



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

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**SECTION A. General description of the project****A.1. Title of the project:**

Title of the project: Dorobantu Wind Power Park
Sectoral scope(s): (1) Energy industries (renewable/non-renewable sources)
Version: 3
Date: 16/11/2011

A.2. Description of the project:

The purpose of the project is the generation of green electricity through the construction of 18 wind power turbines with a total capacity of up to 54 MW located between the villages Dorobantu and Tortoman, in Constanta county in Romania. The expected net annual generation of the project activity is approximately 145,930 MWh, once fully operational. By replacing fossil fuel based power generation of the national Romanian electricity grid approximately 134,474 tCO₂ will be reduced per year. The project is being developed by S.C. OMV Petrom Wind Power S.R.L. (Project's Focal Point PFP according to Romanian track 1 procedure) (hereafter the "project proponent")

Situation existing prior to the starting date of the project

Same as baseline scenario, see paragraph below.

Baseline Scenario

According to applied CDM methodology ACM0002 "*Consolidated baseline methodology for grid-connected electricity generation from renewable sources*" Version 12.1.0 - If the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system"¹.

Project Scenario

The project includes the construction and operation of a wind farm with the capacity of up to 54 MW. The electricity will be fed into the grid at a new 20/110 kV transformer station situated at the south-east border of the wind farm (GPS location: 44°23'18.13"N 28°12'49.75"E), which has been built by the project proponent. By replacing fossil fuel based power generation of the national Romanian electricity grid approximately 134,474 tCO₂ will be reduced per year.

¹ As described under section B.1. the project activity will deviate from the Tool by using an emission factor calculated by the Romanian Energy Regulator ANRE as a JI specific approach.

Summary of the history of the project (incl. its JI component)

Date	Event/Action
February 10 th , 2010	<u>Contract with Energy Changes Projektentwicklung Gmbh for JI development</u>
April 14 th , 2010	Signing of purchase contract for wind turbines, this date is also the <u>start date of the JI project activity</u>
August 26th 2010	Submission of documentation to the Designated Focal Point for Joint Implementation in order to <u>apply for the Letter of Endorsement (LoE)</u> within the Romanian JI approval procedure
February 10 th 2011	Meeting of Romanian JI committee; <u>Approval for issuance of LoE</u>
March 3rd, 2011	<u>LoE issued by Romanian JI DFP</u>
April 2011	Start of turbine erection

A.3. Project participants:

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Name of Party involved	Legal entity project participants (as applicable)	Please indicate if the Party involved wishes to be considered as project participant (Yes/No)
Romania (host)	S.C. OMV Petrom Wind Power S.R.L. OMV Petrom S.A.	No
Austria	OMV Power International GmbH	No

With October 31st, 2011 the company S.C. Wind Power Park S.R.L. changed its name to S.C. OMV Petrom Wind Power S.R.L. and also changed its headquarters from Galbiori to Bucharest (see details in Annex 1). Permits and authorizations issued prior to October 31st, 2011 have been issued to the company under the name of S.C. Wind Power Park S.R.L.

A.4. Technical description of the project:**A.4.1. Location of the project:****A.4.1.1. Host Party(ies):**

Romania

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

Constanta County

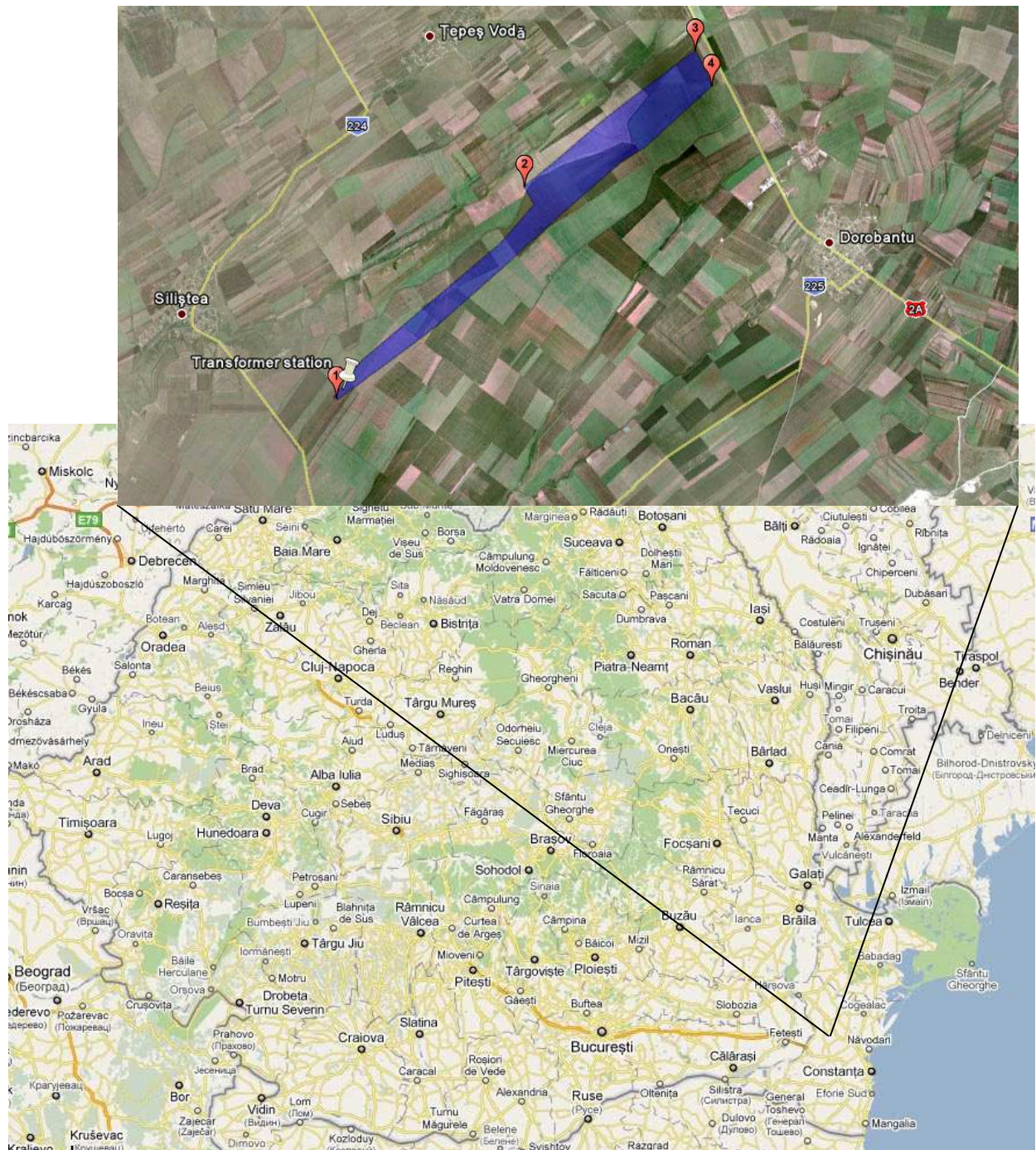
A.4.1.3. City/Town/Community etc.:

