



**CDM Project Activity Registration
and Validation Report Form**
*(By submitting this form, designated operational entity confirms
that the proposed CDM project activity meets all validation and
registration requirements and thereby requests its registration)*

Section 1: Request for registration

Name of the designated operational entity (DOE) submitting this form	Spanish Association for Standardization and Certification (AENOR)
Title of the proposed CDM project activity (Section A.2 of the attached CDM-PDD) submitted for registration	Agua del Cajón Thermal Power Plant – Open to Combined Cycle Conversion.
Project participants (Name(s))	CAPEX, S.A
Sector in which project activity falls	Sectoral Scope 1: energy industries (renewable source)
Is the proposed project activity a small-scale activity?	Yes / <u>No</u> (underline as applicable)

Section 2: Validation report

List of documents to be attached to this validation report (please check mark):	
<ul style="list-style-type: none"> ✓ The CDM-PDD of the project activity ✓ An explanation by the submitting designated operational entity of how it has taken due account of comments on validation requirements received, in accordance with the CDM modalities and procedures, from Parties, stakeholders and UNFCCC accredited non-governmental organizations (Note: included in validation report, ref. No. 2005/0003/CDM/01 rev 02) ✓ The written approval of voluntary participation from the designated national authority of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development: <ul style="list-style-type: none"> ○ (Attach a list of all Parties involved and attach the approval (in alphabetical order)) ✓ Other documents, including any validation protocol used in the validation <ul style="list-style-type: none"> ○ Validation report ref. No. 2005/0003/CDM/01 rev 02, including List of persons interviewed by DOE validation team during the validation process. ○ Validation Protocol ref No. 2005/0003/CDM/01 rev 02. ✓ Information on when and how the above validation report is made publicly available. <input type="checkbox"/> Banking information on the payment of the non-reimbursable registration fee. (Note: After receiving the individual reference number we will be able to proceed with the payment of the non-reimbursable fee) ✓ A statement signed by all project participants stipulating the modalities of communicating with the Executive Board and the secretariat in particular with regard to instructions regarding allocations of CERs at issuance. 	

Executive Summary and Introduction, including

- **Description of the proposed CDM project activity**
- **Scope of validation process (include all documentation that has been reviewed and name persons that have been interviewed as part of the validation, as applicable)**
- **DOE Validation team (list of all persons involved in the validation, describing functions assumed in the validation)**

The Spanish Association for Standardisation and Certification (AENOR) entered into an agreement with CAPEX, S.A to initiate validation of the “Agua del Cajón” thermal plant open cycle to combined cycle conversion Project in Argentina. The project consists in the conversion of Agua del Cajón conventional open-cycle thermal power plant into a combined cycle power plant, by adding one steam turbo generator to make use of the exhaust gases coming from the six (6) existing gas turbo generators. This results in the generation of extra energy and power without increasing the fossil fuel consumption. Therefore the plant is supplying clean energy without emitting additional CO₂.

Capex S.A.'s main business is the generation and sale of electricity within Argentina. The company owns and operates a power plant located in the province of Neuquén, on the Agua del Cajón concession. The facilities extend over the fields named El Salitral, which supply the Agua del Cajón power plant with the natural gas it uses as fuel to generate electricity.

The project comprises the open to combined cycle conversion of six gas turbines (370 MW ISO). A combined cycle takes advantage of the exhaust gases from the gas turbines to produce steam in the recovery boilers placed in each of the turbines; the steam so generated drives a steam turbine with a 185 MW generating capacity; in turn, so as to streamline the project, the steam production is increased by adding extra heat in each recovery boiler. This is achieved through burners that provide supplementary fire by using the excess oxygen available at the turbine exhausts achieving an increment of capacity of around 100 MW effective.

In order to recover part of the wasted heat from the stacks, a Rankine steam cycle is added to the existing Brayton cycle. This requires a heat recovery steam generator (HRSG) that captures the exhaust gases from the gas turbine and transmits their heat energy to the water generating steam in the HRSG heat exchanger. The steam then feeds a turbo generator able to generate 185 MW of additional electricity, without consuming extra fuel. The steam that exits the turbine passes through a condenser (cooling steam into water) and then through the pump feed water cycle, the heaters and the water treatment plant and back to the HRSG where, thanks to the supplementary fire, the output can be increased by 100 MW.

