



Industrie Service

Validation Report

AGCERT INTERNATIONAL LIMITED, IRELAND

Validation of the AWMS GHG Mitigation Project
BR05-B-11, Mato Grosso, Minas Gerais and
São Paulo, Brazil

Report No. 711664

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Carbon Management Service
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Executing Operational Unit:		TÜV Industrie Service GmbH TÜV SÜD Group Carbon Management Service Westendstr. 199 - 80686 Munich Federal Republic of Germany		
Client:		AgCert International PLC, Ireland Sandyford Business Park The Apex Building Dublin 18, Ireland		
Contract approved by:		Werner Betzenbichler		
Report Title:		Validation of the AWMS GHG Mitigation Project BR05-B-11, Mato Grosso, Minas Gerais and São Paulo, Brazil		
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Summary:				
<p>The Certification Body "Climate and Energy" has been ordered by AgCert International LLC, Ireland (AgCert International) to perform a validation of the above mentioned project.</p> <p>In summary, it is TÜV SÜD's opinion that the project "AWMS GHG Mitigation Project BR05-B-11, Mato Grosso, Minas Gerais and São Paulo, Brazil", as described in the revised project design document of November 2005, meets all relevant UNFCCC requirements for the CDM, set by the Kyoto Protocol, the Marrakech Accords and relevant guidance by the CDM Executive Board and that the project furthermore meets all relevant host country criteria and correctly applies the baseline and monitoring methodology AM0016 / Ver. 02 entitled "<i>Greenhouse gas mitigation from improved Animal Waste Management Systems in confined animal feeding operations.</i>"</p> <p>Hence, TÜV SÜD will recommend the project for registration as CDM project activity by the CDM Executive Board.</p> <p>Prior to the submission of this validation report to the CDM Executive Board, TÜV SÜD will have to receive the written approval of the DNA of involved parties, including confirmation by the DNA of Brazil that the project assists in achieving sustainable development.</p> <p>Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 678,250 tonnes CO_{2e} over a crediting period of ten years, resulting in a calculated annual average of 67,825 tonnes CO₂ represents a reasonable estimation using the assumptions given by the project documents.</p>				
Work carried out by:		<ul style="list-style-type: none"> • Markus Knödseder (GHG lead auditor, Auditor Environmental Management Systems (ISO 14001)) • Tomao Wilson (GHG auditor, ISO 14001 Auditor Local expert) 		Internal Quality Control by: Werner Betzenbichler

Abbreviations

AE	Applicant Operational Entity
AgCert Brazil	AgCert Do Brasil Solucoes Ambientais Ltda
AgCert International	AgCert International PLC, Ireland
AWMS	Animal Waste Management Systems
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CR	Clarification Request
DOE	Designated Operational Entity
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
GHG	Greenhouse gas(es)
KP	Kyoto Protocol
MP	Monitoring Plan
PDD	Project Design Document
TÜV SÜD	TÜV Industrie Service GmbH TÜV SÜD Group
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

AgCert International PLC, Ireland (AgCert International) has commissioned TÜV Industrie Service GmbH TÜV SÜD Group (TÜV SÜD) to validate the AWMS GHG Mitigation Project BR05-B-11, Mato Grosso, Minas Gerais and São Paulo, Brazil. The validation serves as design verification and is a requirement of all CDM projects. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

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

1.2 Scope

The 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. TÜV SÜD has, based on the recommendations in the Validation and Verification Manual employed 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 consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

The audit team has been provided with the first PDD-version in August 2005. Based on this documentation a document review and a fact finding mission in form of an on site audit has taken place. This PDD version was published from August 04 to September 02, 2005. After the document review and the onsite visit the validation team demanded additional information addressed in annex A. The information was given and the PDD was updated accordingly. That final PDD version (2) was submitted in November 2005 and serves as the basis for the final assessment presented herewith. The changes were not significant, thus the global stakeholder process was not repeated.

Studying the existing documentation belonging to this project, it was obvious that the competence and capability of the validation team has to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Environmental and Social Impact Assessment
- Skills in environmental auditing (ISO 14000, EMAS)
- Quality assurance
- Agricultural operations especially regarding manure management
- Technical aspects of gas flaring and biodigester operation

- Monitoring concepts
- Political, economical and technical random conditions in host country

According to these requirements TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV certification body “climate and energy”:

Markus Knödseder: After his professional training as chemical assistance Mr. Knödseder studied environmental engineer at the University of Applied Science in Bingen, Germany. Beside his main focus in studies of environmental technologies, he dealt with environmental management and environmental controlling issues. He has been a staff at the department “Carbon Management Service” located in the head office of TÜV Industrie Service GmbH, TÜV SÜD Group in Munich since Oct. 2001. He has been involved in the topic of environmental auditing, baselining, monitoring and verification due to the requirements of the Kyoto Protocol with special focus on renewable energies. Mr. Knödseder is also an auditor for environmental management systems (ISO 14.000).

Mr. Wilson Tomao is lead auditor and former manager of TÜV Bayern Brazil. He is familiar with local laws and regulations and the assessment of technical installations. He assisted Mr. Knödseder during the on-site inspections and by evaluating documents submitting in Portuguese language.

