# VALIDATION REPORT

# "PÃO DE AÇÚCAR – DEMAND SIDE ELECTRICITY MANAGEMENT – PDD 2 PROJECT", IN BRAZIL

REPORT NO. 2006-1526

REVISION NO. 01

DET NORSKE VERITAS

# VALIDATION REPORT

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| Approved by:<br>Einar Telnes<br>Director | Organisational unit:<br>DNV Certification, International Climate Change Services |
| Client:<br>Companhia Brasileira de Distribuição – Grupo Pão de Açúcar and Ecoinvest Carbon Brasil Ltda | Client ref.:<br>Sidney Furlan and Carlos de Mathias Martins |

Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Pão de Açúcar – Demand side electricity management – PDD 2 Project" in Brazil on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures for small scale projects and the subsequent decisions by the CDM Executive Board.

The validation consisted of the following three phases: i) a desk review of the project design, baseline and monitoring plan, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In summary, it is DNV's opinion that the "Pão de Açúcar – Demand side electricity management – PDD 2 Project", as described in the revised PDD of 15 March 2007, meets all relevant UNFCCC requirements for the CDM, is eligible as type III small-scale CDM project activity and correctly applies the simplified baseline and monitoring methodology AMS-II.E (Version 8 of 23 December 2006). Hence, DNV requests the registration of the "Pão de Açúcar – Demand side electricity management – PDD 2 Project" as a CDM project.

Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the project assists in achieving sustainable development and that the project participants are authorized to participate in this project.

Due to the approval of a new version of the applied methodology AMS II.E the revised PDD in line with the version 8 of the methodology has been made publicly available for a new period of 30 days starting on 28 February. This report cannot be considered final until the stakeholder consultation process is finalized.

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|---|---|---|
| Report No.:<br>2006-1526 | Subject Group:<br>Environment | |
| Report title:<br>"Pão de Açúcar – Demand side electricity management – PDD 2 Project" in Brazil. | | |
| Work carried out by:<br>Felipe Antunes, Michael Lehmann | | |
| Work verified by:<br>Miguel Rescalvo (acting) | | |
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**Indexing terms**

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|---|---|
| Key words<br>Climate Change<br>Kyoto Protocol<br>Validation<br>Clean Development Mechanism | Service Area<br>Validation<br>Market Sector<br>General Industry |

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## *Abbreviations*

| | |
|---|---|
| BAU | "Business as usual" |
| CAR | Corrective Action Request |
| CBD | Companhia Brasileira de Distribuição |
| CDM | Clean Development Mechanism |
| CEF | Carbon Emission Factor |
| CER | Certified Emission Reduction |
| $CH_4$ | Methane |
| CL | Clarification request |
| $CO_2$ | Carbon dioxide |
| $CO_2e$ | Carbon dioxide equivalent |
| DNV | Det Norske Veritas |
| DNA | Designated National Authority |
| GHG | Greenhouse gas(es) |
| GWP | Global Warming Potential |
| IPCC | Intergovernmental Panel on Climate Change |
| MP | Monitoring Plan |
| MVP | Monitoring and Verification Plan |
| $N_2O$ | Nitrous oxide |
| NGO | Non-governmental Organisation |
| ODA | Official Development Assistance |
| ONS | Operador Nacional do Sistema Elétrico (National Electricity System Operator) |
| PDD | Project Design Document |
| PROCEL | Programa Nacional de Conservação de Energia Elétrica (National Program for Electrical Energy Conservation) |
| S-SE-CO | South-Southeast-Midwest (one Brazilian regional grid) |
| UNFCCC | United Nations Framework Convention on Climate Change |

# 1 INTRODUCTION

Companhia Brasileira de Distribuição – Grupo Pão de Açúcar (CBD) and Ecoinvest Carbon Brasil Ltda (Ecoinvest) have commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the "Pão de Açúcar – Demand side electricity management – PDD 2 Project", located in the cities mentioned at Table A., Brazil.

**Table A**

| Store Name / No. | | Location | |
|---|---|---|---|
| CPRBEM | 2410 | Estrada do Campo Limpo, 459 – São Paulo | – SP |
| EXTRA | 1315 | Rua Senador Vergueiro,428 – São Caetano do Sul | – SP |
| PA-SP | 0009 | Al. Gabriel Monteiro da Silva, 1.351 – São Paulo | – SP |
| CPRBEM | 1738 | Av. Vila Ema, 1370 – São Paulo | – SP |
| CPRBEM | 1729 | R. Cons. Moreira de Barros, 2075 – São Paulo | – SP |
| PA-SP | 1863 | R. Conselheiro Furtado, 1.440 – São Paulo | – SP |
| CPRBEM | 1796 | Av. Dna. Belmira Marin, 3917 – São Paulo | – SP |
| PA-SP | 0061 | Av. Santo Amaro, 3.271 – São Paulo | – SP |
| PA-SP | 2457 | Av. Lavandisca, 249/263 – São Paulo | – SP |
| SENDAS | 1675 | Av. Felipe Uebe, 451/469 – Campos dos Goytacazes | – RJ |
| PA-SP | 0174 | Av. Santo Amaro, 1001 - São Paulo | - SP |
| PA-SP | 2349 | Rua Teodoro Sampaio, 1.933 - São Paulo | - SP |
| CPRBEM | 2405 | Rua Pinheiros, 905/19 – São Paulo | - SP |

This report summarises the findings of the validation of the project, performed based on UNFCCC criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consists of the following personnel:

| | | |
|---|---|---|
| Mr. Felipe Antunes | DNV Rio de Janeiro | Team Leader. CDM validator. |
| Mr. Michael Lehmann | DNV Oslo | Energy sector expert |
| Mr. Miguel Rescalvo | DNV Oslo | Technical reviewer (acting) |
| Mr Einar Telnes | DNV Oslo | Technical reviewer |

## 1.1 Validation Objective

The purpose of a validation is to have an independent third party assessing the project design. In particular, the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CER's).

## 1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the

relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology AMS-II.E, Version 8 of 23 December 2006. The validation team has, based on the recommendations in the Validation and Verification Manual /4/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

## 1.3 Description of Proposed CDM Project

The project involves the reduction of the electricity consumption at the stores of Companhia Brasileira de Distribuição (CBD), by means of energy efficiency improvements, resulting in greenhouse gas emission reductions. The reduction in electricity consumption has been achieved through the implementation of different independent electricity efficiency measures at the stores of CBD.

The project is one from a group of eight small-scale CDM project activities. Each component of the group is a small-scale CDM project activity that includes a defined number of stores of CBD in which independent efficiency measures are undertaken.

With the implementation of this project, the stores are able to reduce the dispatch of electricity partly generated by thermal power plants supplying electricity to the S-SE-CO grid.

The project has already been implemented and started operation on 01 January 2001.

The estimated amount of GHG emission reductions from the project is 23 238 tonnes $CO_2$ equivalents ($tCO_2e$) during the fixed 10-year crediting period, resulting in estimated average annual emission reductions of 2 324 $tCO_2e$.

# 2 METHODOLOGY

The validation consisted of the following three phases:

i) a desk review of the project design, baseline and monitoring plan;

ii) follow-up interviews with project stakeholders;

iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /4/. 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, 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 for the "Pão de Açúcar – Demand side electricity management – PDD 2 Project" in Brazil is enclosed in Appendix A to this report.

Findings established during the validation can be seen as either a non-fulfilment of validation criteria or where a risk to the fulfilment of project objectives is identified. *Corrective action requests* (CARs) are issued, where:

i) mistakes have been made with a direct influence on project results;

ii) CDM or host Party requirements have not been met; or

iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The term request for *clarification* (CL) may be used where additional information is needed to fully clarify an issue.

| ***Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities*** | | | |
|---|---|---|---|
| ***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**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.* | *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).A request for **Clarification (CL)** is used when the validation team has identified a need for further clarification.* |

| ***Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification*** | | | |
|---|---|---|---|
| ***Draft report corrective action requests and requests for clarifications*** | ***Ref. to Table 2*** | ***Summary of project participants' response*** | ***Final 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 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**

## 2.1 Review of Documents

The Project Design Document (Version 6 of 15 March 2007 /1/) submitted by Companhia Brasileira de Distribuição – Grupo Pão de Açúcar and Ecoinvest Carbon Brasil Ltda and its previous versions were assessed by DNV. In addition, spreadsheets containing detailed calculations for emission reductions and the combined margin emission coefficient /2/ /3/, which is applied by the project, were assessed.