Prior to the implementation of the project activity there were five Westinghouse turbo generators, 46.1 MW gross power each, and one 130 MW gross power Westinghouse turbo generator. They came on line between December 1993 and May 1995, making up an open cycle, gas-fired, thermal power plant.

The project contribution to sustainable development is achieved as follows:

- The project provides clean energy and reduces the CO₂ emissions in Argentina.
- The implementation of this project has generated clean energy without consuming fossil fuel, therefore saving gas on the Argentine reserves, and reducing the CO₂ emissions.
- The combined cycle conversion project as a whole doubles Capex's income yielded by energy and power sales, with the ensuing municipal, provincial and national tax contributions. It also contributes to the safety of the overall electricity grid, by adding more power in a reliable way.
- From the social point of view, the project has created, during its development stage, 200 direct and indirect jobs. Since the thermal power plant became commercially operational, 17 more permanent jobs were created. Besides, the development and construction stage had a strong impact on the area, at both local and municipal level.
- During conversion of the power plant, the area within the plant boundaries was afforested, thus reducing the dust raised by local winds and the temperature in the area and increasing CO₂ absorption by trees.
- The project has met environmental criteria established by the Municipality of Plottier in the Environmental Statement of Plottier (1983; updated in 2002).

- Environmental awareness and climate change information to the public.

The spatial extent of the boundary includes the site where the power plant is and all power plants physically connected to the Argentinean National Grid, where the project activity will also be connected, excluding the Wholesale Electricity Market of the Patagonia System (WEMPS) due to the weak interconnection to the grid of the WEM. Electricity imports are taken into account, which is considered appropriate since information on the characteristics of the grid is available to calculate emission reductions using the dispatch method described in ACM0002. It will be considered only power plants with no energy transportation constraints related to transmission lines.

The project is estimated to produce a net reduction in CO₂ emissions of 378,446 tCO₂ per annum based on an estimated production of 4,414 GWh per annum.

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 (ACM0007)
- Approved Methodology (ACM0002)
- Decision 17/CP.7 and relevant decisions from the EB
- Environmental Impact Assessment of the project and the Environmental Management System with some audits' reports.
- The regulatory framework related with environmental legal requirements and the electrical sector.
- Approval, authorizations and contracts necessary to carry out the activity according to the regulatory framework.
- CAMMESA (Electrical Whole Market Administrator) dispatch reports in the MEMNET tool.

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/66.01), 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.

CAPEX has undertaken an EIA and established the needed Environmental Management System, according to official requirements of the Law 24,065/92 (Electric energy regulatory framework), resolution 475/87 of the Energy Secretary, resolution 149/90 of the Ex-Sub-secretary of Energy which standardises procedures for the environmental management of thermal power plants, and resolution ENRE 32/94 that establishes the Guide of Basic Contents for an Environmental Management Plan.

In agreement with this regulation it is not necessary to carry out a public consulting process, nevertheless CAPEX has developed a public survey to know the opinion and comments of national and local stakeholders about the project. This survey and other initiatives are described in section G of the PDD and include initiatives to promote climate change concern among pupils of the schools in the area. The validating team during the on-site visit to Plottier, was invited to assist to this initiative during the award ceremony of a drawing competition among pupils of 5° grade of elementary schools in Plottier.

During the desk review and the on-site visit, the following persons were interviewed:

Interviewed organisation Person/Position	Interview topics
ENRE	
- Ing. Gustavo Devoto: Electricity Production and Supply Department.	➤ Regulatory framework for electrical generators
- Ing. Ernesto M. Kerszberg: Board Assessor	➤ Environmental requirements for thermal Power Plants
	➤ Licenses and authorizations granted to CAPEX

