

VALIDATION REPORT

GAMESA ENERGIA, S.A

VALIDATION OF THE PROJECT ACTIVITY BII NEE STIPA WIND FARM PROJECT (MEXICO)

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Client: GAMESA ENERGIA, S.A. Pl. Pablo Ruiz Picasso, 1. Torre Picasso – 28020 Madrid	

Summary:

The Spanish Association for Standardisation and Certification (AENOR) has carried out the validation of the Wind Farm project “Bii Nee Stipa” located in La Ventosa area near the municipality of Juchitán de Zaragoza in the Isthmus of Tehuantepec, state of Oaxaca, México, on the basis of UNFCCC criteria for the CDM, as well as relevant decisions of the EB. The objectives of the validation are to confirm that the project follows the above criteria and the approved methodology and that the PDD presented by GAMESA ENERGIA, S.A will lead to a realistic determination of the emissions reductions of the project activity. The scope of the validation covers the baseline methodology and a study of the monitoring methodology and plan proposed for the collection and archived of the data necessary for determining the baseline.

The validation, carried out by AENOR, involved a desk study of the PDD and the approved methodology, followed by a visit to Mexico city and La Ventosa area in Mexico, where not only key CISA, SENER, CRE, SEMARNAT and CFE personnel involved in the project, but also landowners and municipality authorities, were interviewed. Conformance with local legal and environmental regulations was also confirmed.

Clarifications and corrective actions on a number of issues were requested by AENOR according to desk review and on-site visit conclusions; these were amended satisfactorily by GAMESA ENERGIA and resulted in a new version of the original PDD.

In the opinion of AENOR the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria, therefore the project shall be recommended for registration with the UNFCCC.

Report No.: 2005/0001/CDM/01		
Report title: BII NEE STIPA WIND FARM VALIDATION OF CDM PROJECT FOR GHG EMISSION REDUCTION BY WIND ENERGY GENERATION		
Members of the validation equipment Antonio Carretero Peña Miguel Carrasco García Javier Vallejo Drehs		
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Indexing terms

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Abbreviations

ACM0002	Approved consolidated baseline and monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources
CAR	Corrective Action Requested
CCGT	Combined Cycle Gas turbine
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CFE	Comisión Federal de Electricidad (Federal Electricity Commission)
CISA	Cableados Industriales S.A. de C.V. (Partner of GAMESA ENERGIA in Mexico)
CL	Clarification
CRE	Comisión Reguladora de Energía (Energy Regulation Commission)
DECISION 17/CP.7	Modalities and Procedures for a Clean Development Mechanism as Defined in Article 12 of the Kyoto Protocol
EB	Executive Board of the CDM of the Kyoto Protocol
EIA	Environmental Impact Assessment
FEPRO	Federación Estatal de Propietarios Rurales de Oaxaca (Rural Land Owners of Oaxaca State Federation)
GHG	Greenhouse Gases
GWh _e	Electrical Giga Watt hour
GWh _t	Thermal Giga Watt hour
IIEE	Instituto de Investigaciones Eléctricas (Electrical Research Institute)
IRR	Internal Return Rate
LSPEE	Ley del Servicio Público de Energía Eléctrica (Public Electric Services Act)
MP	Monitoring Plan
MWh	Mega Watt hour
PDD	Project Design Document
SEMARNAT	Secretaría de Medio Ambiente y Recursos Naturales (Environment and Natural Resources Ministry)
SENER	Secretaría de Energía (Ministry of Energy in Mexico)
tC	Carbon tonnes
tCO ₂	Carbon dioxide equivalent tonnes
TJ	Tera Joules
UERI	Unión de Energías Renovables del Istmo (Isthmus Renewable Energies Union)
UNFCCC	United Nations Framework Convention on Climate Change

Conversion Factors and Definitions

Emissions = Carbon Content x 44tCO₂/12tC x Fuel Consumption

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1 INTRODUCTION

This validation concerns a project implemented by GAMESA in Mexico to reduce emissions of CO₂ by generating renewable energy coming from wind resources. The objectives of the validation exercise are to confirm that the project meets the necessary CDM criteria, that the project follows the approved methodology (ACM0002) and that the proposals presented by GAMESA ENERGIA in the PDD will lead to a realistic determination of the emissions reductions.