Other documents, such as the licence requirements as well as the letters sent to local stakeholders, were also assessed during the follow up interviews in order to ensure the accuracy of the relevant information.

## 2.2 Follow-up Interviews

In September 2006, DNV performed interviews with representatives from Ecoinvest Carbon Brasil Ltda /11/. The main topics of the interviews are summarised in Table 1.

**Table 1 Interview topics**

| Interviewed organisation | Interview topics |
|---|---|
| Ecoinvest Carbon Brasil Ltda | ➢ Licenses requirements compliance,<br>➢ Local stakeholders consultation process,<br>➢ Baseline emission calculations,<br>➢ New procedures/equipments. |

## 2.3 Resolution of Clarification and Corrective Action Requests

The initial validation of the project identified 1 (one) *corrective action request* and 6 (six) requests for *clarification.* These initial findings were presented to the project participants in DNV's draft validation report of 31 August 2006. The project participants' response, including the submission of the revised PDD of 15 March 2007, addressed the raised *corrective action requests* and requests for *clarification* to DNV's satisfaction.

To guarantee the transparency of the validation process, the concerns raised and the response provided by the project participants are documented in more detail in the validation protocol in Appendix A.

## 2.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

# 3 VALIDATION FINDINGS

The findings of the validation of the "Pão de Açúcar – Demand side electricity management – PDD 2 Project" are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the PDD of 15 March 2006.

## 3.1 Participation Requirements

The project participants are Companhia Brasileira de Distribuição – Grupo Pão de Açúcar and Ecoinvest Carbon Brasil Ltda of Brazil. The host Party Brazil meets all relevant participation requirements. No participating Annex I Party is yet identified.

Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the project assists in achieving sustainable development and that the project participants are authorized to participate in this project.

## 3.2 Project Design

The project is an *"Energy efficiency and fuel switching measures for buildings"* project activity, displacing grid electricity that is partly generated by fossil-fuelled thermal plants, by means of energy efficiency improvement, which reduce energy consumption.

The project increased the efficiency of the stores by implementing a group of different environmentally safe and sound actions and technologies in each store, including:

- Identification of the main opportunities for electricity consumption reduction;
- Contracting specialized services to develop management system in order to monitor and control electricity consumption;
- Revision of operational procedures aiming at creating a more efficient standard of operation of the stores with the establishment of daily electricity consumption targets focusing specially the peak hour demands;
- Identification of energy demands benchmarks from the comparison of several stores of the group, taking into consideration the specificities of each one of the brands that have different consumption patterns;
- Best practices in the operation and maintenance of air conditioning and refrigerating systems. This type of load represents the major consumption element within stores electricity consumption patterns. Therefore, very stringent operational and maintenance procedures and investments to improve installations performance were implemented in order to reduce electricity demand;
- Substitution of light bulbs for more efficient devices and changes in the operational procedures, operating at more suitable and efficient illumination levels according to each area.

The project design reflects good practice and sufficient training has been provided so as to operate and maintain the installed equipment in an efficient way.

A 10-year fixed crediting period is selected, starting on 01 January 2001. The expected operational lifetime of the project is 30 years. The project boundary are the sites (please, refer to Table A) where the stores are located (Companhia Brasileira de Distribuição – Grupo Pão de Açúcar ).

CBD operates in the market with five brands: Pão de Açúcar (PA), Extra (EXTRA), Extra Eletro (ELETRO), Compre Bem Barateiro (CPRBEM) and Sendas-Sé (SENDAS).

No public funding from Annex I Parties is involved in the project, and the validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.

## 3.3 Baseline Determination

The project applies the approved baseline methodology AMS-II.E version 08- *"Energy efficiency and fuel switching measures for buildings"* for *Type II – Energy Efficiency Improvement Projects* /6/. The project fulfils the conditions under which AMS-II.E is applicable. The energy efficiency improvements reduce energy consumption by less than 60 GWh per year. The project is thus eligible to apply AMS-II.E.

The project is one from a group of eight small-scale CDM project activities. Each component of the group is a small-scale CDM project activity that includes a defined number of stores of CBD in which independent efficiency measures are undertaken.

The same project participants are proposing eight similar small scale CDM project activities ("Pão de Açúcar – Demand side electricity management – PDDs 1 to 8). Each store alone and each bundle of stores is not a debundled component of a large project activity because each store is not within 1 km of another at the closest point. Therefore, each small-scale project activity is not a debundled component of a larger project activity.

In accordance with AMS-II.E the energy baseline consists of the energy use of the existing equipment prior to the project implementation. The electricity consumption of each store in the year 2000 is selected as the baseline electricity consumption. In line with the new version 8 of the methodology the energy baseline no longer needs adjustment for technical transmission and distribution losses for the electrical grid serving the stores.

In accordance with AMS-I.D-Version 10 of 23 December 2006, an electricity baseline emission factor is calculated *ex-ante* as a combined margin, consisting of the combination of the operating margin (OM) and build margin (BM) factors (please, see section 3.6).

## 3.4 Additionality

The additionality of the project is demonstrated through the barrier analysis contained in Attachment A to *"Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities"* - Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities.

Although not required by the above mentioned barrier analysis, DNV assessed whether CDM benefits were considered prior to project implementation as required by step 0 of the *Tool for the demonstration and assessment of additionality.*

(1) The starting date of the CDM project activity, i.e. 01 January 2001, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004).

(2) Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity is the contract signed between CBD and Sinerconsult, which was the company that implemented the electricity efficiency program, and part of the scope of work/contract is related to CDM projects / the Kyoto Protocol.

Moreover, the projects participants submitted a proposed new baseline and monitoring methodology for the reduction of electricity consumption projects at the stores of CBD in the methodology submission round 11 (June 2005). This proposed new baseline and monitoring methodology was filed as NM0120 and was graded C by the CDM Executive Board at its 21st meeting (September 2005). At the time of the new baseline and methodology submission, up to 551 stores of the CBD were mentioned in the submitted PDD as potential project participants. Eventually, the project participants presented the reduction of electricity consumption projects at the stores of CBD as eight small-scale CDM project activities applying AMS-II.E, based in a priority list of stores. The project participants can therefore request retroactive credits if the project is submitted for registration by the Executive Board by 31 March 2007 at the latest.

Investment barriers, technological barriers, barriers due to prevailing practice and other barriers are presented in the PDD:

a) *Investment barriers*. When comparing different investment possibilities it is deemed likely that a company such as CBD will prefer to invest mainly in their core business and not e.g. in improved energy efficiency measures. The expected investment for the actions involved in the 8 PDDs is around R$11 millions (ca. 4 million EUR). Contracts with providers and installations companies have been presented to DNV and the investment estimation is confirmed to be correct. As the project involves a significant investment into an area not considered as the core business of CBD it had to be financed on an equity basis without any public or private funding. DNV acknowledges that this argumentation demonstrates a barrier to implement the project.

b) *Technological barriers*. The continuation of the situation prior to project implementation represented a less technologically advanced alternative, which involved lower performance risks but also would have led to higher emissions. The risk entailed by the implementation of the project activity and the lack of confidence in the results of the project thus represented barriers to its implementation. In particular, CBD was affected by the risks (actual and perceived) of using new or unfamiliar technology. However, DNV does not consider this argumentation as a plausible barrier to project implementation as the main arguments are more related to the financial (costs and benefits) barriers.

c) *Barrier due to prevailing practice*. Prevailing practice, existing regulatory requirements and existing policies would not push the project activity to be implemented. An uncertain economic scenario, little economic incentive for energy efficiency programs and capital restrictions appears as the important barriers to investment in energy efficiency projects. Hence, energy efficiency programs are not a common practice in the sector and rely solely on self promoted initiatives. The lack of awareness regarding energy losses and what can be done, to limit these as well as the limitations of in-house capacity for such projects are deemed as another barrier to energy efficiency projects. DNV acknowledges that this argumentation also demonstrates a barrier to implement the proposed project.

d) *Other barriers*. Limited information about the benefits and contents of an energy efficiency program is also a barrier to project implementation. Energy-use is a "secondary" and "invisible" characteristic of CBD's activities and as such supplementary information is needed to bring it to the attention of the company's decision makers. The market fails to disseminate information about products' energy characteristics to the extent that it is economically efficient. Also, as electricity is not a major cost in CBD operations, there is a limited awareness and interest in energy costs and thus in reducing the energy expenses. Energy is a small part of the cost of doing business and is often treated as a fixed cost. DNV acknowledges that information about a products' energy characteristics is not a disseminate action among equipment manufactures.