<ul style="list-style-type: none"> - Lic. Cecilia Beuret: Environmental Department 	<ul style="list-style-type: none"> ➤ Periodical controls and audits ➤ Periodical reports to check regulatory compliance ➤ Sanctions or penalties applied, if any ➤ Sustainable development
<p>CAMMESA</p> <ul style="list-style-type: none"> - Ing. Sabino Mastrángelo: Wholesale Market Actors Attention Manager 	<ul style="list-style-type: none"> ➤ Electrical sector data in Argentina ➤ Generation data of Plants that supply electricity to the grid ➤ Foreseen growth of electrical generation in Argentina ➤ MEMNET: online information for electrical generators about hourly dispatch ➤ Calculations about efficiency of power plants ➤ Load factor for Agua del Cajón ➤ General procedures for thermal power plants and specific procedures for meters calibration and controlling. ➤ Power transmission constraints
<p>SADS-MSA</p> <ul style="list-style-type: none"> - Dr. Atilio A. Savino: Environment and Sustainability Development Secretary 	<ul style="list-style-type: none"> ➤ Argentinean DNA and project's sustainable development contribution ➤ Approval and authorization letter
<p>MUNICIPALITY OF PLOTTIER</p> <ul style="list-style-type: none"> - Tec. Eduardo Omar González : General Secretary of the Municipality of Plottier 	<ul style="list-style-type: none"> ➤ Local regulatory framework compliance ➤ Authorizations and permits granted to CAPEX ➤ Interest of local authorities in the development of new projects in the area and new investments ➤ Concerns for the future of the landfill serving to the area. ➤ Improvement of the area due to afforestation activities ➤ Improvement of the quality of the electrical supply and infrastructures
<p>STAKEHOLDERS</p> <ul style="list-style-type: none"> - Pablo Yapura: Wild Live Foundation in Argentina: FSC Coordinator - Patricio Sutton: Patagonian Environmentalist Organization - Ivan Moricz Karl: renowned artist of Neuquén 	<ul style="list-style-type: none"> ➤ Confirmation of the answers to the survey ➤ Confirmation that CAPEX is considered a clean company concerned for the environment and the mitigation of the climate change ➤ Participation in the award ceremony and his opinion about its benefits to the local population
<p>CAPEX, S.A.</p> <ul style="list-style-type: none"> • BUENOS AIRES HEAD OFFICE: <ul style="list-style-type: none"> - Hugo A. Cabral: Legal Affairs and Marketing Manager - Diego M. López Cuneo: Commercial Manager for Energy, Gas and Oil - Ing. Jorge M. Buciak: Engineering Manager - Federico Kitzberger: Electrical Energy Manager - Claudio Martín Armada: Administration and Financial Management • THERMAL POWER PLANT "AGUA DEL CAJÓN": <ul style="list-style-type: none"> - Ing. Alberto M. Vildósola: Maintenance and Operations Manager. - Italo Quesada: Environmental Coordinator - Nelson Aranda: Environmental Coordinator 	<ul style="list-style-type: none"> ➤ Starting date of the project ➤ Implications of supplementary fire ➤ Baseline calculations ➤ Additionality justification ➤ Management Plan ➤ Environmental management system ISO 14001 ➤ Natural gas reserves and daily consumptions ➤ Financial analysis and assumptions made ➤ Power plant operation and control systems ➤ Award ceremony participation ➤ Dispatch data analysis and computational method ➤ Unfired / fired performance tests

The validation team consist of the following personnel:

- Mr. Javier Vallejo Drehs AENOR Madrid Team leader, CDM Chief validator.
Her duties during the validation process were as follows:
 - Organise and supervise validation.
 - Evaluate the PDD against CDM-PDD form Version 2 and the Guidelines for Completing it version 3.
 - Analyse, in conjunction with the members of the validation team, the comments received during the public inquiry period and draw the respective conclusion.
 - Establish action guidelines for the members of the validation team.
 - Analyse the evidence found.
 - Evaluate and decide on conflicting evidence.
 - Follow up interviews with the projects participants and in the host country.
 - Forward the CDM-project-activity validation contract to the party concerned.
 - Make the PDD publicly available, pursuant to the provisions of the CDM M&P, paragraph 40 b) & c).
 - Make any comments received during the public inquiry period publicly available.
 - Inform the applicant of the result of the validation.
 - Complete and forward form R/DCS/273, verification plan, to the party concerned.
 - Fill in the application for registration form F-CDM-REG.
 - Elaboration of the validation protocol and the validation report.
- Mr. Miguel Carrasco García AENOR Madrid Renewable electricity generation expert and validator in practice.
Her duties during the validation process were as follows:
 - Participate in the validating team, furnishing the chief validator with specialised knowledge in technical aspects related with hydroelectric generation.
 - Evaluate the PDD.
 - Analyse the evidence found.
 - Analyse, in conjunction with the members of the validation team, the comments received during the public inquiry period and draw the respective conclusion.
 - Follow up interviews with the projects participants and in the host country.
 - Elaboration of the validation protocol and the validation report.