Dorobantu

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

The geographical coordinates of the outline of the wind park are:

Location (refer to map)	Latitude	Longitude
1 (turbine 17D)	N 44°23'12.96"	E 28°12'44.35"
2 (turbine 5D)	N 44°25'15.37"	E 28°15'16.91"
3 (turbine 1D)	N 44°26'34.01"	E 28°17'35.69"
4 (turbine 4D)	N 44°26'13.45"	E 28°17'49.04"
Transformer station	N 44°23'18.13"	E 28°12'49.75"





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

The technology to be employed is wind turbines with the following technical specifications:

Item	Parameters	Manufacturer
Type	V90-3.0 MW VCS 50Hz	Vestas
Quantity	18	
Rated capacity per turbine (MW)	3	
Hub height (m)	105m	
Rotor diameter (m)	90m	
Swept area (m ²)	6362m ²	
Blade material	Fibreglass reinforced epoxy and carbon fibres	
Generator (type)	Double fed asynchronous with wound rotor and slip rings	

The electricity will be fed into the grid at a new 20/110kV transformer station situated at the south east border of the wind farm (GPS location: 44°23'18.13"N 28°12'49.75"E), which has been built by the project proponents.

The planned implementation schedule is as follows (time of submission of PDD to validation)

- | | |
|--|--|
| • Securing the land | done |
| • Location approval from grid operator | done |
| • Grid connection permit | done |
| • Environmental permit | done |
| • Building permit | issued for first 15 turbines,
applied for the extension to 18 |
| • Start of construction (wind park) | April 2011 |
| • Start of operation | June 2011 |

The project proponent has concluded a Service and Availability Agreement (AOM 4000, signed on March 11th, 2011) with the technology provider Vestas for several years. Little training will therefore be needed for the staff of the project proponent.

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:

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The proposed JI project generates renewable, emission-free electricity, which will be fed into the Romanian national electricity grid. By that it replaces the electricity production from other generation facilities in the grid, mainly from fossil sources. These emission reductions are calculated by using an emission factor representing the GHG emissions in the Romanian national electricity grid.



According to EBRD Renewable Energy Initiative Country Profile Romania: (<http://ebrdrenewables.com/sites/renew/countries/romania/profile.aspx#Policy> accessed on April 14th 2011)

As member country of the European Union Romania must take part in and “follow the EU’s energy policy and legislation. In negotiations for EU entrance, Romania agreed to privatize their energy sector. Programs have been launched for the sale of electricity production and distribution companies (IEA, 2009).

The Electric Power Law no.13/2007

- Ensures the non-discriminatory and regulated access for all participants on the electric power market and the public electric network
- Demands the transparency of the taxes and prices for electric power
- Promotes using new and renewable energy sources
- Promotes local and global environmental protection
- Ensures the safety of commercial electric power for the consumer.”

“Romania’s renewable energy target for 2020 is 38 percent renewable consumption. In order to meet these goals and set standards for Romanian renewable energy, Romania created a renewable energy law, Law no. 220/2008. Parliament passed the law in October of 2008. The law includes

- Incentives for small hydro, solar, wind, geothermal, biomass, biogas, and waste water sludge and gas projects
- Incentives are offered for 3 years after completion of small hydro refurbishments to 15 years for new power plants
- An outline for a green certificate trading market. Typically one certificate represents 1 MWh of electricity that can be traded. Suppliers must meet the annual mandatory target for green certificates; if they do not fulfill the target, they must pay a counter-value.
- Priority access for electricity produced by renewable energy sources, as long as such priority does not affect the safety of the National Energy System.
- Loan guarantees and tax exemptions for renewable energy investments”

However due to the current economic situation as well as the uncertainties in relation to the application of Law 220 (Green Certificates) banks were not willing to finance wind projects. “*Unclear laws have prevented banks from funding green energy projects and holding up the sector from development.*” (<http://www.petrolplaza.com/news/industry/MiZlbiY5MjAzJiYxJjMwJjE%3D>).