Given the above and in particular the barriers due to prevailing practice and other barriers which the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions are thus additional.

## 3.5 Monitoring Plan

The project applies the approved monitoring methodology AMS-II.E - "Energy *efficiency and fuel switching measures for buildings"* for *Type II – Energy Efficiency Improvement Projects* /6/

Monitoring consists of (a) documenting the measures, programs and specification of equipments replaced, (b) monitoring the electricity consumption with the centralized management tool Sigescon (electricity invoices from each individual store can be used to cross-check the information); (c) monitoring of additional fossil fuel consumption due to the project activity and (d) Calculating the energy savings due to the measures implemented by comparing the electricity consumption of each store in the project activity to the electricity consumption of the store prior to the implementation of the project activity (i.e. electricity consumption in the year 2000). The measurement of the electricity consumption is based on calibrated meters (by the electricity company/ies) installed in each one of the stores.

The electricity consumption data of each store is also controlled and monitored from the company headquarters and consolidated electronically in the SIGESCON system, where all this information is available (back-up also available) and monthly reports are produced from these data and should be cross-checked with the monthly electricity receipts.

At two stores a total of twelve electric ovens were substituted by more efficient LPG ovens in 2001. Additionally, a backup/peak-hour diesel generator was used for 6 months in one store in 2001. The fossil-fuel consumptions was monitored and the project emissions are included in the calculation.

The electrical efficiency program includes different actions in each one of the stores. When the action is the installation of new equipments (such as light bulbs, freezers, chillers, better insulation, etc.), the monitoring can be performed verifying the purchase receipts of the equipment. When the actions include operational and behavioural changes, they can be monitored through meeting minutes, folders, interviews with employees, etc.

The calculation of emission reductions is made through a Microsoft Excel spreadsheet, which contains formulas in accordance with the methodology.

Details of the data to be collected, the frequency of data recording, its certainty, and format and storage location are described. The recording frequency of the data is appropriate for the project. The period for which data will be archived is established.

Companhia Brasileira de Distribuição – Grupo Pão de Açúcar is defined as the responsible for the project management, monitoring and reporting project activities as well as for organizing and training of the staff in the appropriate monitoring, measurement and reporting techniques.

The monitoring plan is straightforward and no specific procedures beyond the already established QA/QC procedures will be necessary. The established procedures reflect good monitoring and reporting practices.

## 3.6 Calculation of GHG Emissions

Project activity emissions are calculated as the electricity consumption of each store ($EC_{proj}$) multiplied by the grid electricity emission factor ($EF_{grid}$).

For each store, the electricity baseline consists of the electricity consumption of the store before the implementation of the project activity (i.e. electricity consumption in the year 2000). There are no new stores in this project.

The calculations of baseline emissions are established according to paragraph 9 of AMS-I.D (Version 10 of 23 December 2006) which is the kWh consumed during the baseline year (2000) multiplied by an emission coefficient (kg $CO_2$e/kWh) calculated as the average of the "approximate operating margin" and the "build margin". The system boundaries are the S-SE-CO and the N-NE regional Brazilian grids.

The combined margin emission coefficient is calculated as 0.2611 t$CO_2$e/MWh for the South/Southeast/Midwest (S-SE-CO) grid. The emission coefficient is determined ex-ante in accordance with version 06 of ACM0002 as stipulated by AMS-I.D using the simple adjusted OM based on data provided by ONS for the years 2003-2005. Data for the years 2003-2005 were the most recent statistics available at the time of PDD submission and the data was verified against the data published on the ONS website.

The ONS dataset does not include power plants that are locally dispatched. However, it is justified to only include plants dispatched by ONS although they only represent about 80% of the total installed capacity. Data for the remaining plants is not publicly available. Also, these plants operate either based on power purchase agreements which are not under control of the dispatch authority, or they are located in non-interconnected systems to which ONS has no access. Hence, these plants are not likely to be affected by a CDM project and the power plants dispatched by ONS are thus representative for the operating margin.

The build margin emission coefficients are correctly calculated considering the 20% capacity additions of the most recently installed plants dispatched by ONS and according the conservative plant efficiencies recommended by the CDM Executive Board at its 22$^{nd}$ meeting.

Project emissions due to the consumption of fossil fuels are foreseen and included in the estimations.

According to AMS-II.E, leakage is to be considered if equipment is transferred from another activity or if the existing equipment is transferred to another activity. The project was

implemented with new equipment(s) and there was no transference of equipment(s) from or to another activity(ies), hence no leakage is expected.

Algorithms and formulas used have been clearly presented and are considered adequate.

## 3.7 Environmental Impacts

The project activity has been implemented in accordance with all the applicable environmental legislation in the Municipal, State and Federal levels. No adverse environmental impacts are identified, which seems reasonable given the nature of the project design. Transboundary environmental impacts are not foreseen.

## 3.8 Comments by Local Stakeholders

Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. The names and details of the local stakeholder that were consulted were presented to the validation team. No concerns on the project were raised by these local stakeholders.

# 4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD of 12 June 2006 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were, through the CDM website, invited to provide comments during a 30 days period from 15 June 2006 to 14 July 2006. No comments were received.

After the revision of the methodology AMS-II.E the PDD of 25 February 2007 was again made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were, through the CDM website, invited to provide comments during a 30 days period from 28 February 2007 to 29 March 2007. No comment has been received so far.

# 5 VALIDATION OPINION

*Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Pão de Açúcar – Demand side electricity management – PDD 2 Project"" in Brazil. The validation was performed on the basis of UNFCCC criteria for CDM project activities and relevant Brazilian criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.*

*The project participants are Companhia Brasileira de Distribuição – Grupo Pão de Açúcar and Ecoinvest Carbon Brasil Ltda. The host Party Brazil meets the relevant participation requirements for the CDM. No participating Annex I Party is yet identified.*

*The project involves the reduction of the electricity consumption at the stores of Companhia Brasileira de Distribuição (CBD), by means of energy efficiency improvements. The reduction in electricity consumption has been achieved through the implementation of different independent electricity efficiency measures at the stores of CBD.*

*The project is one from a group of eight small-scale CDM project activities. Each component of the group is a small-scale CDM project activity that includes a defined number of stores of CBD in which independent efficiency measures are undertaken.*

*With the implementation of this project, the stores are able to reduce the reduce the consumption of electricity which is partly generated by thermal power plants supplying electricity to the S-SE-CO grid.*

*The project correctly applies the approved baseline methodology AMS-II.E version 08 - "Energy efficiency and fuel switching measures for buildings" for Type II – Energy Efficiency Improvement Projects.*

*The project is an "Energy efficiency and fuel switching measures for buildings" project activity, displacing grid electricity by means of energy efficiency improvements, which reduce energy consumption by less than 60 gigawatt/hours per year. The project is thus eligible to apply AMS-II.E.*

*The combined margin emission coefficient is calculated ex-ante as 0.2611 $tCO_2e/MWh$ for the South/Southeast/Midwest (S-SE-CO) grid. The estimated average annual emission reductions are 2 324 $tCO_2e$.*