Description of methodology for carrying out validation

- **Review of CDM-PDD and additional documentation attached to it**
- **Assessment against CDM requirements (e.g. by use of a validation protocol)**
- **Report of findings by the DOE, e.g. by use of type of findings (e.g. corrective action requests, clarifications or observations). Please explain the way findings are "labelled" during validation.**
- **Include statements or assessments in the section "Conclusions, final comments and validation opinion" below.**

The validation of the project was started in October 2005 and concluded in May 2006.

The validation consisted of the following three phases:

- A desk review of the PDD (October and November 2005)
- Follow-up interviews with project stakeholders, project participants and Argentinean authorities. (22-25 November 2005)
- The resolution of outstanding issues and the issuance of the final validation report and opinion (May 2006)

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 CAPEX in Argentina. 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 AENOR's 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.

Findings establish during the validation can either be seen as non-fulfilment of validation criteria or where a risk to the fulfilment of the project objectives is identified. Such findings are termed Corrective Action Request (CAR). The term Clarification (CL) may be used where additional information is needed to fully clarify an issue.

The three Corrective Action Requests and four Clarification Requests raised by AENOR were resolved during communications between CAPEX and project stakeholders with AENOR. Additional information provided by the project participant resolved these requests to AENOR's full satisfaction. CAPEX developed a Corrective Action Plan dated on 2nd December, 2005, to proposed resolutions to CAR2 and CAR3, which remain unresolved after the on-site visit. AENOR was requested by the Argentinean DNA to issue a first version of the validation report, where we showed our conclusions about project's accomplishment with UNFCCC criteria, taking into account on-site visit interviews and the Corrective Action Plan. This first version of the validation report was send to the Argentinean DNA on 5th December, 2005 prior to the end of the public information period. To guarantee the transparency of the validation process, the concerns raised and responses given are summarised and documented in more detail in Table 3 of the validation protocol Ref. 2005/0003/CDM/01 Report No.2.

To address the corrective actions and clarification requests that arose from AENOR desk review and on-site visit, CAPEX revised the project design documents submitted in October 2005 and developed a new version in May 2006, according to the Corrective Action Plan proposed.

For further details, please refer to the "Methodology" section of AENOR validation Report (Ref: 2005/0003/CDM/01 No.2) and the IETA/PCF Validation and verification manual (www.vvmanual.info).

Explanation by the submitting designated operational entity of how it has taken due account of comments on validation requirements received, in accordance with the CDM modalities and procedures, from Parties, stakeholders and UNFCCC accredited non-governmental organizations;

- **Description of how and when the PDD was made publicly available**
- **Description of how comments were received and made publicly available**
- **Explanation of how due account has been taken of comments received**
- **Compilation of all comments received (Identify the submitter)**

AENOR published the project documents on CDM website (<http://unfccc.cdm.int>) on 2005-11-30 and invited comments within 2005-12-29 by Parties, stakeholders and non-governmental organisations. One comment was received via e-mail and made publicly available on AENOR website (<http://www.aenor.es/desarrollo/certificacion/productos/proyectos.asp?codigo=5>) on 2005-12-29. This is below referred to and further discussed.

Comment by: Axel Michaelowa

Inserted on: 2005-12-20

Subject: Starting date of the project

Comment:

Dear Javier,

The project has already started operation well before Jan. 1, 2000 and is thus not eligible under the CDM. This is corroborated by the following public sources:

1. Company website of CAPEX, the company operating the Agua del Cajon plant: http://www.capex.com.ar/contenido_capex_central.html

Quote from this text: "CICLO COMBINADO (Fase IV): Capex implementó la conversión de la Central de Ciclo Abierto en una de Ciclo Combinado con Fuego Suplementario, incrementando la potencia de la Central en 301 MW; a través de una turbina de vapor Mitsubishi y 6 calderas de recuperación con postcombustión en el escape de cada turbina de gas. La planta entró en operación en noviembre de 1999 en forma conjunta con la puesta en servicio de la ampliación del sistema de transmisión de energía Comahue-Buenos Aires, a través de la Cuarta Línea de Transmisión. "

2. "El Paso Energy takes interest in Argentina", in: Alexander's Oil and Gas Connections, Company News Latin America, Volume 2, issue #9 - 04-04-1997, available at <http://www.gasandoil.com/goc/company/cnl71408.htm>

Quote from this text: "An additional 240-MW combined cycle expansion is currently under development at the Agua del Cajon plant."