The scope of the validation covers the baseline methodology involving a review of historical data of Mexico's national electrical grid (required to assess the Emission factor of the grid), and a study of the monitoring methodology and plan proposed for the collection and record of all data necessary for determining the baseline.

The project involves the installation of a 200 MW wind farm plant near the municipality of Juchitán de Zaragoza in la Ventosa area, state of Oaxaca, in the south of Mexico. This plant will generate electric energy that would otherwise continue to be generated with fossil fuels.

The validation team consists of the following members:

Mr. Antonio Carretero Peña	AENOR Madrid	Team leader, CDM Chief validator
Mr. Javier Vallejo Drehs	AENOR Madrid	CDM Expert
Mr. Miguel Carrasco García	AENOR Madrid	Renewable technology expert

1.1 Objective

GAMESA ENERGIA has commissioned AENOR to validate Bii Nee Stipa wind farm project. The validation serves as design verification and is a requirement of all Client projects. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and it is considered as necessary to provide assurance of the quality of the project and its intended generation of certified emission reductions (CERs) to stakeholders.

UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities as agreed in the Bonn Agreement and the Marrakech Accords.

1.2 Scope

The scope of the validation is to assess all aspects of GHG reduction involved in the project, including the project design, the baseline, the determination of the Emission factor of the grid and the procedures proposed for monitoring the emission reductions in the future.

The following documents were reviewed as part of the scope of the activity:

- PDD, including baseline study and monitoring plan.
- Approved Methodology (ACM0002)
- Decision 17/CP.7 and relevant decisions from the EB
- Two Environmental Impact Assessments of the project.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. AENOR, based on the Specific Code for the Processing and Conducting of Validation, Registration, Verification and Certification of Kyoto Protocol CDM Project Activities (IE/DCS/66.00), has used a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consultancy services to the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the PDD.

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CISA has undertaken two EIAs corresponding to each expansion of the plant power, according to official requirements of the General Law of Ecological Balance and Environmental Protection and his Regulation for Environmental Impact assessment. In agreement with this regulation it is not necessary to carry out a public consulting process, nevertheless CISA has developed several initiatives to know the opinion and comments of local stakeholders about the project. These initiatives are described in section G of the PDD and include periodical meetings with land owners and local authorities, who were interviewed by the validating team during the on site visit to the future plant location in El Espinal, near Juchitan de Zaragoza, Oaxaca, Mexico.

1.3 GHG Project Description

The purpose of this project activity is to generate renewable energy coming from wind resources, in order to sell it to Mexican partners willing to consume this sort of energy. With this aim, the project activity will reduce greenhouse gas (GHG) emission by avoiding electricity generation otherwise produced at fossil-fuel fired power plants, and thus CO₂ emissions associated to it. Total power to be installed will be 200 MW in different phases.

The wind resources available at the location of the project activity are optimal for the implementation of this kind of renewable project, due to the excellent wind resources existing (both speed and quality) in this area, as well as the possibilities of energy evacuation through existing High Voltage lines. Wind data is available at *Instituto de Investigaciones Eléctricas* (IIEE), CFE and yet confirmed by two 40m high measurement towers installed in December 2001 at the future Wind Farm location. A third 65m tower has been recently installed in order to evaluate with more accuracy the wind resources in the whole area. At present stage, the wind farm is under final stage of development. Both construction and operation of the wind farm will be performed by GAMESA using in house technology and procedures. Gamesa Energía signed a strategic alliance with CISA (Cableados Industriales SA) to co-develop wind farms in Mexico since February 2001. CISA is a 100% Mexican company specialized in the design, construction, operation and maintenance of electrical systems.

In addition to the reduction in GHG emission reductions that the project activity would carry in case of being registered, other environmental and social benefits have been detected:

- Use of autochthonous energy resources (wind energy) which will improve local grid performance, this is, decreasing the occurrences of voltage drops and local blackouts
- Job creation, specially during the construction period of the wind farm, but also for the maintenance and operation works through out the life time of the wind farm
- Additional income to landowners derived from land leasing without impacting in the incomes they perceive because of their regular activities
- Foreign capital attraction, which would yield in higher incomes related to taxes
- Decrease of fossil-fuel sources dependence
- Local environmental studies performed

The spatial extent of the boundary includes the site where the power plant will be erected and all power plants physically connected to the Mexican National Grid, where the project activity will also be connected. It will be considered only power plants with no energy transportation constraints related to transmission lines. Electricity imports and exports from the Mexican National grid will be also taken into account.