*The baseline methodology has been applied correctly and the assumptions made for the selected baseline scenario are sound. It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are additional to any that would occur in the absence of the project activity.*

*Project activity emissions are calculated as the electricity consumption of each store ($EC_{proj}$) multiplied by the grid electricity emission factor ($EF_{grid}$). The energy baseline consists of the energy use of the existing equipment prior to the project implementation, i.e. the electricity consumption of each store in the year 2000.*

*The monitoring methodology AMS-II.E has been applied correctly. The monitoring plan sufficiently specifies the monitoring requirements of the main project indicators.*

*By promoting the improvement of electricity efficiency, the project is in line with the current sustainable development priorities of Brazil.*

*Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. The names and details of the local stakeholder that were consulted were presented to the validation team. No concerns on the project were raised by these local stakeholders.*

*In summary, it is DNV's opinion that the ""Pão de Açúcar – Demand side electricity management – PDD 2 Project"", as described in the revised project design document of 15 March 2007, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria, is eligible as type III small-scale CDM project activity and correctly applies the simplified baseline and monitoring methodology AMS-II.E (Version 8 of 23 December 2006). Hence, DNV requests the registration of the ""Pão de Açúcar – Demand side electricity management – PDD 2 Project"" as a CDM project activity.*

*Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the project assists in achieving sustainable development and that the project participants are authorized to participate in this project.*

*Due to the approval of a new version of the applied methodology AMS II-E the revised PDD in line with the version 08 of the methodology has been made publicly available for a new period of 30 days starting on 28 February 2007. This validation opinion cannot be considered final until the new stakeholder consultation process finalizes.*

## REFERENCES

*Documents provided by the project proponent that relate directly to the project:*

/1/ Companhia Brasileira de Distribuição – Grupo Pão de Açúcar and Ecoinvest: *Project Design Document for the "Pão de Açúcar – Demand* side electricity management – PDD 2 Project", Version 6 of 15 March 2006.

/2/ Spreadsheets for the calculation of the combined margin emission coefficients ("*ONS-Emission factors S-SE-CO 2003-2005-2006.08.28.xls*").

/3/ Spreadsheets for the calculation of the emission reductions ("*PaodeAcucar SSCPDD 2-CERs & actions-2007.03.13.xls*").

*Background documents related to the design and/or methodologies employed in the design or other reference documents:*

/4/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): Validation and Verification Manual. http://www.vvmanual.info

/5/ "Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities" - Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities: AMS-II.E – "Energy efficiency and fuel switching measures for buildings" for Type II – Energy Efficiency Improvement Projects. Version 7 of 28 November 2005.

/6/ "Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities" - Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities: AMS-II.E – "Energy efficiency and fuel switching measures for buildings" for Type II – Energy Efficiency Improvement Projects. Version 8 of 23 December 2006.

/7/ "Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities" - Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities: AMS-I.D – "Grid connected renewable electricity generation" for Type I – Renewable Energy Projects. Version 10 of 23 December 2006.

/8/ Approved consolidated baseline methodology ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 06 of 19 May 2006.

/9/ Bosi, M., A. Laurence, P. Maldonado, R. Schaeffer, A. F. Simoes, H. Winkler and J.-M. Lukamba: Road testing baselines for greenhouse gas mitigation projects in the electric power sector. OECD and IEA information paper, October 2002.

/10/ Attachment A to "Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities" - Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities. Version 06 of September 2005.

*Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above:*

/11/ Ricardo Esparta - Ecoinvest Carbon Brasil Ltda

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# APPENDIX A

## CDM VALIDATION PROTOCOL

## FOR SMALL-SCALE CDM PROJECT ACTIVITIES

## Table 1 Mandatory Requirements for Small Scale Clean Development Mechanism (CDM) Project Activities

| Requirement | Reference | Conclusion | Cross Reference / Comment |
|---|---|---|---|
| 1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 | Kyoto Protocol Art.12.2 | NA | Table 2, Section E.4.1<br>No Annex I party has yet been identified. |
| 2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof | Kyoto Protocol Art. 12.2,<br>CDM Modalities and Procedures §40a | -- | Table 2, Section A.3<br>Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the project assists in achieving sustainable development and that the project participants are authorized to participate in this project. |
| 3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC | Kyoto Protocol Art.12.2. | OK | Table 2, Section E.4.1 |
| 4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved | Kyoto Protocol Art. 12.5a,<br>CDM Modalities and Procedures §40a | -- | Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the project assists in achieving sustainable development and that the project participants are authorized to participate in this project. |
| 5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change | Kyoto Protocol Art. 12.5b | OK | Table 2, Section E |

| Requirement | Reference | Conclusion | Cross Reference / Comment |
|---|---|---|---|
| 6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity | Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43 | OK | Table 2, Section B.2 |
| 7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance | Decision 17/CP.7 | OK | No public funding is used. The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil. |
| 8. Parties participating in the CDM shall designate a national authority for the CDM | CDM Modalities and Procedures §29 | OK | The Brazilian designated national authority for the CDM is the "Comissão Interministerial de Mudança Global do Clima". |
| 9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol | CDM Modalities §30/31a | OK | Brazil has ratified the Kyoto Protocol on 23 August 2002 |
| 10. The participating Annex I Party's assigned amount shall have been calculated and recorded | CDM Modalities and Procedures §31b | NA | No Annex I party has yet been identified. |
| 11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7 | CDM Modalities and Procedures §31b | NA | No Annex I party has yet been identified. |
| 12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity | Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c | OK | Table 2, Section A.1 |

| Requirement | Reference | Conclusion | Cross Reference / Comment |
|---|---|---|---|
| 13. The project design document shall conform with the Small Scale CDM Project Design Document format | Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A | OK | The PDD is in line with the CDM-PDD for small-scale project activities (version 02 of 08 July 2005). |
| 14. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category | Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e | OK | Table 2, Section A.1.3, B and D |
| 15. Comments by local stakeholders are invited, and a summary of these provided | Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b | OK | Table 2, Section G<br>Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were not invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. |
| 16. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented | Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c | OK | Table 2, Section F |
| 17. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available | Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d | OK | The PDD of 12 June 2006 was published on the UNFCCC CDM website, www.dnv.com/certification/ClimateChange, and Parties, stakeholders and NGOs were invited to provide |

| Requirement | Reference | Conclusion | Cross Reference / Comment |
|---|---|---|---|
| | | | comments on the validation requirement during a period of 30 days, from 15 June 2006 to 14 July 2006. No comments were received.<br><br>Due to the approval of a new version of the applied methodology AMS II-E the revised PDD in line with the version 08 of the methodology has been made publicly available for a new period of 30 days starting on 28 February 2007. No comment has been received so far. |

