other soil layers. After construction works are finalised, the loam will be re-cultivated and planted according to projects plans in order to avoid soil erosion.

Flora / Fauna

Based on data of operating wind power plants, there is no evidence of the impact of wind power plants on biological diversity. Hence, measures to recreate environmental biodiversity are not necessary.
There are no envisaged tree cuttings or relocation in the project area. A grass-plot will be set in the area.
There are no wild animal accumulation, feeding, mating, wintering of migration points in the project area that should be protected.

Impacts on birds

Kreivenai wind power park is far away from bird migration routes. The probability of birds colliding with the wind power plants is very low. Therefore the impacts on birds are considered negligible. A study from the Danish Ministry of the Environment states that high voltage power lines is much greater danger to birds than the wind turbines themselves[7].
According to results of the studies performed by Danish and German scientists – wind power plants have no impacts on migration routes of birds. The studies in ES show that the risk of bird collisions with wind power plants is much smaller compared to the risks of bird collision with high voltage air power lines, cars, skyscraper, glass facades of buildings. After long term observations, the conclusions were drawn that birds have changed their migration routes according to new obstructions evolved on their way.

[7] Birds and wind turbines: http://www.windpower.org/en/tour/env/birds.htm

Impacts on animals

Noise, shadow and blinking effects and landscape fragmentation effect made by wind power park can disturb natural wildlife. However, Kreivenai wind power park is surrounded by farmlands and rural areas situated away from wild animal habitats. Hence, the impact on wild animals is considered negligible.

Protected areas

There are no protected areas within or nearby the project site. There are no protected species of flora or fauna within or close to the project site. Among other sources, such data was verified at the State Service for protected Areas under the Ministry of Environment[8].
All nearest protected areas are within sufficient range away from the project site:

Pagramančio regional park (about 10 km);
Rambyno regional park (about 7 km);
Vilkyškių geomorfogical reservation (about 7 km)
Viešvilės botanical-zoological reservation (about 20 km);
Tyrelio landscape reservation (about 10 km)
Jūros landscape reservation (about 12 km)
Jūros ichthyologic reservation (about 5 km)
Plynosios telmologinis reservation (about 10 km)
Kaskalnio geomorfogical reservation (about 18 km)

Cultural heritage

Before starting excavation works, the area was explored for archaeological objects in line with the Cultural heritage law of Lithuania. No valuable excavations were found in the project area.

Waste

Waste in wind power park is minimal. No oil lubricants are used in Enercon turbines as there are no gear box in the construction. Any spare parts that are substituted with new ones during the operation and maintenance period of wind power park will be removed from the project site and recycled by the maintenance service provider.

Physical impact

Electromagnetic field

Electromagnetic field is formed around high voltage air power lines, at the transformer substations and other open power installations. Electromagnetic field is measured by the intensity of electric field (E, V/m) and by the intensity of magnetic field (H, A/m). Permissible intensity of electric field in residential (building) areas is up to 1kV/m without limitations for allowed exposure time and up to 5 kV/m in "green" zones (parks, gardens etc.) without limitation for exposure time (HN 104: 2000).
The potential sources of electromagnetic field in wind power park (generators and transformers) are generating low voltage and up to 100kW power capacity. The intensity of electric and magnetic fields are lower than the permissible level for residential areas (1kV/m). Electro-technical equipment of wind

[8] State cadastre of protected areas http://stk.vstt..lt

power plants are mounted in 90m height from the surface in the metal, connected to earth baskets, which perform as electromagnetic shields. Zone of electromagnetic impact is not present in wind power park territory or in neighbouring areas.

Noise

The sanitary zone with the radius of 80 m, was set around wind power plants according to the requirements. Maximum allowed noise level in the residential areas is 55dB at the night time and 65dB at the daytime (HN 33:2007). Estimations of the Kreivenai wind power park project noise level gave the following results depending on the distance from wind power plants: 100m – 50dB, 290m -45, 440m-40dB, 660m-35dB. After installing the wind-power plants the compulsory monitoring of the noise level will be undertaken.
The closest living area (grange) is approx. 290m away from the wind power park.