The Project is a 200 MW wind power project, expected to produce 730 GWh per year, with a capacity factor of 42%. The minimum expected operational lifetime is 20 years.

- Total Power 200 MW
- Turbine G61-G52
- Rated Power per turbine 1320 kW-850 kW
- Rated output Voltage 690V
- No. of turbines 150-234
- Equivalent annual operating hours 3650
- Annual Production 730 GWh

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- Capacity factor 42%
- Transmission line length 6 km
- Transmission line Voltage 115 kV
- Wind Farm output transformer 20kV/115kV

2 METHODOLOGY

The validation of the project was started in February 2005 and concluded in September 2005. The validation was performed in the manner of an audit, where a desk review of the PDD was first undertaken against the Approved Methodology and CDM and other relevant criteria. The desk review was followed by a site visit to CISA and other key stakeholders in Mexico. Some information was also obtained from selected experts in the field.

In order to ensure transparency, a validation protocol was customised for the project, according to Specific Code IE/DCS/66.01. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, provides details and clarifies the requirements a CDM project is expected to meet;
- it ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

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

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Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request , these should be listed in this section.	Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1 Validation protocol tables

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2.1 Review of Documents

The Project Design Document submitted by the Client was reviewed against the approved methodology and against CDM and other relevant criteria. Additional background documents related to the project design and baseline were also made available during the on-site visit in Mexico. These documents were also reviewed.

The PDD underwent two revisions. To address the corrective actions and clarification requests that arose from AENOR desk review and on-site visit, GAMESA revised the project design documents submitted in February 2005 and developed a new version in August 2005. This version did not contain all corrective actions; therefore the validation team asked GAMESA to develop a new one. A final version of the PDD was developed in September 2005, addressing all corrective actions and AENOR's requests.

The final validation findings presented in this report related to the project as described in the project design documents of September 2005.

2.2 Follow-up Interviews

In the period of 2005-02-28 to 2005-09-21, AENOR conducted interviews with project developers in Spain to confirm selected information and to resolve issues identified in the document review. Representatives of GAMESA ENERGIA and CISA, SENER, CRE, SEMARNAT and CFE personnel involved in the project, but also landowners and municipality authorities, were interviewed during the on-site visit on 2005-06-11 to 2005-06-15. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation Person/Position	Interview topics
SEMARNAT - Lic. Lucrecia Martín Chavez: Subdirector for Climate Change Projects	➤ Mexican DNA and project's sustainable development contribution ➤ EIA Approval
CRE - Dr. Alejandro Peraza García: General Director - Ing. Francisco Granados Rojas: Electrical Permits Director	➤ Requirements for wind farms arising from electrical regulatory framework in Mexico: - Public Electric Services Act - Public Electric Services Ruling Act - Public Electric Services Ruling Act on Contributions. - Energy Regulation Commission Act ➤ Characteristics of the Mexico electricity market: prices, tariff, growth, taxes,...
CFE - Ing. Juan Jacobo Miranda T.: Deputy Manager for Projects Evaluation	➤ Interconnection contract ➤ CFE review and decision about the project feasibility ➤ Electrical sector data in Mexico ➤ Generation data of Plants that supply electricity to the grid ➤ Foreseen growth of electrical generation in Mexico