## Table 2 Requirements Checklist

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| ***A.*** **Project Description**<br>The project design is assessed. | | | | | |
| **A.1. Small scale project activity**<br>It is assess whether the project qualifies as small scale CDM project activity. | | | | | |
| A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM? | /1/ | DR | Being an "Energy efficiency and fuel switching measures for buildings" project activity, the project qualifies as a small-scale CDM project activity according to AMS-II.E, and as defined by category Type II – Energy Efficiency Improvement Projects of "Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities" - Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities. | | OK |
| A.1.2. The small scale project activity is not a debundled component of a larger project activity? | /1/ | DR, I | The project is not a debundled component of a larger project activity according to "Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities" - Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities. The project is one from a bundle of eight small-scale CDM project activities. Each component project activity of the bundle is a small-scale CDM project activity that includes one store of CBD in which independent efficiency measures are undertaken. | | OK |
| A.1.3. Does proposed project activity confirm to one of the project categories defined for | /1/ | DR | The project is a Type II – Energy Efficiency Improvement Projects small-scale CDM project | | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| small scale CDM project activities? | | | activity as defined in the "Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities". | | |
| **A.2. Project Design**<br>Validation of project design focuses on the choice of technology and the design documentation of the project. | | | | | |
| A.2.1. Are the project's spatial (geographical) boundaries clearly defined? | /1/ | DR | Yes. The "Pão de Açúcar – Demand side electricity management – PDD 2 Project", Brazil, is located in the cities mentioned at Table A. | | OK |
| A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined? | /1/ | DR, I | Yes. The project boundary are the sites where the stores are located (see Table A). The system boundary for the determination of the combined margin emission factor is the S-SE-CO grid, which is the grid electricity system affected by the project. | | OK |
| A.2.3. Does the project design engineering reflect current good practices? | /1/ | DR | Yes. | | OK |
| A.2.4. Will the project result in technology transfer to the host country? | /1/ | DR | No. | | OK |
| A.2.5. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs? | /1/ | DR | The project design reflects good practice and sufficient training has been provided so as to operate and maintain the installed equipment in a most efficient way. | | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **A.3. Contribution to Sustainable Development**<br>The project's contribution to sustainable development is assessed | | | | | |
| A.3.1. Will the project create other environmental or social benefits than GHG emission reductions? | /1/ | DR | The project activity aims to reduce the country's dependency on the electricity partly generated by fossil-fuelled thermal plants. | | OK |
| A.3.2. Will the project create any adverse environmental or social effects? | /1/ | DR | Adverse environmental or social effects are not foreseen. | | OK |
| A.3.3. Is the project in line with sustainable development policies of the host country? | /1/ | DR | Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the project assists in achieving sustainable development and that the project participants are authorized to participate in this project. | -- | -- |
| A.3.4. Is the project in line with relevant legislation and plans in the host country? | /1/ | DR/I | DNV requests documented evidences of the Operation Permits/Licenses. | ~~CL 4~~ | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| ***B.*** **Project Baseline**<br>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario. | | | | | |
| **B.1. Baseline Methodology**<br>It is assessed whether the project applies an appropriate baseline methodology. | | | | | |
| B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category? | /1/<br>/6/<br>/7/ | DR, I | The project applies the Baseline methodology: AMS-II.E - "Energy efficiency and fuel switching measures for buildings" for Type II – Energy Efficiency Improvement Projects.<br>The electricity baseline consists in the electricity consumption of the stores before the implementation of the project activity. In the case of a new facility, the baseline consists in the benchmark electricity consumption of the facility that would otherwise be built.<br>Electricity consumption is multiplied by an emission coefficient, which is calculated as per methodology AMS-I.D Paragraph 9, Option (a). | | OK |
| B.1.2. Is the baseline methodology applicable to the project being considered? | /1/<br>/6/ | DR | Yes.<br>See B.1.1. | | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **B.2. Baseline Determination**<br>It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario. | | | | | |
| B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers? | /1/ | DR, I | It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions are thus additional.<br>The additionality of the project is demonstrated through the barrier analysis contained in Attachment A to *"Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities"* - Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activities.<br>Although not required by the above mentioned barrier analysis, DNV assessed whether CDM benefits have been considered prior to project implementation as required by step 0 of the *Tool for the demonstration and assessment of additionality*.<br>(1) The starting date of the CDM project activity, i.e. 01 January 2001, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004).<br>DNV requests evidences of the project starting date.<br>(2) Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity is the contract signed between | ~~CL 1~~<br>~~CL 2~~ | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| | | | CBD and Sinerconsult, which was the company that implemented the electricity efficiency program, and part of the scope of work/contract is related to CDM projects / Kyoto protocol.<br><br>Moreover, the projects participants submitted a proposed new baseline and monitoring methodology for the reduction of electricity consumption projects at the stores of CBD in round 11 (June 2005). This proposed new baseline and monitoring methodology was filed as NM0120 and was graded C by the CDM Executive Board at its 21st meeting (September 2005). At the time of the new baseline and methodology submission, up to 551 stores of the CBD were mentioned in the submitted PDD as potential project participants. Eventually, the project participants presented the reduction of electricity consumption projects at the stores of CBD as eight small-scale CDM project activities applying AMS-II.E, based in a priority list of stores. The project participants can request retroactive credits if the project is registered by the Executive Board by 31 December 2006 at the latest.<br><br>DNV requests evidence of the signed contract between CBD and Sinerconsult.<br><br>Investment barriers and technological barriers, barriers due to prevailing practice and other barriers are presented in the PDD:<br><br>a) *Investment barriers*. When comparing different investment possibilities it is very likely that a company will prefer to invest mainly in their core | | |