At the time of the investment decision for the Dorobantu Wind Power Park (ordering the turbines from Vestas in April 2010) no other wind park of similar size was operational in Romania. The total installed and operational wind power capacity at that time was 14MW in Romania. See the 2010 Annual Statistics of the European Wind Energy Association (http://www.ewea.org/fileadmin/ewea_documents/documents/statistics/EWEA_Annual_Statistics_2010.pdf) and information of the Global Wind Energy Council (<http://www.gwec.net/index.php?id=176>, accessed on April 14th, 2011).

According to these sources the first wind farm that became operational after the investment decision for Dorobantu was the Fantanele wind farm with a planned capacity of 347.5MW, which started operation in August 2010 and had a capacity of 300MW installed by the end of 2010.

The proposed project activity can therefore be classified as not being prevailing practice in the host country.



Since the proposed project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system"².

Based on section E estimated emission reductions in 2011 will be 53,790 tCO₂e. In the following years (for years after 2012 only if approved by the host country) emission reductions will be 134,474 tCO₂e per year.

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

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Length of the crediting period	Years
Year	10
	Estimate of annual emission reductions in tonnes of CO₂ equivalent
2011	53,790
2012	134,474
2013*	134,474
2014*	134,474
2015*	134,474
2016*	134,474
2017*	134,474
2018*	134,474
2019*	134,474
2020*	134,474
*= subject to the approval by the Romanian Designated Focal Point as well as to the design of any post-Kyoto system	
Total estimated reductions over the <u>crediting period</u> (tonnes of CO₂ equivalent)	1,264,056
Total number of crediting years	10
Annual average of estimated reductions over the crediting period (tonnes of CO₂ equivalent)	126,406
Total estimated reductions until end of 2012 (tonnes of CO₂ equivalent)	188,264

A.5. Project approval by the Parties involved:

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² As described under section B.1. the project activity deviates from the Tool by using an emission factor calculated by the Romanian Energy Regulator ANRE as a JI specific approach.

**SECTION B. Baseline****B.1. Description and justification of the baseline chosen:**

Step 1. Indication and description of the approach chosen regarding baseline setting

CDM Methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” Version 12.1.0 is used in its totality. Only where ACM0002 refers to the “Tool to calculate the emission factor for an electricity system”, the project uses a JI specific approach as the emission factor for the Romanian national grid electricity system is provided by the Romanian Ministry of Environment and Forests, Designated Focal Point for Joint Implementation. The emission factor is fixed ex ante.

ACM0002 Version 12.1.0 also refers to the latest approved versions of the following tools:

- *Tool to calculate the emission factor for an electricity system;*
- *Tool for the demonstration and assessment of additionality; Version 05.2*
- *Combined tool to identify the baseline scenario and demonstrate additionality; N.A.*
- *Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion. N.A.*

Applicability conditions in Version 12.1.0 of ACM0002 related to wind power activities	Characteristics of the project activity	Applicability criterion met?
<i>This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).</i>	The proposed project activity is a new grid-connected wind farm project and no renewable power plant was operated prior to the implementation at the proposed project activity site.	Yes
<i>The methodology is applicable under the following conditions:</i> <ul style="list-style-type: none"> • <i>The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;</i> • <i>In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 11 to calculate the parameter EGPJ,y): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference</i> 	The proposed project activity is the installation of a wind power plant.	Yes



<p><i>period and the implementation of the project activity;</i></p> <ul style="list-style-type: none"> • <i>In case of hydro power plants, one of the following conditions must apply:</i> <ul style="list-style-type: none"> o <i>The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or</i> o <i>The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m²; or</i> o <i>The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m².</i> 		
<p><i>The methodology is not applicable to the following:</i></p> <ul style="list-style-type: none"> • <i>Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;</i> • <i>Biomass fired power plants;</i> • <i>Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m².</i> 	<p>The proposed project activity does not involve switching from fossil fuels to renewable energy. It is neither a biomass fired power plant nor a hydro power plant.</p>	<p>Yes</p>

Therefore, the methodology Version 12.1.0 is applicable to the project activity

Step 2. Application of the approach chosen

Identification of the baseline scenario

Since the proposed project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the official Romanian grid emission factor calculated by the Romanian Energy Regulatory Authority (ANRE), accepted by the Romanian Designated Focal Point for the use in JI projects.

Baseline emissions

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

1



Where:

BE_y	Baseline emissions in year y (tCO_2/yr)
$EG_{PJ,y}$	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the JI project activity in year y (MWh/yr)
$EF_{grid,CM,y}$	The official Romanian grid emission factor calculated by the Romanian Energy Regulatory Authority (ANRE), accepted by the Romanian Designated Focal Point for the use in JI projects

Calculation of $EG_{PJ,y}$

The calculation of $EG_{PJ,y}$ is different for (a) greenfield plants, (b) retrofits and replacements and (c) capacity additions. These cases are described next

The proposed project activity is a greenfield plant therefore (a) applies.