3. <http://www.seen.org/db/Dispatch?action=ProjectWidget:126-detail=1>

Quote from this text "U.S. Export-Import Bank (Ex-Im)* Guarantor Approved 1995-01-01
Guarantee : \$19 Million

In 1995, Exim supported a \$19 million contract in which CBS Corporation provided gas turbine related equipment to Capex for the Cajon III project.

[...] Notes: The ExIm project converts an existing plant, also known as Agua del Cajon, from a simple-cycle to combined-cycle technology, raising its 354WM capacity to 539MW, using waste heat not additional fuel. Capex' captive gas reserves fuel this plant."

These sources all clearly show that the project was implemented between 1997 and 1999 and started operation in November 1999.

Best regards, Axel Michaelowa

AENOR Response:

The comment starts pointing out that the project activity started operation before January 1, 2000.

The starting date of the project is considered 2000-01-17 as it is stated in the document Note N° B – 5239 – 3 from CAMMESA (Ref: 10 & 11 in validation report) that reflect access to the MEM (Mercado Electrico Mayorista, Wholesale Electricity Market), of the steam unit ACAJTV07 of the thermal power plant Agua del Cajón. This document authorizes the commercial operation of the steam turbine that completes the combined cycle in the Agua del Cajón power plant in the above-mentioned date.

The comment also presents some supposed evidences of the previous statement.

The first one is related to the website of Capex S.A. Effectively in the website it is mentioned that the project started operation in November 1999. According to information provided by CAMMESA and ENRE to the validation team during the interviews, this only means that some operational proofs were undertaken in that date in order to meet the requirements established by CAMMESA to authorize the commercial operation of the new steam turbine. This is a usual procedure to get capacity and authorization for dispatching electricity to the grid in market conditions.

The second reference is related to some declaration of interest from El Paso Energy, a former shareholder of Agua del Cajón thermal power plant. Specifically, it is pointed out that "an additional 240 MW combined cycle is currently under development at the Agua del Cajón plant." This declaration was made considering the possibility to expand the power plant as a project idea only, but not real action took place. Actually, the implemented project is quite different from this project idea. Thus, it does not contradict the starting date set in the PDD: January 17, 2000.

The third reference is quoted from the US Export-Import Bank (Ex-Im). In the website indicated it is clearly stated that the referenced \$19 million was related to the "Cajón III project." This "III" refers to the so-called phase III, already mentioned in the PDD, in which a new gas turbine was acquired by the company to increase electricity generation in the Agua del Cajón power plant operating as open cycle. The other note of the same website referenced in the comment is again a reference to the previous stages to the conversion of the open cycle to combined cycle, but this does not contradict the starting date set in the PDD, as the date of entering into operation of the combined cycle into the national electricity grid: January 17, 2000.

Conclusions, final comments and validation opinion

- Provide conclusions on each requirement under paragraph 37 of the CDM modalities and procedures, describing how these requirements have been met. This shall include assessments and findings (e.g. corrective action requests, clarifications or observations) in relation to each requirement, including a confirmation that all issues raised have been addressed to the satisfaction of the DOE.
- Final comments and validation opinion

AENOR has performed a validation of the "Agua del Cajón" Thermal Power Plant-Open cycle to combined cycle conversion project in Argentina. 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 Argentinean DNA. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. AENOR has already received the written approval of voluntary participation from the DNA of Argentina and the confirmation that the project activity assists in achieving sustainable development. The project will hence be recommended by AENOR for registration within the UNFCCC.

By displacing fossil fuel-based electricity with electricity generated in the steam turbine of the combined cycle plant, 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 Argentina 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 is 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.

For further details, please refer to the "Validation findings" section of AENOR validation Report (Ref: 2005/0003/CDM/01 No.2) and to the table 1 of AENOR validation protocol (Ref: 2005/0003/CDM/01 No.2).

AENOR declares herewith that in undertaking the validation of this proposed CDM project activity it has no financial interest related to the proposed CDM project activity and that undertaking such a validation does not constitute a conflict of interest which is incompatible with the role of a DOE under the CDM.

By submitting this validation report, the DOE confirms that all validation requirements are met.

JOSE LUIS TEJERA OLIVER
CDM Operational Director

Name of authorized officer signing for the DOE

Date and signature for the DOE

2006-05-15

Section below to be filled by UNFCCC secretariat

Date when the form is received at UNFCCC secretariat

Date at which the registration fee has been received

Date at which registration shall be deemed final

Date of request for review, if applicable

Date and number of registration

Date

Number