Visual impact

Wind power plants make landscape more urbanized. However , if the right planning concept is used – a visual impact can be minimized. The positioning of wind power plants is made optimal to integrate it into the landscape. The towers of wind power plants are painted into bright grey color which will fade them in the sky background.
Also, wind power plants, like all tall buildings cast shadow on the neighboring areas when the sun is visible. It also causes a blinking effect due to rotation of wind turbine wings. The shadowing effect is not relevant for the project. According to the preliminary calculations – shadows will be cast not more than 250m from the wind power plants. Bearing in mind that the closest living area are approx. 290 meters away – the shading effect is not considered as an impact.

F.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

The environmental impacts are nor considered as significant.

SECTION G. Stakeholders' comments

G.1. Information on stakeholders' comments on the project, as appropriate:

While preparing the detailed plans, compulsory public consideration procedures were undertaken where all stakeholders may participate. Compulsory written agreements of residents in surrounding areas were obtained during the process of detailed planning and technical project preparation process. Stakeholders have not expressed any objections.
The following steps were made during the stakeholder process (Table 20):

Table 20. Stakeholder process

Date	Description
2004-10-23	Announcement about Klaipeda Regional Department of Environment conclusion concerning the environmental impact assessment (AIE) of the planned economic activity in the newspaper „Taurages balsas“.
2007-07-05	Received written consents from all neighbour land owners regarding endorsement of Project sanitary zones.
2008-02-22	Announcement about beginning of Project detailed plan preparation in the newspaper „Taurages kurjeris“
2008-04-23	Announcement about availability of public opinion impact on the Project detailed plan in the Taurages municipality website (for period from 18-04-2008 to 20-05-2004). No comments were received.
2008-05-28	Detailed plan agreed with Administration of civil aviation
2008-06-10	Detailed plan agreed with Air Force
2008-06-12	Protocol of hygiene examination of the project documentation prepared by Taurages centre of public health (Visuomenes sveikatos centras).
2008-06-12	Conclusion of the Klaipeda regional department for environmental protection regarding the approval of the suggested solutions of detailed plan.
2008-07-17	Decision of the board of Taurage municipality regarding the approval of the Project detailed plan.

Annex 1

CONTACT INFORMATION ON PROJECT PARTICIPANTS

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Annex 2

BASELINE INFORMATION

Year	Power production, MWh	Heat production, MWh	Natural gas, nm3	Fuel oil, t	Orimulsion, t	CO2 emissions using fossil fuel	CO2 emissions from heat production	CO2 emissions from power production	Emission factor CO2/MWhe
2002	736.604	202.060	199.104	7.355	52.534	517,318	52,796	464,522	0,631
2003	723.858	195.553	225.813	5.241	21.238	491,709	48,885	442,824	0,612
2004	745.372	212.399	207.690	2.750	55.501	525,916	55,204	470,712	0,632
2005	1.072.814	199.383	280.559	1.815	86.160	729,451	52,161	677,290	0,631
						566,098	**52,262**	**513,837**	**0,626**

Annex 3

MONITORING PLAN

Emission reductions from the project will be calculated by multiplying annual amount of power dispatched to the grid by emissions factor:

$ER = E_{VP} \times EF_{LE}$

Where:
ER – annual emission reductions, tCO_2
E_{VP} – Net annual power production at Kreivenai wind power park. E_{VP} is the difference between produced and consumed power at Kreivenai wind power park, MWh.
EF_{LE} – emission factor for power production at Lietuvos elektrine, 0.626 tCO_2/MWh

ER will be calculated for a previous year, starting in 2010 (using annual power dispatch data from previous year). The following monitoring form will be used to monitor dispatched power. Monitoring procedures are described in D3.

YEAR:__________

Month	Power dispatch confirmation document No.	Date of signature of power dispatch confirmation document	ID of the power metering device	Indication of the produced power by the metering device, MWh	Indication of the consumed power by the metering device, MWh	Amount of power dispatched to the grid, MWh	Date of the entry	Name of the person in charge	Signature
January									
February									
March									
April									
May									
June									
July									
August									
September									
October									
November									
December									
Total:									

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