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Interviewed organisation Person/Position	Interview topics
SENER <ul style="list-style-type: none"> - Eduardo Espinosa Bustamante : Energy Policy Integration Subdirector - Dr. Jorge Wolpert Kuri : Rural Electrification Capacity Development Project by using Renewable Energies - Ubaldo Inclán: Renewable Energies - Julio A. Valle Pereña: Investment and promotion General Direction 	<ul style="list-style-type: none"> ➤ National Energy Balance: Electrical generation in Julies unit. ➤ Electrical Sector Forecast: Data of the electrical system in Mexico ➤ Common practice barriers in Mexico
LAND OWNERS <ul style="list-style-type: none"> - Porfirio Montero Fuentes: President of FEPRO and UERI - Prof. Tito Castillejo Ordoñez: Deputy President of UERI - Ing Emilio Velázquez García: Projects study - Prof. Virgilio Fuentes Toledo: Land property documents regularisation - Ing. Tamos Pineda: Land owner 	<ul style="list-style-type: none"> ➤ Stakeholders Public Information Process ➤ Land owners opinion about wind farm projects ➤ Land owners contracts ➤ Problems with ancient documents of title ➤ Land owners current socioeconomic situation
MUNICIPAL AUTHORITIES <ul style="list-style-type: none"> - Prof. Dña. Marcela Escobar: Councilwoman - Ing. Edgardo Martínez Villalba: Planning Director - Carlos Escobar Pulido: Municipal Secretary 	<ul style="list-style-type: none"> ➤ Opinion about the project ➤ Citizen information about the project ➤ Knowledge of the EIA ➤ Project expectations
CISA <ul style="list-style-type: none"> - Ing. Javier Padilla: Regional Manager - Lic. José Leon Velasco: projects coordinator 	<ul style="list-style-type: none"> ➤ Plant design details ➤ Changes in the project design ➤ EIA ➤ Baseline development ➤ Monitoring plan ➤ Environmental legal requirements ➤ Compliance with law applicable to electrical generation ➤ On site visit to new plant location ➤ Regulation issues of Mexican national grid
GAMESA <ul style="list-style-type: none"> - Eduardo García Molina: Business Development in Latin America - Javier López Huerta: Energy Management 	<ul style="list-style-type: none"> ➤ PDD development and Additionality justification

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this validation phase was to resolve the requests for corrective actions and clarifications and any other outstanding issues that needed to be clarified for AENOR's positive conclusion on the project design. The eleven Corrective Action Requests and six Clarification Requests raised by AENOR were resolved during communications between GAMESA and project participants with AENOR. To guarantee the transparency of the validation process, the concerns raised and responses given are summarised in chapter 3 below and documented in more detail in the validation protocol in Appendix A.

Since modifications to the Project design were necessary to resolve AENOR's concerns, the Client decided to revise the documentation and finally resubmitted the project design documentation on 2005-

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09-28. After reviewing the revised and resubmitted project documentation, AENOR issued this final validation report and opinion.

3 VALIDATION FINDINGS

The main findings of the validation are stated in the following sections. The validation findings for each validation subject are presented as follows:

- 1) The findings from the desk review of the original project design documents and the findings from interviews during the on-site visit are summarised. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
- 2) Where AENOR had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in eleven Corrective Action Requests and six Clarification Requests.
- 3) Where Clarification or Corrective Action Requests have been issued, the exchanges between project participants and AENOR to resolve these Clarification or Corrective Action Requests are summarised.
- 4) The conclusions for validation subject are presented.

The final validation findings related to the project design as documented and described in the revised and resubmitted project design documentation.

3.1 Project Design and additionality

The technology used in the Bii Nee Stipa wind farm project is unique for the state of the art in Mexico and is absolutely not the common practice there. Moreover, Bii Nee Stipa will be the first wind farm in Mexico and this kind of renewable energy source is not similar to any other technology due to its technical characteristics. Electricity generation is based on the wind turbines either G61 from MADE manufacturer or G52 (or G-52RCC) from Gamesa Eólica. Both MADE and Gamesa Eólica are companies from Gamesa Group. The wind turbine size is 1,320 kW for the G61 turbine and 850 kW for the G-52 turbine (also G-52RCC, rated 800kW, which is the same wind turbine but under US standards). Both are three-bladed rotor machine, asynchronous four-pole generators. Rated voltage of generator is 690V in both turbines, with 690V/20kV transformers each. These two turbines provide proven technology (over 2,000 wind turbines installed worldwide of each model), assuring optimal performance, maximum output from existing wind resource, robustness and reliability. The average availability of these wind turbines is proven to be over 95%