(a) Greenfield renewable energy power plants

If the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$$EG_{PJ,y} = EG_{facility,y} \quad 2$$

Where:

$EG_{PJ,y}$	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the JI project activity in year y (MWh/yr)
$EG_{facility,y}$	Quantity of net electricity generations supplied by the project plant/unit to the grid in year y (MWh/yr)

The following tables provide the key information and data used to establish the baseline:

Data/Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2/MWh
Description	CO_2 grid emission factor provided by the Romanian Energy Regulatory Authority - ANRE through the Romanian Designated Focal Point for Joint Implementation
Time of determination/monitoring	Fixed ex ante
Source of (data to be) used	Romanian Energy Regulatory Authority - ANRE through Romanian Ministry of Environment and Forests, Designated Focal Point for Joint Implementation
Value of data applied (for ex ante calculation/determination)	0.9215
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Romanian Ministry of Environment and Forests, Designated Focal Point for Joint Implementation
QA/QC procedures (to be) applied	----
Any comment	----

Data/Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y. Net electricity generation is the



	difference between produced and consumed electricity.
Time of determination/monitoring	
Source of data (to be) used	Electricity meter in ownership of OMV Petrom Wind Power at the 110kV side of the transformer station. The bi-directional meter has an accuracy class of 0.2s. Values are measured by OMV Petrom Wind Power.
Value of data applied (for ex ante calculation/determination)	For <u>ex ante calculation</u> the value of 58,372 MWh is used for 2011, for the following years the value of 145,930 MWh is applied.
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Continuous measurement and at least monthly recording.
QA/QC procedures (to be) applied	Cross check measurement results with records for sold electricity respectively number of Green Certificates received.
Any comment	-----

Ex ante $EG_{PJ,y}$ is determined as follows:

Capacity development:

June 2011 first turbines operational
31.12.2012 full capacity (54MW) operational

Therefore for 2011 40% of the capacity is assumed for calculations, for the years from 2012 the full capacity is used.

Plant Load Factor:

According to the *Guidelines for the Reporting and Validation of Plant Load Factors Version 01* the plant load factor shall be defined ex-ante in the JI-PDD according to one of the following options:

- (a) *The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval;*
(b) *The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company);*

The plant load factor was determined by applying the wind potential of the site calculated by an external third party using standard software “WindPro 2”. A capacity factor of 0.308493 was determined.

Project emissions

For most renewable power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

3



Where:

PE_y	Project emissions in year y (tCO ₂ e/yr)
$PE_{FF,y}$	Project emissions from fossil fuel consumption in year y (tCO ₂ /yr)
$PE_{GP,y}$	Project emissions from the operation of geothermal power plants due to the release of non-condensables gases in year y (tCO ₂ e/yr)
$PE_{HP,y}$	Project emissions from water reservoirs of hydro power plants in year y (tCO ₂ e/yr)

The proposed project activity does not consume any fossil fuels, is not a geothermal power plant and no hydro. Therefore project emissions will be 0.

Leakage emissions

No leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected.

No leakage emissions are considered in the proposed project activity.

Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad 4$$

Where:

ER_y	Emission reductions in year y (t CO ₂ e/yr)
BE_y	Baseline emissions in year y (t CO ₂ e/yr)
PE	Project emissions in year y (t CO ₂ e/yr)

Estimation of emissions reductions prior to validation

Project participants should prepare as part of the CDM-PDD an estimate of likely emission reductions for the proposed crediting period. This estimate should, in principle, employ the same methodology as selected above. Where the grid emission factor ($EF_{CM,grid,y}$) is determined ex post during monitoring, project participants may use models or other tools to estimate the emission reductions prior to validation

Estimations of emission reductions are presented under section E of this JI-PDD

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:

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ACM0002 Version 12.1.0 is applied

According to Version 12.1.0 of ACM0002, the latest version of the “Tool for the demonstration and assessment of additionality” shall be used to demonstrate the additionality of this project activity.

Version 05.2 of the additionality tool includes the following steps:

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

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

The CDM Validation and Verification Manual (v 01.2) states:

Identification of alternatives:

(i) Requirement to be validated

105. The PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required.

ACM0002 v.12.1.0 (page 4) in relation to the identification of the baseline scenario specifies:

If the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the Tool to calculate the emission factor for an electricity system.

Therefore the only alternatives considered for further discussion are:

Alternative 1: The proposed project activity undertaken without being registered as a JI project activity.

Alternative 2: Continuation of the current situation Electricity delivered to the grid by the project activity would have otherwise been generated by the Romanian national grid.

Alternatives 1 and 2 are realistic and credible alternatives to the proposed project activity.

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

Alternatives 1 and 2 are theoretically technically feasible and comply with Romanian current laws and regulations, which were mentioned under A.4.3 The Electric Power Law no.13/2007 and the Renewable Energy Law, Law no. 220/2008. Furthermore the Romanian National Allocation Plan dated 12/12/2006 http://ec.europa.eu/environment/climat/pdf/nap_romania_final.pdf for the EU Emissions Trading System creates a specific Joint Implementation reserve for indirect reductions generated inter alia from renewable energy projects such as wind power.

Hence, alternatives 1 and 2 are further considered as realistic and credible alternatives.

Step 3: Barrier analysis

Sub-step 3a: Identify barriers that would prevent the implementation of the proposed JI project activity:

Barriers due to prevailing practice, inter alia:

At the time of the investment decision for the Dorobantu Wind Power Park (ordering the turbines from Vestas in April 2010) no other wind park of similar size was operational in Romania. The total installed



and operational wind power capacity at that time was 14MW in Romania. See the 2010 Annual Statistics of the European Wind Energy Association

(http://www.ewea.org/fileadmin/ewea_documents/documents/statistics/EWEA_Annual_Statistics_2010.pdf) and information of the Global Wind Energy Council (<http://www.gwec.net/index.php?id=176>, accessed on April 14th, 2011).

According to these sources the first wind farm that became operational after the investment decision for Dorobantu was the Fantanele wind farm with a planned capacity of 347.5MW, which started operation in August 2010 and had a capacity of 300MW installed by the end of 2010.

The proposed project activity can therefore be classified as not being prevailing practice in the host country.

Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):

While alternative 1 is prevented by the barrier as mentioned above, alternative 2 would not be prevented.

Step 4: Common practice analysis

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

Provide an analysis of any other activities that are operational and that are similar to the proposed project activity.

Similar activities are defined as wind farms with an installed capacity within a range of 32 to 76MW (+/- 40% of the project activity), implemented in Romania.

At the time of the investment decision for the Dorobantu Wind Power Park (ordering the turbines from Vestas in April 2010) no other wind park of similar size was operational in Romania. The total installed and operational wind power capacity at that time was 14MW in Romania.

See the 2010 Annual Statistics of the European Wind Energy Association (http://www.ewea.org/fileadmin/ewea_documents/documents/statistics/EWEA_Annual_Statistics_2010.pdf) and information of the Global Wind Energy Council (<http://www.gwec.net/index.php?id=176>, accessed on April 14th, 2011).

All capacity additions that resulted in a total installed capacity of 462 MW by the end of 2010 became operational only after the investment decision for Dorobantu was made:

Wind farm	Start of operation	operational capacity by end 2010 (MW)
existing capacity	April 2010	14
Fantanele	August 2010	300
Pestera	November 2010	90
Agighiol	December 2010	30
others	December 2010	28
Total		462

The time schedule of these capacity additions is also visible from the official list of green certificates issued for renewable power produced in 2010, provided by the Romanian power grid operator Transelectrica (http://www.transelectrica.ro/PDF/Piata/CertificateVerzi/Emise_lunar_2010.pdf).



The conclusion therefore is that at the time of investment decision for the Dorobantu wind farm no similar activity was operational.

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

Similar options are not widely observed and commonly carried out. Therefore this sub step is not applicable.

Since sub-steps 4a and 4b are satisfied the project activity is additional.

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

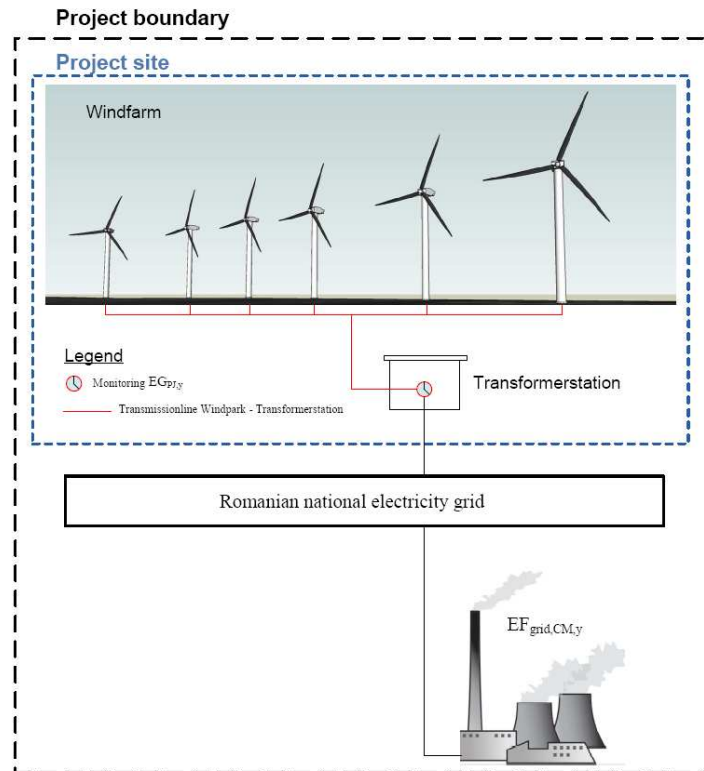
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According to ACM0002 the following greenhouse gases and emission sources must be considered to be included or excluded from the project boundary of the proposed project activity:

	Source	Gas	Included	Justification/Explanation
Baseline	CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission source
		N ₂ O	No	Minor emission source
Project activity	For geothermal power plants fugitive emissions of CH ₄ and CO ₂ from non-condensable gases contained in geothermal steam	CO ₂	No	The project activity is no geothermal power plant
		CH ₄	No	
		N ₂ O	No	
	CO ₂ emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO ₂	No	The project activity is neither a solar thermal nor a geothermal power plant
		CH ₄	No	
		N ₂ O	No	
	For hydro power plants, emissions of CH ₄ from the reservoir	CO ₂	No	The project activity is no hydro power plant
		CH ₄	No	
		N ₂ O	No	

Baseline emissions to be included in the boundary of the proposed project are CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. Since the proposed project activity is neither a geothermal nor a hydro power plant nor does it consume fossil fuels no project emissions occur within the project boundary.

The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the Romanian national electricity grid where project power plant is connected to.



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

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Date of baseline setting 17/08/2011

Energy Changes Projektentwicklung GmbH
Obere Donaustraße 12/28
1020 Vienna
Austria

Clemens Plöchl clemens.ploechl@energy-changes.com
Oliver Percl oliver.percl@energy-changes.com

SECTION C. Duration of the project / crediting period

C.1. Starting date of the project:

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According to the JI guidelines

The starting date of a JI project is the date on which the implementation or construction or real action of the project begins.

The starting date of the project is the signing of the purchase contract for the turbines which was 14/04/2010.



C.2. Expected operational lifetime of the project:

25 years, 0 months.

C.3. Length of the crediting period:

>>

Starting date of the crediting period shall be 01.06.2011.

Length of the crediting period shall be 10 years 0 months. The first 19 months of the crediting period fall under the first Kyoto commitment period. Beyond 2012 any further crediting is subject to the approval by the Designated Focal Point of Romania (or any of its successor institutions) as well as to the design of any post-Kyoto system. The crediting period does not extend the operational lifetime of the project.