| **Checklist Question** | **Ref.** | **MoV*** | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| | | | business and not e.g. in improved energy efficiency measures. The project involved a significant investment into a business not related to the core business of CBD, around R$11 millions, and it was developed on equity basis, without any public or private funding. DNV acknowledges that this argumentation demonstrates a barrier to implement the project.<br><br>b) *Technological barriers*. The maintenance of the situation existing previously to project implementation represented a less technologically advanced alternative which involved lower risks due to the performance uncertainty and so it would have led to higher emissions. The risk involved in the implementation of the project activity and the lack of confidence in the results of the project represented barriers to its implementation and CBD was affected by the risks (actual and perceived) of using a new or unfamiliar technology. DNV does not consider this argumentation as a possible barrier to implement the project as the main arguments are more related to a financial (costs and benefits) issue.<br><br>c) *Barrier due to prevailing practice*. Prevailing practice, existing regulatory requirements and existing policies would not push the implementation of the project activity to the point of its implementation. Uncertain economic scenario, little economic incentive for energy efficiency programs and capital restrictions | | |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| | | | appears as important barriers to investment in energy efficiency, so that efficiency programs are not a common practice in the sector and rely on self promoted initiatives. Here the problem is the related lack of awareness regarding their energy losses and what can be done, as well as the limitations of in-house capacity. DNV acknowledges that this argumentation demonstrates a barrier to implement the project.<br><br>d) *Other barriers*. Limited information is also a barrier to project implementation. Energy-use is a "secondary" and "invisible" characteristic of CBD activities and so, supplementary information is needed to bring it to the attention of the company's decision makers. Markets fail to disseminate information about products' energy characteristics to the extent that it is economically efficient. Also, as electricity is not a major cost in CBD operations, there is a limited awareness and interest in energy costs and thus reducing energy expenses. Energy is a small part of the cost of doing business and is often treated as a fixed cost. DNV acknowledges that information about products' energy characteristics is not a disseminate action among equipments manufactures.<br><br>The project participants were able to demonstrate that the sale of CERs will provide the necessary incentives for the project to alleviate the above presented barriers.<br><br>Given the above and in particular the barriers due | | |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| | | | to prevailing practice and other barriers which the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions are thus additional. | | |
| B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative? | /1/ | DR | The combined margin emission coefficient is calculated as 0.261 $tCO_2e/MWh$ for the South/Southeast/Midwest (S-SE-CO) grid. The ONS dataset does not include power plants that are locally dispatched. Data for the years 2002-2004 were the most recent statistics available at the time of PDD submission and the data was verified against the data published on the ONS website. | | OK |
| B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account? | /1/ | DR/I | Yes. | | OK |
| B.2.4. Is the baseline selection compatible with the available data? | /1/ | DR | See.B.2.2 | | OK |
| B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity? | /1/ | DR | See B.2.1. | | OK |
| ***C.*** **Duration of the Project / Crediting Period**<br>It is assessed whether the temporary boundaries of the project are clearly defined. | | | | | |
| C.1.1. Are the project's starting date and operational lifetime clearly defined? | /1/ | DR | The project start date is 01 January 2001 with an expected lifetime of 30 years.<br>DNV requests evidences of the project starting date. | ~~CL 1~~ | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)? | /1/ | DR | A fixed 10-year crediting period was selected, starting on 01 January 2001. | | OK |
| ***D.*** **Monitoring Plan**<br>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed. | | | | | |
| **D.1. Monitoring Methodology**<br>It is assessed whether the project applies an appropriate monitoring methodology. | | | | | |
| D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category? | /1/<br>/6/ | DR | The monitoring methodology is in line with the monitoring methodology AMS-II.E and the General Guidance-paragraph 11 of "Appendix B of the "Simplified modalities and procedures for small-scale CDM project activities", provided for Type II – Energy Efficiency Improvement Projects projects category. | | OK |
| D.1.2. Is the monitoring methodology applicable to the project being considered? | /1/<br>/6/ | DR | The monitoring methodology is in accordance with the AMS-II.E methodology. | | OK |
| D.1.3. Is the application of the monitoring methodology transparent? | /1/<br>/6/ | DR | Yes. | | OK |
| D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions? | /1/<br>/6/ | DR | Yes. | | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **D.2. Monitoring of Project Emissions**<br>It is established whether the monitoring plan provides for reliable and complete project emission data over time. | | | | | |
| D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period? | /1/ /6/ /7/ | DR, I | Project activity emissions are calculated as the electricity consumption of each component project activity ($EC_{proj}$) multiplied by the grid electricity emission factor ($EF_{grid}$). The electricity emission factor is calculated as per methodology AMS-I.D Paragraph 9, Option (a).<br>The PDD states at E.1.2.1 that "the *project activity did result in any consumption of fossil fuels"* but in other items (for example A.4.3, b.5 and D.4) it is mentioned the possibility of having some fossil fuels consumption. DNV requests clarifications about this possible fossil fuel consumption and monitoring. | ~~CL 5~~ | OK |
| D.2.2. Are the choices of project emission indicators reasonable? | /1/ /6/ /7/ | DR, I | See D.2.1 | ~~CL 5~~ | OK |
| D.2.3. Will it be possible to monitor / measure the specified project GHG indicators? | /1/ /6/ /7/ | DR, I | See D.2.1 | ~~CL 5~~ | OK |
| D.2.4. Will the indicators give opportunity for real measurements of project emissions? | /1/ /6/ /7/ | DR, I | See D.2.1 | ~~CL 5~~ | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **D.3. Monitoring of Leakage**<br>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time. | | | | | |
| D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage? | /1/ /6/ | DR, I | According to AMS-II.E leakage is to be considered if equipment is transferred from another activity or if the existing equipment is transferred to another activity.<br>The project was implemented with new equipment, hence no leakage is expected.<br>DNV requests a complete description of all actions taken (for example, new practices / procedures) as well as of all retrofitted / replaced and new equipments and their performances and, for retrofitted / replaced equipments, their lifetime. | ~~CAR 1~~ | OK |
| D.3.2. Are the choices of leakage indicators reasonable? | /1/ /6/ | DR, I | See D.3.1 | | OK |
| D.3.3. Will it be possible to monitor / measure the specified leakage indicators? | /1/ /6/ | DR, I | See D.3.1 | | OK |
| D.3.4. Will the indicators give opportunity for real measurements of leakage effects? | /1/ /6/ | DR, I | See D.3.1 | | OK |
| **D.4. Monitoring of Baseline Emissions**<br>It is established whether the monitoring plan provides for reliable and complete project emission data over time. | | | | | |
| D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data | /1/ /6/ | DR, I | See B.2.2. | | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| necessary for determining baseline | | | | | |
| D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable? | /1/ /6/ | DR, I | See B.2.2. | | OK |
| D.4.3. Will it be possible to monitor / measure the specified baseline indicators? | /1/ /6/ | DR, I | See B.2.2. | | OK |
| D.4.4. Will the indicators give opportunity for real measurements of baseline emissions? | /1/ /6/ | DR, I | See B.2.2. | | OK |
| **D.5. Project Management Planning**<br>It is checked that project implementation is properly prepared for and that critical arrangements are addressed. | | | | | |
| D.5.1. Is the authority and responsibility of project management clearly described? | /1/ /6/ | DR, I | Companhia Brasileira de Distribuição – Grupo Pão de Açúcar is defined as the responsible for the project management, monitoring and reporting project activities as well as for organizing and training of the staff in the appropriate monitoring, measurement and reporting techniques.<br>The electricity consumption data of each store is controlled and monitored from the company headquarters and consolidated electronically in the SIGESCON system, where all this information is available (back-up also available) and monthly reports are produced from these data.<br>Monitoring consists of (a) Documenting the specifications of the equipment replaced and (b) Calculating the energy savings due to the measures installed (see CAR 1).<br>Project proponents also monitor the electricity | ~~CL 6~~ | OK |

| **Checklist Question** | **Ref.** | **MoV*** | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| | | | consumption in each component project activity (store) obtained from the monthly electricity receipts, issued each month by the electricity company(ies), that will be used to cross-check the calculation of energy savings due to the efficiency measures installed. The measurement of the electricity consumption is based on calibrated meters (by the electricity company/ies) installed in each one of the stores.<br><br>DNV requests clarifications about the back-up procedure (periodicity, storage…) and evidences of the monthly reports of electricity consumption (from SIGESCON data), purchase receipts of new equipments and for the operational and behavioural changes. | | |
| D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described? | /1/ /6/ | DR, I | See D.5.1 | | OK |
| D.5.3. Are procedures identified for training of monitoring personnel? | /1/ /6/ | DR, I | See D.5.1 | | OK |
| D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions? | /1/ /6/ | DR, I | Not applicable | | OK |
| D.5.5. Are procedures identified for calibration of monitoring equipment? | /1/ /6/ | DR, I | See D.5.1 | | OK |
| D.5.6. Are procedures identified for maintenance of monitoring equipment and installations? | /1/ /6/ | DR, I | See D.5.1 | | OK |
| D.5.7. Are procedures identified for monitoring, measurements and reporting? | /1/ /6/ | DR, I | See D.5.1 | | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation) | /1/ /6/ | DR, I | See D.5.1 | | OK |
| D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties? | /1/ /6/ | DR, I | See D.5.1 | | OK |
| D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable? | /1/ /6/ | DR, I | See D.5.1 | | OK |
| D.5.11. Are procedures identified for project performance reviews? | /1/ /6/ | DR, I | See D.5.1 | | OK |
| D.5.12. Are procedures identified for corrective actions? | /1/ /6/ | DR, I | See D.5.1 | | OK |
| ***E.*** **Calculation of GHG emission**<br>It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions. | | | | | |
| **E.1. Project GHG Emissions**<br>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations. | | | | | |
| E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design? | /1/ /7/ | DR, I | Project activity emissions are calculated as the electricity consumption of each component project activity adjusted for technical transmission and distribution losses for the electrical grid serving the | ~~CL 5~~ | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| | | | stores ($EC_{proj}$) multiplied by the grid electricity emission factor ($EF_{grid}$). The electricity emission factor is calculated as per methodology AMS-I.D Paragraph 9, Option (a).<br><br>The PDD states at E.1.2.1 that "the *project activity did result in any consumption of fossil fuels"* but in other items (for example A.4.3, b.5 and D.4) it is mentioned the possibility of having some fossil fuels consumption. DNV requests clarifications about this possible fossil fuel consumption and monitoring. | | |
| E.1.2. Have all relevant greenhouse gases and sources been evaluated? | /1/ /7/ | DR, I | See E.1.1 | | OK |
| E.1.3. Do the methodologies for calculating project emissions comply with existing good practice? | /1/ /7/ | DR, I | See E.1.1 | | OK |
| E.1.4. Are the calculations documented in a complete and transparent manner? | /1/ /7/ | DR, I | See E.1.1 | | OK |
| E.1.5. Have conservative assumptions been used? | /1/ /7/ | DR, I | See E.1.1 | | OK |
| E.1.6. Are uncertainties in the project emissions estimates properly addressed? | /1/ /7/ | DR, I | See E.1.1 | | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **E.2. Leakage**<br>It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed. | | | | | |
| E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed? | /1/ /6/ | DR, I | According to AMS-II.E leakage is to be considered if equipment is transferred from another activity or if the existing equipment is transferred to another activity.<br>The project was implemented with new equipment, hence no leakage is expected.<br>DNV requests a complete description of all actions taken (for example, new practices / procedures) as well as of all retrofitted / replaced and new equipments and their performances and, for retrofitted / replaced equipments, their lifetime. | ~~CAR 1~~ | OK |
| E.2.2. | /1/ /6/ | DR, I | See E.2.1 | | OK |
| E.2.3. | /1/ /6/ | DR, I | See E.2.1 | | OK |
| E.2.4. | /1/ /6/ | DR, I | See E.2.1 | | OK |
| E.2.5. | /1/ /6/ | DR, I | See E.2.1 | | OK |
| E.2.6. | /1/ /6/ | DR, I | See E.2.1 | | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **E.3. Baseline GHG Emissions**<br>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations. | | | | | |
| E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions? | /1/ | DR | The project boundary are the sites where the stores are located (see Table A). The system boundary for the determination of the combined margin emission factor is the S-SE-CO grid, which is the grid electricity system affected by the project. | | OK |
| E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design? | /1/ | DR | Yes. | | OK |
| E.3.3. Have all relevant greenhouse gases and sources been evaluated? | /1/ | DR | The project considers only emission reductions related to $CO_2$ emitted by electricity partly generated by fossil-fuelled thermal plants from the S-SE-CO grid and displaced by the project. | | OK |
| E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice? | /1/ | DR | Yes. According to AMS-II.E. | | OK |
| E.3.5. Are the calculations documented in a complete and transparent manner? | /1/ | DR, I | See B.2.2. | | OK |
| E.3.6. Have conservative assumptions been used? | /1/ | DR, I | See B.2.2. | | OK |
| E.3.7. Are uncertainties in the baseline emissions estimates properly addressed? | /1/ | DR, I | See B.2.2. | | OK |