The project's contribution to sustainable development is not only related to electric generation from wind and the subsequent reduction of pollutant emissions, but also to the social benefits that will introduce in the area of El Espinal municipality. On the one hand, nowadays the different towns of the area are suffering from occurrences of voltage drops and local blackouts, according to information provided by the local authorities interviewed. With the use of the autochthonous energy provided by the wind farm, these inconveniences could be resolved and the whole local grid would be improved. On the other hand, the additional incomes that the land owners will receive for land leasing will surely improve their live conditions. Currently, extensive cattle is the only activity land owners can develop, but the high wind speeds prevent the farmers from improving this kind of business. Moreover, during the interview with the local authorities it was stated that they are expecting capital gains tax for the foreign capital attraction that this kind of projects generate.

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Project proponents have use the tool for demonstration and assessment of Additionality to analyse the Additionality of the projects. They have fulfilled all the steps required in the mentioned tool in the correct way, excepting steps 2c and 2d that are partially considered, due to step 2 is optional if step 3 is fully considered as it is the case. From the investment analysis it arises that the IRR is undoubtedly more positive for fossil fuel plants, due to its lower investment requirements and higher energy production, which means that there are necessary extra incomes from CERs revenues to increase the IRR and make it attractive for future investors. Nevertheless this step is only complementary to the decisive conclusions of step 3: there are no wind-farm plants built in Mexico (only a very little experience from CFE that can not be considered similar to the proposed project), although the wind conditions are exceptionally for this type of renewable energies. Only after the establishment of the CDM infrastructure and the first registrations, electrical utilities have been able to overcome the financial and common practice barriers that are described in the PDD. During the on site visit to Mexico and after the interviews with CFE, CRE and SENER, the validation team obtained the evidences that demonstrate statements made in the PDD: Mexican law does not provide either premiums or grants for renewable energies; Electrical sector in Mexico is considered an strategic public sector controlled by CFE, therefore independent private generators have to comply with quite restricted legal requirements; There is foreseen only a 1.6% of wind energy in 2013 according to data reflected in the document “Electrical sector forecast”.

On the other hand it is necessary to take into account the role of CFE in the development of the installed capacity in Mexico. All new electrical plants construction and operation are put out to tenders by CFE, so they decided which type of energy is more suitable for Mexico, considering strategic issues and public interest. Until now the most enhanced type of technology is the CCGT as it arises from interviews and the documents “Electrical sector Forecast” and “Energy National Balance”.

3.2 Baseline

The PDD describes the baseline methodology, which is in conformance with the approved baseline methodology ACM0002 for grid-connected electricity generation from renewable sources. The key conclusions about the correct application are summarised below.

There is sufficient publicly available information to document in a transparent and conservative manner the applicability of the methodology and the data used to calculate the baseline emissions. The sources of information are SENER, CRE and CFE. The PDD stated that the Kingdom of Spain participates voluntarily as a country included in Annex I of the UNFCCC and the needed letter from the DNA is already issued.

Bii Nee Stipa wind farm will supply electricity to Mexico’s national grid. The system boundaries are the Mexico national grid describe in “Electrical Sector Forecast” as there are no energy transmission constraints. Source of data of the grid is SENER. GAMESA ENERGIA and CISA will found a self-consumption entity in which the company to consume the energy generated by the wind farm has to be a shareholder, complying so with requirements about self-consumption stated in Article 36 and 36bis of LSPEE and articles 101 and 102 of the Public Electric Services Ruling Act. The permit from the CRE to build the wind farm has not yet been issued, but there is a favourable report from the CFE to the CRE about the feasibility of grid connections. According to the Energy Regulation Commission Act the CRE is the competent authority to issue these permits.

According to baseline requirements of ACM0002, the emissions coefficient used to estimate the baseline is calculated as the average of the operating margin and the build margin, so a 50:50 weighting of the build and operating margin is used to determine the baseline. To determine the operating margin the simple OM method has been selected instead of the Dispatch Data Analysis OM method, since hourly data to calculate the hourly generation-weighted average emissions for electricity unit are not available in Mexico from the CFE or other actors of the electrical sector. Data to estimate the baseline are those provided annually by the SENER in the “Electrical Sector Forecast”, where relevant data from the

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electrical sector come out from CFE statistics. Assumptions and calculus made up in the PDD are in accordance with ACM0002 requirements for baseline calculations. Moreover, projects proponents have estimated changes of the Baseline Emission Factor along the time until the end of the project activity, which is more accurate.