**SECTION D. Monitoring plan****D.1. Description of monitoring plan chosen:**

>>

According to Guidelines for Users of the Joint Implementation PDD Form Version 04

Step 1 (Indication and description of the approach chosen regarding monitoring)

“Consolidated baseline methodology for grid-connected electricity generation from renewable sources” Version 12.1.0 is chosen (in its totality).

It’s applicability for the proposed project activity is described under section B.1.

Therefore tables provided in sections D.1.1.1., D.1.1.3., D.1.2.1., D.1.3.1. and D.2., of the Joint Implementation PDD Form Version 04 are not applied

Step 2 Application of the approach chosen

a) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination regarding the PDD;

None of the parameters and data explicitly mentioned in ACM0002 Version 12.1.0 not to be monitored are relevant in the project case. However ACM0002 Version 12.1.0 p. 12/19 further specifies

In addition to the parameters listed in the tables below, the provisions on data and parameters not monitored in the tools referred to in this methodology apply.

Data/Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ /MWh
Description	CO ₂ grid emission factor provided by the Romanian Energy Regulatory Authority - ANRE through the Romanian Designated Focal Point for Joint Implementation
Time of determination/monitoring	Fixed ex ante



Source of (data to be) used	Romanian Energy Regulatory Authority - ANRE through Romanian Ministry of Environment and Forests, Designated Focal Point for Joint Implementation
Value of data applied (for ex ante calculation/determination)	0.9215
Justification of the choice of data or description of measurement methods and procedures (to be) applied	Romanian Ministry of Environment and Forests, Designated Focal Point for Joint Implementation
QA/QC procedures (to be) applied	----
Any comment	----

b) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination regarding the PDD;

Not applicable

c) Data and parameters that are monitored throughout the crediting period.

Data/Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y . Net electricity generation is the difference between produced and consumed electricity.
Time of determination/monitoring	
Source of data (to be) used	The net electricity generation is measured by a bi-directional meter of the accuracy class 0.2s, installed and owned by the project proponent on the 110kV side of the substation where the electricity generated by the project is fed into the grid.
Value of data applied (for ex ante calculation/determination)	For <u>ex ante calculation</u> the value of 58,372 MWh is used for 2011, for the following years the value of 145,930 MWh is applied.



Justification of the choice of data or description of measurement methods and procedures (to be) applied	Continuous measurement and at least monthly recording.
QA/QC procedures (to be) applied	The recorded data from the meter will be cross checked for consistency with electricity invoices, sales reports or the amount of Green certificates issued by Transelectrica. The meter has been initially calibrated according to the Romanian regulations and recalibrations will be made annually.
Any comment	---

All data collected as part of the monitoring are archived electronically and kept at least for 2 years after the end of the last crediting period. 100% of the data are monitored as indicated in the table below.

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

D.1.1.1 is not applicable since CDM Methodology ACM0002 Version 12.1.0 is followed in its entirety.

D.1.1.2. Description of formulae used to estimate project emissions (for each gas, source etc.; emissions in units of CO₂ equivalent):

>>



D1.1.2. is not applicable since the proposed project activity does not emit any greenhouse gases

D.1.1.3. Relevant data necessary for determining the <u>baseline</u> of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived:								
ID number <i>(Please use numbers to ease cross-referencing to D.2.)</i>	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

D.1.1.3 is not applicable since CDM Methodology ACM0002 Version 12.1.0 is followed in its entirety.

D.1.1.4. Description of formulae used to estimate <u>baseline</u> emissions (for each gas, source etc.; emissions in units of CO₂ equivalent):
--

>>

According to ACM0002 Version 12.1.0

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad 1$$

Where:

BE_y Baseline emissions in year y (tCO₂/yr)

$EG_{PJ,y}$ Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the JI project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ The official Romanian grid emission factor calculated by the Romanian Energy Regulatory Authority (ANRE), accepted by the Romanian Designated Focal Point for the use in JI projects

Calculation of $EG_{PJ,y}$



The calculation of $EG_{PJ,y}$ is different for (a) greenfield plants, (b) retrofits and replacements and (c) capacity additions. These cases are described next

The proposed project activity is a greenfield plant there (a) applies.

(a) Greenfield renewable energy power plants

If the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$$EG_{PJ,y} = EG_{facility,y} \quad 2$$

Where:

$EG_{PJ,y}$ Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the JI project activity in year y (MWh/yr)

$EG_{facility,y}$ Quantity of net electricity generations supplied by the project plant/unit to the grid in year y (MWh/yr)

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

D.1.2.1. is not applicable since CDM Methodology ACM0002 Version 12.1.0 is followed in its entirety

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 CO₂ equivalent):

>>



Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad 4$$

Where:

- ER_y Emission reductions in year y (t CO₂e/yr)
- BE_y Baseline emissions in year y (t CO₂e/yr)
- PE Project emissions in year y (t CO₂e/yr)

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

D.1.3.1. is not applicable since CDM Methodology ACM0002 Version 12.1.0 is followed in its entirety

D.1.3.2. Description of formulae used to estimate leakage (for each gas, source etc.; emissions in units of CO₂ equivalent):

>>

D.1.3.2. is not applicable since the proposed project activity does not result in any leakage emissions



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 CO₂ equivalent):

>>

According to ACM0002 Version 12.1.0

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad 1$$

Where:

BE_y Baseline emissions in year y (tCO₂/yr)

$EG_{PJ,y}$ Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the JI project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ The official Romanian grid emission factor calculated by the Romanian Energy Regulatory Authority (ANRE), accepted by the Romanian Designated Focal Point for the use in JI projects

Calculation of $EG_{PJ,y}$

The calculation of $EG_{PJ,y}$ is different for (a) greenfield plants, (b) retrofits and replacements and (c) capacity additions. These cases are described next

The proposed project activity is a greenfield plant there (a) applies.