| Checklist Question | Ref. | MoV* | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| **E.4. Emission Reductions**<br>Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations. | | | | | |
| E.4.1. Will the project result in fewer GHG emissions than the baseline case? | /1/ | DR, I | The project is expected to reduce $CO_2$ emissions to the extent of 23 238 tCO2e (2 324 tCO2e/year on average) during the fixed 10-year crediting period. | | OK |
| ***F.*** **Environmental Impacts**<br>It is assessed whether environmental impacts of the project are sufficiently addressed. | | | | | |
| F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity? | /1/ | DR/I | The project activity has been implemented in accordance with all the applicable environmental legislation in the Municipal, State and Federal levels.<br>DNV requests documented evidences of the Operation Permits/Licenses. | ~~CL 4~~ | OK |
| F.1.2. Does the project comply with environmental legislation in the host country? | /1/ | DR/I | See F.1.1 | ~~CL 4~~ | OKB |
| F.1.3. Will the project create any adverse environmental effects? | /1/ | DR/I | No adverse environmental effects are foreseen. | | OK |
| F.1.4. Have environmental impacts been identified and addressed in the PDD? | /1/ | DR/I | See F.1.1 | ~~CL 4~~ | OK |

| **Checklist Question** | **Ref.** | **MoV*** | Comments | Draft Concl. | Final Concl. |
|---|---|---|---|---|---|
| ***G.*** **Comments by Local Stakeholder**<br>Validation of the local stakeholder consultation process. | | | | | |
| G.1.1. Have relevant stakeholders been consulted? | /1/ | DR/I | Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were not invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA.<br>Local stakeholders should be invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. | ~~CL 3~~ | OK |
| G.1.2. Have appropriate media been used to invite comments by local stakeholders? | /1/ | DR/I | See G.1.1. | ~~CL 3~~ | OK |
| G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws? | /1/ | DR/I | See G.1.1. | ~~CL 3~~ | OK |
| G.1.4. Is a summary of the comments received provided? | /1/ | DR/I | See G.1.1. | ~~CL 3~~ | OK |
| G.1.5. Has due account been taken of any comments received? | /1/ | DR/I | See G.1.1. | ~~CL 3~~ | OK |

## Table 3 Resolution of Corrective Action and Clarification Requests

| Draft report corrective action requests and requests for clarifications | Ref. to Table 2 | Summary of project participants' response | Final conclusion |
|---|---|---|---|
| CAR 1<br>DNV requests a complete description of all actions taken (for example, new practices / procedures) as well as of all retrofitted / replaced and new equipments and their performances and, for retrofitted / replaced equipments, their lifetime. | B.2.2<br>D.3.1<br>E.2.1 | --- 2006.09.07 ---<br>A list with the description of actions taken in each store as well as capacity building/training presentations were supplied. From the list it is clear that the level of service did not change significantly (all the actions are related to changes in operational procedures, use of more efficient devices and more suitable and efficient illumination levels).<br>--- 2006.09.14 ---<br>The list of actions taken was completed (including description of actions taken in the mentioned stores). | 2006-09-15<br>This CAR is closed. |
| CL 1<br>DNV requests evidences of the project starting date. | B.2.1<br>C.1.1 | --- 2006.09.07 ---<br>A contract with a company (Light) to implement the energy efficiency actions was provided.<br>--- 2006.09.14 ---<br>The contract with Light is additional evidence. The implementation of the project started in 2001 as the contract with Sinerconsult (signed 1 May 2001) shows.<br>--- 2006.09.15 --- | Date of the contract with Light: 2002-09-01; date of the project starting date: 2001-01-01. Needs further clarification.<br>2006-09-14<br>Date of the contract with Sinerconsult: 2001-05-01; date of the project starting date: 2001-01-01. Needs further clarification.<br>2006-10-03<br>DNV requires evidence that at least one store has started the project before 1 |

| Draft report corrective action requests and requests for clarifications | Ref. to Table 2 | Summary of project participants' response | Final conclusion |
|---|---|---|---|
| | | Programs and actions towards electricity consumption reduction and energy efficiency started with internal actions in the beginning of 2001. As there is not an specific date to be picked up as the unequivocal starting date, the project participants decided to choose the first day of the year (also to be coincident with the fiscal year). Sinerconsult was incorporated to the project since its beginning but the negotiation and final text of the contract was agreed only in the middle of April and finally signed in May.<br><br>--- 2006.09.14 ---<br><br>The CDB program for a better management (and reduction) of electricity consumption was planned at the end of 2000 and started officially in 1 January 2001 with the implementation of the software "Sigescon", a monitoring tool related to the electricity consumption in all stores of the CBD group.<br><br>Actual measures to reduce electricity consumption were implemented from 1 January 2001 onwards. In some cases measures were taken without an specific start date (for example, nobody took note of the exact day an specific supermarket considered reasonable to | January 2001.<br><br>2006-11-22<br><br>Evidence was providing demonstrating that the CDB program started on 1 January 2001. DNV acknowledges that although the actual implementation date at each shop is difficult to define, using the starting date 1 January 2001 is appropriate since it is not likely that the electricity at one store was reduced due to other reasons than the program (there was a trend of increased electricity consumption prior to the implementation of the project).<br><br>This CL is therefore closed. |

| Draft report corrective action requests and requests for clarifications | Ref. to Table 2 | Summary of project participants' response | Final conclusion |
|---|---|---|---|
| | | turn off lights of the parking places during the night, or to reduce air-conditioning use in the evening hours). Physical measures (like refrigeration equipment and light bulb changes) were taken from January 2001 onwards as the opportunities were being recognized. It is difficult to say the exact date a physical measure is really implemented (but, for example, certainly not dates in the receipt of the equipment sale/bought).<br><br>Different actions (some new other just the "maintenance" of old ones) are still being taken on a continuously basis.<br><br>Although the actual implementation date for the whole project is diffuse (depending on the implementation of individual measures in each store) due to the increase/stabilization electricity consumption trend, assuming the project start date as a general one for all the stores will not lead to CER generation that is not directly related to the implementation project activity. | |
| CL 2<br>DNV requests evidence of the signed contract between CBD and Sinerconsult. | B.2.1 | Evidence of the agreement was supplied. | OK, the agreement was received.<br><br>This CL is closed. |
| CL 3<br>Local stakeholders should be invited to comment on the project, in accordance with | Table 1 - 15<br>G.1.1 | --- 2006.09.07 ---<br><br>Local stakeholders were invited in July 2006 to comment the project. Electronic | 2006-09-14<br><br>OK, the ARs received are related with local stakeholders of this set of stores. |