3.3 Monitoring Plan

The project applies the methodology for “zero-emissions grid-connected electricity generation from renewable sources” (ACM0002). This monitoring methodology can be used for electricity capacity additions from wind sources that do not involve switching from fossil fuels and where the system boundary can be clearly identified and information of the characteristics of the grid are available.

The project meets these conditions required for using it, specifically:

The grid, which the project activity is connected to, is clearly identifiable and there is no fuel switching at the site of the project activity. The Bii Nee Stipa project is connected to Mexico’s national electricity grid via a 6 Km long line.

In accordance with ACM0002 requirements the MP provided information about frequency, responsibility and authority for controlling, correct deviations and reporting during the crediting period of the following:

- Electricity generation from the wind farm,
- Data needed to recalculate the operating margin emission factor,
- Data needed to recalculate the build margin emission factor,
- Annual determination of the combined margin,
- Correction of emission factors due to import/export of electricity,

Sustainability development indicators are defined and the MP provides for the monitoring of these indicators:

- Number of blackouts per year,
- Number of employees created
- Total tax paid to municipality

All variables used to calculate project and baseline emissions are directly measured or use publicly – available official data. To ensure the quality of the data, in particular those that are measured, the data are double-checked against commercial data.

The management system necessary for consistent project operations, monitoring and reporting will be included in the “Manual for the project Manager”. Within this manual, all internal audits and conflict resolutions will be considered. Maintenance Program and activities are also foreseen and described in the EIAs as part of the information necessary to obtain the SEMARNAT approval of the EIAs.

3.4 Calculation of GHG Emissions

The methodologies for calculating emission reductions are transparently documented and comply with existing good practice. The calculation methods applied to the determination of emission reduction are explained in detail in the PDD and they follow the procedures laid down in the approved methodology. The project consists of a wind farm with an installed capacity of 200 MW that is foreseen to generate an average of 730,000 MWh of electricity per year. In the absence of the project, the same level of demand for electricity would be met by fossil fuel thermal power generation with associated GHG emission of an estimated 0.5189 tCO₂/MWh in 2007 and 0.4594 tCO₂/MWh in 2016. The average annual emission reductions to be achieved by the project are 94,699 tCO₂/year in 2007 and 335,377 tCO₂/year in 2016.

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The system boundaries are the national grid of Mexico taking electricity imports into account, which is considered appropriate since information on the characteristics of the grid is available to calculate emission reductions using the simple OM method described in ACM0002.

Formulas and factors used to calculate the Operating Margin and the Build Margin are properly described in the PDD and are considered correct and transparent. Efficiency factor for CCGT plants are obtained from the document “Electrical Sector Forecast” in a conservative way. Carbon content is obtained from IPCC inventory workbook 1996, which is considered a reliable international recognized data source. The formulas used to obtain emissions data are:

- Emission factor for Natural Gas (tCO_2/GWh)= Carbon Content $\text{tC/TJ} \times 44\text{tCO}_2/12\text{tC} \times 3600\text{s/1h} \times \text{T}/10^3\text{G} \times \text{efficient factor} (\text{GWh}_{\text{elec}}/\text{GWh}_{\text{therm}})$
- Emission factor for Operating Margin = Fuel Consumption TJ x Carbon Content (tC/TJ) x $44\text{tCO}_2/12\text{tC}$ / total generation (GWh)

Assumptions made for estimating the grid emission factor, are considered correct and in accordance with ACM0002 requirements and guidelines. Assumptions made for estimating fuel consumption are considered correct and conservative. Electrical Sector Forecast contains the data of fuel consumption in TJ for electrical generation in Mexico and also the contribution of each fuel to the total fuel consumption. Plants on Mexico’s grid used to calculate the Operating Margin excluded other renewable energies (Geothermal, Biomass, and Hydroelectric) and low-cost/must-run. Plants included in the calculation of the Build Margin are those CCGT most recently build considering that 85% of new power installed was combined cycle. All this data are obtained from the CFE, which monthly received a report from all power plants that reflected generation data measured with calibrated power meters. SENER issued annually a report resuming all these data called “Electrical Sector forecast”. Impact of imports and exports in the grid emission factor is calculated in a conservative manner. Imports shall be considered in the calculation of the Operating Margin and exports are not considered to be conservative.