(a) Greenfield renewable energy power plants

If the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$$EG_{PJ,y} = EG_{facility,y} \quad 2$$

Where:

$EG_{PJ,y}$ Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the JI project activity in year y (MWh/yr)



$EG_{facility,y}$ Quantity of net electricity generations supplied by the project plant/unit to the grid in year y (MWh/yr)

Project emissions = 0
Leakage emissions = 0

Emission reductions
 Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad 4$$

Where:

ER_y Emission reductions in year y (t CO₂e/yr)
 BE_y Baseline emissions in year y (t CO₂e/yr)
 PE Project emissions in year y (t CO₂e/yr)

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 Approval issued by the Constanta Environmental Protection Agency for the proposed project activity contains a list of issues which have to be observed during the construction phase. Quarterly reports covering these activities will be sent to the Romanian Ministry of Environment and Forests.

The Romanian National procedures for JI Track 1 projects require that the local Environmental Protection Agency (EPA) *shall verify once per semester the permanent monitoring performed by the project participants in accordance with the PDD of the project, as well as the accuracy of the registered data under the permanent monitoring.* The manager of the Dorobantu Wind Power Park is responsible for the coordination of these regular verifications.

D.2. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored:		
Data <i>(Indicate table and ID number)</i>	Uncertainty level of data (high/medium/low)	Explain QA/QC procedures planned for these data, or why such procedures are not necessary.



D.2. is not applicable since CDM Methodology ACM0002 Version 12.1.0 is followed in its entirety

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

>>

The aim of the monitoring plan is to make sure that the net electricity generation delivered to the grid is monitored completely, consistently, reliably and precisely. The details are summarized as follows:

1. Monitoring subject

The data monitored is the net electricity generation delivered to the grid by the project.

The overall responsibility for the monitoring lies with the manager of the Wind Power Plant Dorobantu. The individual monitoring tasks are assigned to members of the local operation team in the monitoring manual, which is part of the site operations procedures.

2. Monitoring apparatus and installation

Monitoring is based on the measurements of the net generated electricity which is done by means of a meter installed and owned by the project proponent on the 110kV side of the substation where the electricity generated by the project is fed into the grid.

The meter of the type ION 8800 (accuracy class 0.2s) is a bidirectional meter, thus both the electricity delivered to the grid and the electricity consumed is measured. The meter was initially calibrated and will be recalibrated annually.

3. Data monitoring

The quantity of net electricity delivered to the grid by the project will be monitored.

The meter is connected to a client computer in the transformer station control room, where all the data is locally stored. After the end of each month (cut off is 24h on the last day of each month) a report will be saved by a member of the local operation team. The amount of electricity generated in the recorded period will be entered into the Monitoring Work Book (excel file).

4. Quality control

The recorded data from the meter will be cross checked for consistency with electricity invoices, sales reports or the amount of Green certificates issued by Transelectrica, as soon as these documents are available.

The meter has been initially calibrated according to the Romanian regulations and recalibrations will be made annually. Regular calibrations will be mentioned in the Monitoring Work Book.

5. Data management

The monthly metering reports will be archived in electronic format on a CD-ROM and on paper copy by a member of the local operation team.



All data is kept until 2 years after the end of the total crediting period of the JI project.
The site manager at Wind Power Plant Dorobantu is responsible for the storage of data.

6. Emergency treatment

In case the meter specified under paragraph 2 breaks down, the information for the month in which no or only incomplete data is available will be taken from the sources used for cross checking (electricity invoices, sales reports or the amount of Green certificates issued by Transelectrica), which are based on independent measurement by a separate meter owned by the grid operator.

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

>>

Date of establishing the monitoring plan 17/08/2011

Energy Changes Projektentwicklung GmbH
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Clemens Plöchl clemens.ploechl@energy-changes.com
Oliver Percl oliver.percl@energy-changes.com

**SECTION E. Estimation of greenhouse gas emission reductions****E.1. Estimated project emissions:**

>>

According to ACM0002 Version 12.1.0

For most renewable power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

 PE_y Project emissions in year y (tCO₂e/yr) $PE_{FF,y}$ Project emissions from fossil fuel consumption in year y (tCO₂/yr) $PE_{GP,y}$ Project emissions from the operation of geothermal power plants due to the release of non-condensables gases in year y (tCO₂e/yr) $PE_{HP,y}$ Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/yr)

The proposed project activity does not consume any fossil fuels, is not a geothermal power plant and no hydro. Therefore project emissions will be 0 for any year.

E.2. Estimated leakage:

>>

Leakage emissions

No leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport). These emissions sources are neglected.

No leakage emissions are considered in the proposed project activity. Leakage emissions will be 0 for any year.