| Draft report corrective action requests and requests for clarifications | Ref. to Table 2 | Summary of project participants' response | Final conclusion |
|---|---|---|---|
| the requirements of Resolution 1 of the Brazilian DNA. | | copies of the letters and corresponding receipts (of sending as well as delivery) were provided. | This CL is therefore closed. |
| CL 4<br>DNV requests documented evidences of the Operation Permits/Licenses. | A.3.4 | --- 2006.09.07 ---<br>Electronic copies of the operation permits/licenses were provided. | 2006-09-15<br>License received. This CL is therefore closed. |
| CL 5<br>The PDD states at E.1.2.1 that "*the project activity did result in any consumption of fossil fuels*" but in other items (for example A.4.3, b.5 and D.4) it is mentioned the possibility of having some fossil fuels consumption. DNV requests clarifications about this possible fossil fuel consumption and monitoring. | D.2.1 to D.2.4<br>E.1.1 | --- 2006.09.07 ---<br>Some of the actions for specific stores included the substitution of electric by more efficient gas ovens and/or having a backup diesel generators to avoid problems (and higher electricity consumption) caused by instabilities of grid power. Leakage calculations were included for the specific stores. | 2006-09-15<br>At two stores a total of twelve electric ovens were substituted by more efficient LPG ovens in 2001. Hence, the consumption of fossil fuel is monitored through fossil fuels purchase invoices and the appropriate project emissions are determined. Additionally a backup/peak-hour diesel generator was used for 6 months in one store in 2001. The diesel consumptions was monitored and the appropriate project emissions is included in the calculation.<br>This CL is therefore closed. |
| CL 6<br>DNV requests clarifications about the back-up procedure (periodicity, storage…) and evidences of the monthly reports of electricity consumption (from SIGESCON data), purchase receipts of new equipments and for the operational and behavioural changes. | D.5.1 | --- 2006.09.07 ---<br>Information on the monitoring equipments and procedures were supplied.<br>--- 2006.09.14 ---<br>Document with description of Sigescon were provided. | Information was not yet received.<br>2006-09-14<br>Document received.<br>This CL is therefore closed. |

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# APPENDIX B

## CERTIFICATES OF COMPETENCE

# CERTIFICATE OF COMPETENCE

# *Michael Lehmann*

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

| | | | |
|---|---|---|---|
| ***GHG Auditor:*** | Yes | | |
| ***CDM Validator:*** | Yes | ***JI Validator:*** | Yes |
| ***CDM Verifier:*** | Yes | ***JI Verifier:*** | Yes |
| ***Industry Sector Expert for Sectoral Scope(s):*** | Sectoral scope 1,2,3 & 9 | | |
| ***Technical Reviewer for (group of) methodologies:*** | | | |
| *ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G* | Yes | *AM0021* | Yes |
| *ACM002, AMS-I.A-D, AM0019, AM0026, AM0029* | Yes | *AM0023* | Yes |
| *ACM003, ACM0005, AM0033, AM0040* | Yes | *AM0024* | Yes |
| *ACM0004* | Yes | *AM0027* | Yes |
| *ACM0006, AM0007, AM0015, AM0036, AM0042* | Yes | *AM0028, AM0034* | Yes |
| *ACM0007* | Yes | *AM0030* | Yes |
| *ACM0008* | Yes | *AM0031* | Yes |
| *ACM0009, AM0008, AMS-III.B* | Yes | *AM0032* | Yes |
| *AM0006, AM0016, AMS-III.D* | Yes | *AM0035* | Yes |
| *AM0009, AM0037* | Yes | *AM0038* | Yes |
| *AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I* | Yes | *AM0041* | Yes |
| *AM0014* | Yes | *AM0034* | Yes |
| *AM0017* | Yes | *AMS-II.A-F* | Yes |
| *AM0018* | Yes | *AMS-III.A* | Yes |
| *AM0020* | Yes | *AMS-III.E, AMS-III.F* | Yes |

Høvik, 6 November 2006

Einar Telnes
*Director, International Climate Change Servicer*

Michael Lehmann
*Technical Director*

# CERTIFICATE OF COMPETENCE

# *Einar Telnes*

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

| | | | |
|---|---|---|---|
| ***GHG Auditor:*** | Yes | | |
| ***CDM Validator:*** | Yes | ***JI Validator:*** | Yes |
| ***CDM Verifier:*** | Yes | ***JI Verifier:*** | Yes |
| ***Industry Sector Expert for Sectoral Scope(s):*** | Sectoral scope 1,2,3 & 9 | | |
| ***Technical Reviewer for (group of) methodologies:*** | | | |
| *ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G* | Yes | *AM0021* | Yes |
| *ACM002, AMS-I.A-D, AM0019, AM0026, AM0029* | Yes | *AM0023* | Yes |
| *ACM003, ACM0005, AM0033, AM0040* | Yes | *AM0024* | Yes |
| *ACM0004* | Yes | *AM0027* | Yes |
| *ACM0006, AM0007, AM0015, AM0036, AM0042* | Yes | *AM0028, AM0034* | Yes |
| *ACM0007* | Yes | *AM0030* | Yes |
| *ACM0008* | Yes | *AM0031* | Yes |
| *ACM0009, AM0008, AMS-III.B* | Yes | *AM0032* | Yes |
| *AM0006, AM0016, AMS-III.D* | Yes | *AM0035* | Yes |
| *AM0009, AM0037* | Yes | *AM0038* | Yes |
| *AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I* | Yes | *AM0041* | Yes |
| *AM0014* | Yes | *AM0034* | Yes |
| *AM0017* | Yes | *AMS-II.A-F* | Yes |
| *AM0018* | Yes | *AMS-III.A* | Yes |
| *AM0020* | Yes | *AMS-III.E, AMS-III.F* | Yes |

Høvik, 6 November 2006

Einar Telnes
*Director, International Climate Change Servicer*

Michael Lehmann
*Technical Director*

# CERTIFICATE OF COMPETENCE

# *Felipe Lacerda Antunes*

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

| | | | |
|---|---|---|---|
| ***GHG Auditor:*** | Yes | | |
| ***CDM Validator:*** | No | ***JI Validator:*** | No |
| ***CDM Verifier:*** | No | ***JI Verifier:*** | No |
| ***Industry Sector Expert for Sectoral Scope(s):*** | Sectoral scope | | |
| ***Technical Reviewer for (group of) methodologies:*** | | | |
| *ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G* | No | *AM0021* | No |
| *ACM002, AMS-I.A-D, AM0019, AM0026, AM0029* | No | *AM0023* | No |
| *ACM003, ACM0005, AM0033, AM0040* | No | *AM0024* | No |
| *ACM0004* | No | *AM0027* | No |
| *ACM0006, AM0007, AM0015, AM0036, AM0042* | No | *AM0028, AM0034* | No |
| *ACM0007* | No | *AM0030* | No |
| *ACM0008* | No | *AM0031* | No |
| *ACM0009, AM0008, AMS-III.B* | No | *AM0032* | No |
| *AM0006, AM0016, AMS-III.D* | No | *AM0035* | No |
| *AM0009, AM0037* | No | *AM0038* | No |
| *AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I* | No | *AM0041* | No |
| *AM0014* | No | *AM0034* | No |
| *AM0017* | No | *AMS-II.A-F* | No |
| *AM0018* | No | *AMS-III.A* | No |
| *AM0020* | No | *AMS-III.E, AMS-III.F* | No |

Høvik, 6 November 2006

Einar Telnes
*Director, International Climate Change Services*

Michael Lehmann
*Technical Director*

# CERTIFICATE OF COMPETENCE

## *Miguel Rescalvo*

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

| | | | |
|---|---|---|---|
| ***GHG Auditor:*** | Yes | | |
| ***CDM Validator:*** | Yes | ***JI Validator:*** | -- |
| ***CDM Verifier:*** | -- | ***JI Verifier:*** | -- |
| ***Industry Sector Expert for Sectoral Scope(s):*** | -- | | |

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Servicesr

Michael Lehmann
Technical Director