Uncertainties and risks associated with the data and formulas used in the project to calculate annual baseline emissions, arise from accuracy of SENER data and accuracy of calculations. From the desk review, arise some discrepancies with the data used to calculate the grid emission factor that has been corrected in the new version of the PDD.

3.5 Environmental Impacts

The PDD states that two EIA for the proposed project has been undertaken. Existence of the reports has been verified during the desk review and on-site visit and a copy made available for inspection subsequently.

According to Mexican law (General Law of Ecological Balance and Environmental Protection and his Regulation for EIA), proposals for electricity generation with wind sources must undertake an environmental impact study and submit it to the corresponding Federal Office of SEMARNAT. Bii Nee Stipa project has undergone two environmental impact studies, one for the initial project design of 20MW, dated March 2003, a second one in May 2004 when it was determined that the project would be expanded to 200MW. These two EIA have received the approval of the SEMARNAT in July 2003 and in July 2004, respectively. Project participants have applied SEMARNAT for postponement of works start date and for change of wind generators models, in June 2005, in order to comply with all regulatory requirements.

The EIAs concluded that the Project’s environmental impact is very slight or insignificant in terms of its affect on both the a-biotic and biotic environments and the landscape. As for fauna affection, doubtlessly an important aspect to assess in wind farms, this is considered a low-impact project because the area is already highly affected by human impacts coming from agriculture and extensive cattle. Landscape alteration could be important but in this area it is considered insignificant since no tourist or residential activities are foreseen within the boundaries of the project.

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The EIAs included the necessary preventive and mitigation measures to reduce environmental impacts that shall be implemented during the construction and the operation phases.

3.6 Comments by Local Stakeholders

According to national regulations for public consultation processes included in General Law of Ecological Balance and Environmental Protection and his Regulation for EIA, there is not necessary to carry out a public consultation process unless an affected party applies to SEMARNAT for it. During the on site visit to El Espinal the validation team does not find out any request from land owners or municipal authorities applying for such consultation. Moreover, municipal authorities confirmed that there is no opposition to the project from local inhabitants and land owners. Nevertheless, the validation team has found opinions against wind farms in Oaxaca from ecological organizations (www.ecoport.net). It is important to state that this information does not arise from the CDM public information process; it came from informal sources not directly related with the project and with the CDM validation process. Moreover, denunciations are more related with Mexican Environmental law and with contracts conditions than with this particular project. During the on site visit the validation team realized that some land owners did not know about the prices of the land lease for wind farms, so they were concerned about their contracts that have been signed in 2002 and that last until 2032. This matter is naturally an economical problem that does not affect the validation and is not related with CDM requirements, according to the following facts:

- Contracts revised by the validation team are in accordance with Mexican legislation and seems to be fair. Land owners will have assured extra incomes independently from weather conditions and will also continue with their traditional activities in the land.
- All Mexican environmental laws have been considered by projects' proponents and the necessary permissions from the SEMARNAT have been issued, especially those related with the EIAs.
- The local community was consulted regarding their views of the project. This consultation consisted in several meetings along the time and direct interviews with local authorities that are described in section G.1 of the PDD. Local authorities and local inhabitants interviewed during the on site visit confirmed this information and the conclusions stated in sections G.2 and G.3 of the PDD. Moreover, there is a letter from the El Espinal Municipality confirming their favourable opinion about the project.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to Decision 17/CP.7, the validator shall make publicly available the PDD and receive, within 30 days, comments on the validation requirements from parties, stakeholders and UNFCCC accredited NGOs and make them publicly available.

AENOR published the project documents on CDM website (<http://unfccc.cdm.int>) on 2005-06-16 and invited comments within 2005-07-17 by Parties, stakeholders and non-governmental organisations. No comments were received.