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

>>

Sum of E.1. and E.2. equals 0.**E.4. Estimated baseline emissions:**

>>

Applying formula 1 $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ using the following values for data/parameter

$EG_{PJ,y}$ 2011	58,372 MWh
$EG_{PJ,y}$ 2012 and following years	145,930 MWh
$EF_{grid,CM,y}$	0.9215 tCO ₂ e/MWh

gives the following results:

BE_{2011}	53,790 tCO ₂
-------------	-------------------------

BE_{2012 and following}134,474 tCO₂**E.5. Difference between E.4. and E.3. representing the emission reductions of the project:**

>>

ER₂₀₁₁53,790 tCO₂ER_{2012 and following}134,474 tCO₂**E.6. Table providing values obtained when applying formulae above:**

>>

Year	Estimated project emissions (tonnes of CO ₂ equivalent)	Estimated leakage (tonnes of CO ₂ equivalent)	Estimated baseline emissions (tonnes of CO ₂ equivalent)	Estimated emission reductions (tonnes of CO ₂ equivalent)
2011	0	0	53,790	53,790
2012	0	0	134,474	134,474
2013	0	0	134,474	134,474
2014	0	0	134,474	134,474
2015	0	0	134,474	134,474
2016	0	0	134,474	134,474
2017	0	0	134,474	134,474
2018	0	0	134,474	134,474
2019	0	0	134,474	134,474
2020	0	0	134,474	134,474
Total (tonnes of CO ₂ equivalent)			1,264,056	1,264,056

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:**

>>

Romania requires the assessment of environmental impacts of wind power plants. The Environmental Impact Assessment is finalized. The Environmental Agreement no 27 for the Dorobantu Wind Park was issued by Constanta Regional Environmental Protection Agency on October 9th, 2008 and revised on November 18th, 2009.

The next section summarizes the most important findings of the Environmental Agreement.

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 operation of the proposed project activity will have no major impacts on any aspect of the environment, only minor impacts are expected during construction. The environmental permit for the proposed project activity covers these aspects and lists conditions to be followed.

The agreement mentioned in F.1. was issued under the following special conditions:

- the construction materials shall not be stored on the site neighbouring areas;



- the waste resulted from the constructions shall be stored in areas especially designed and taken regularly and transported to such places as indicated by the Nicolae Balcescu Village Hall and/or Tortoman Village Hall;
- the site shall be secured, signalled and enclosed;
- the vehicles and the machinery shall be cleaned upon their exit from the site onto the public roads; stay within the speed limits established for the vehicles within the premises;
- ecologic toilets shall be made available throughout the entire duration of the construction-assembly works;
- the provisions of the Government Decision no. 321/2005 on the assessment and management of the ambient noise;
- continuing the Environment Impact Study throughout the execution of the construction-assembly works and at least one year after the commissioning of the wind power park in order to measure the impact on the flora, habitats and avifauna; submitting the conclusions to APM Constanta;
- mounting state-of-the-art video systems to monitor the wind power plants permanently and simultaneously with an option to record their activity on magnetic support;
- arrangement and maintenance of edges formed of bushes no higher than 1 m on each side of the service roads that lead to each turbines;
- the proper management of the fertile soil resulted from the foundations execution; the excess quantities will be transported in such places as indicated by the Nicolae Balcescu Village Hall.

The environmental permit is issued on the following conditions:

- *All the permits issued by the other public authorities as per the relevant laws shall be obtained as the case may be;*
- *A programme shall be implemented to monitor the environment factors during the construction of the facility, and the Report on the monitoring results will be thereafter remitted quarterly to APM Constanta; the following information shall be provided:*
 - *Report on the generated waste management (types of waste encoded as per the Government Decision no. 856/2002, quantities, final destination);*
 - *Report on the generated wastewater management (the way these are collected, quantities, final destination);*
 - *Test report on the settling powders, one sample-taking per day during the reported quarter;*
 - *Noise test report regarding the noise level measurements performed within the residential area limits – quarterly;*
 - *Monitoring report regarding the flora, avifauna, habitats in the neighbouring area of the facility;*
- *The beneficiary shall notify APM Constanta on the progress of the execution works with a purpose to check whether the conditions provided hereby are fulfilled and to prepare the certificate of findings upon the works completion (pursuant to the MAPM Order no. 860/2002 as further amended and extended).*

No transboundary impacts from the project activity were identified.

SECTION G. Stakeholders' comments

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

>>

The EIA Report including Non Technical Summary was disclosed to the public, as hard copy, at the Constanta EPA headquarter. The competent environmental authority was available for receiving written



comments from public in the period September 11- October 9 2008. The public meeting took place on September 11th 2008 and was announced on Dorobantu City Hall and Nicolae Balcescu City Hall notice board, in “Independentul” local newspaper and to NGO Mare Nostrum.

The stakeholders who attended the public hearing were: Dorobantu City Hall and Nicolae Balcescu City Hall, citizens of Dorobantu and Nicolae Balcescu, Constanta EPA, Dobrogea seaside Water Directorate, Romanian Civil Aeronautical Authority, The Public Health Authority Constanta, EPA Constanta, Constanta City Hall, Inspectorate for Emergency Situations of Constanta County, Hidrotermic Impex SRL – the author of the EIA Report and Monsson Alma as Developer.

No objections/comments were raised during the public hearing.

Additionally to these public hearings the PDD will be published according to the Romanian National JI Guidelines for Track 1 projects on the website of the Romanian Ministry of Environment and Forests and at an international level (by the Independent Entity), for a period of 30 days with the possibility for stakeholder to submit comments.

Annex 1**CONTACT INFORMATION ON PROJECT PARTICIPANTS**

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Annex 2

BASELINE INFORMATION

The grid emission factor for the Romanian electricity grid was calculated by the Romanian Energy Market Authority ANRE and accepted by the Ministry of the Environment and Forests (DFP for JI).

The plant load factor used to estimate the baseline emissions is based on the assessment of an independent consultant.



Annex 3

MONITORING PLAN

All information has been provided in section D.3.