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5 VALIDATION OPINION

AENOR has performed a validation of the Bii Nee Stipa project in Mexico. The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation, the on-site visit and the subsequent follow-up interviews have provided AENOR with sufficient evidence to determine the fulfilment of stated criteria, including the approval letter of the Mexican and Spanish DNAs. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. Moreover, AENOR has already received the written approval of voluntary participation from the DNA of each party involved and the host Party confirmation that the project activity assists in achieving sustainable development. The project will hence be recommended by AENOR for registration with the UNFCCC.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the investment, technological barriers and common practice in Mexico demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project will be implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

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6 REFERENCES

Category 1 documents: Documents provided by the project proponents that relate directly to the GHG components of the project. These have been used as direct sources of evidence for the determination conclusions.

Category 2 documents: Background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents have been used to check project assumptions and confirm the validity of information given in the category 1 documents.

Category	Ref	Document Name	Date	Author/Competent Authority
1	1	PDD Bii Nee Stipa	2005	Gamesa Energía
1	2	EIA - 20 MW	2003-03-11	Efrain Carlos Nieblas Ortiz. Cédula Profesional: 1786751. Socorro Chong Silva. Cédula Profesional: 2964176
1	3	EIA - 180 MW	2004-05-11	Efrain Carlos Nieblas Ortiz. Cédula Profesional: 1786751. Socorro Chong Silva. Cédula Profesional: 2964176
1	4	Leasing contract	2002-09-12	CISA - Propietario
2	5	Map indicating the land owners	2005-04-30	CISA
1	6	Communication of project changes	1-6-2005	CISA
2	7	IPPC 1996 Revised Guidelines	1996	IPCC
2	8	Kyoto Protocol - Status of Ratification	19-9-2005	UNFCCC
2	9	ACM0002 / Versión 01. Approved consolidated baseline and monitoring methodology. "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".	3-9-2004	CDM - Executive Board
2	10	Annex 1. Tool for the demonstration and assessment of Additionality. EB 16 Report. Annex 1	2004-10-22	CDM - Executive Board
1	11	No Objection Letter from Mexico DNA	7-1-2005	Dr. Fernando Tudela Abad. Undersecretary of Planning and Environmental Policy. Ministry of Environment and Natural Resources. SEMARNAT. Substitute President of COMEGEI.
1	12	Letter of approval - DNA Mexico	20-4-2005	"Comité Mexicano para proyectos de reducción de emisiones y de captura de gases de efecto invernadero"
1	13	Letter of approval - DNA Spain	19-5-2005	OECC
1	14	D.P.D. 02/2004 Positive opinion letter from El Espinal Municipality	5-4-2004	H. Ayuntamiento Municipal Constitucional 2002-2004. El Espinal, Oaxaca.
1	15	EIA - 20 MW approval	22-7-2003	Subdelegación de Gestión para la protección ambiental. Secretaría de Medio Ambiente y Recursos Naturales.
1	16	EIA - 180 MW approval	2-7-2004	Subdelegación de Gestión para la protección ambiental. Secretaría de Medio Ambiente y Recursos Naturales.
2	17	General law of ecological balance and environmental protection	23-02-2005	SEMARNAT

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Category	Ref	Document Name	Date	Author/Competent Authority
2	18	General law of ecological balance and environmental protection Ruling Act on Environmental Auditing	29-11-2000	SEMARNAT
2	19	General law of ecological balance and environmental protection Ruling Act on Environmental Impact Assessment	30-05-2000	SEMARNAT
2	20	Ecological gazette. List of projects with EIS.	14-4-2005	SEMARNAT
2	21	2003 National Energy Balance	2003	SENER
2	22	Electric Sector Forecast 2004-2013	2004	SENER
2	23	Feasibility study from CFE	27-7-2004	CFE
2	24	Electric Sector Investment and facilities program, 2004-2013	2004	CFE
2	25	Methodology to determine the charges corresponding to transmission services of electric energy for renewable energy		CFE
2	26	Interconnection contract for a renewable energy source		CFE
2	27	Energy Regulation Commission Act	23-01-1998	CRE
2	28	Public Electric Services Act	22-12-1993	CRE
2	29	Public Electric Services Ruling Act	24-5-2001	CRE
2	30	Public Electric Services Ruling Act on Contributions	10-11-1998	CRE

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ANNEX A

VALIDATION PROTOCOL