The audit team covers the above mentioned requirements as follows:

- Knowledge of Kyoto Protocol and the Marrakech Accords (Knödseder/Tomao)
- Environmental and Social Impact Assessment (All)
- Skills in environmental auditing (ISO 14000, EMAS) (All)
- Quality assurance (Knödseder/Tomao)
- Agricultural operations especially regarding manure management (Knödseder/Tomao)
- Technical aspects of gas flaring and biodigester operation (Knödseder/Tomao)
- Monitoring concepts (All)
- Political, economical and technical random conditions in host country (Tomao)

In order to have an internal quality control of the project, a team of the following persons has been composed by the certification body “climate and energy”:

- Werner Betzenbichler (project manager, GHG lead auditor)

1.3 GHG Project Description

This project proposes to apply to multiple swine Confined Animal Feeding Operations (located in Mato Grosso, Minas Gerais and São Paulo, Brazil) a GHG mitigation methodology which is applicable to intensive livestock operations. The proposed project activities will mitigate AWMS GHG emissions in an economically sustainable manner, and will result in other environmental benefits, such as improved water quality and reduced odour. The project proposes to move the designated farms from a high-GHG AWMS practice; an open air lagoon, to a lower-GHG AWMS practice; an ambient temperature anaerobic digester with the capture and combustion of the resulting biogas. The concluding purpose of this project is to mitigate animal effluent related GHG by improving AWMS practices.

Project participant is AgCert Do Brasil Solucoes Ambientas Ltda. The host party for this project activity is Brazil. In total 7 farms with 12 sites are contracted in the states of Mato Grosso, Minas Gerais and São Paulo, Brazil.

The category of the project activity is in Scope 13 - Waste Handling and Disposal, and Scope 15 – Agriculture.

According to the PDD the starting date of the project activity is 08/07/2004. The 10 year non renewable crediting period starts 01/03/2006.

2 METHODOLOGY

The validation of the project consists of the following three phases:

- Desk review
- Follow-up interviews
- Resolution of clarification and corrective action requests

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual. 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 organizes, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

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

The completed validation protocol is enclosed in Annex 1 to this report.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.</i>	<i>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.</i>

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each</i>	<i>Gives reference to documents where the answer to the checklist</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the</i>	<i>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).</i>

<i>section is then further sub-divided. The lowest level constitutes a checklist question.</i>	<i>question or item is found.</i>	<i>document review (DR) or interview (I). N/A means not applicable.</i>	<i>question. It is further used to explain the conclusions reached.</i>	Clarification is used when the validation team has identified a need for further clarification.
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Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<i>If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.</i>	<i>The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section.</i>	<i>This section should summarize the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Figure 1 Validation Protocol Tables

2.1 Review of Documents

The project design document submitted by the client and additional background documents related to the project design and baseline were reviewed. The project design document underwent several revisions addressing changes to the baseline and monitoring methodology requested by the CDM Executive Board and clarification requests issued by TÜV SÜD. The audit team has been provided with the first PDD-version in August 2005. The final updated PDD version 2 submitted in November 2005 serves as the basis for the assessment presented herewith.

2.2 Follow-up Interviews

In August (11th and 18th) and the period of 24th - 28th October 2005 TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of the farms and AgCert Do Brasil Solucões Ambientais Ltda were interviewed. The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Representatives of the farms	<ul style="list-style-type: none"> ➤ Project design ➤ Technical equipment ➤ Sustainable development issues ➤ Additionality ➤ Crediting period

	<ul style="list-style-type: none"> ➤ Monitoring plan ➤ Management system ➤ Environmental impacts ➤ Stakeholder process
AgCert Brasil	<ul style="list-style-type: none"> ➤ Project design ➤ Technical equipment ➤ Sustainable development issues ➤ Baseline determination ➤ Additionality ➤ Crediting period ➤ Monitoring plan ➤ Environmental impacts ➤ Stakeholder process ➤ Approval by the host country

2.3 Resolution of Clarification and Corrective Action Requests

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

3 VALIDATION FINDINGS

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

- 1) The findings from the desk review of the project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
- 2) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfillment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the project resulted in one Corrective Action Requests and three Clarification Requests.
- 3) Where Clarification or Corrective Action Requests have been issued, the exchanges between the Client and TÜV SÜD to resolve these Clarification or Corrective Action Requests is summarized.
- 4) The final conclusions for validation subject are presented.

The validation findings relate to the project design as documented and described in the final project design documentation.

3.1 Project Design

3.1.1 Discussion

The project participant is AgCert Do Brasil Solucuo es Ambientas Ltda,. The project is developed by AgCert International PLC, Ireland. Brazil as the host Party meets all relevant participation requirements. But the project has not been approved by the national DNAs yet and no Letter of Authorization has been issued.

The objective of the project " AWMS GHG Mitigation Project BR05-B-11, Mato Grosso, Minas Gerais and São Paulo, Brazil" is to apply to the farm GHG mitigation measures which will mitigate GHG emissions in an economically sustainable manner. The project foresees to replace the open air lagoons by positive pressure covered lagoon cells, creating ambient temperature anaerobic digesters.

The project design does reflect current good practice. The design has been professionally developed. A validation of the compatibility of the single components carried out by the project developer resulted in a positive conclusion. The project does moreover apply state of the art equipment.

The project boundaries are clearly defined. The project bundles 7 farms with installations of digesters at 12 sites are contracted in the states Mato Grosso, Minas Gerais and São Paulo, Brazil. During this assessment TÜV SÜD contacted and visited 4 sites indicated by the PDD. As the project participant is operating/developing several similar CDM projects in the same or neighboring region, the validation process has shown that no farm of this project is included in any other existing (draft) PDD.

The project equipment can be expected to run for the whole project period and it can not be expected that it will be replaced by more efficient technologies.

Initial training and maintenance efforts are required. In the PDD and during the visit on site the project developer confirmed that such training has taken place and/or is envisaged. Documentation on executed and/or planned training activities has been submitted.

The project is currently in line with the relevant legislation and plans in the host country. The required environmental licenses are valid and have been submitted to the validation team.

It is not clear whether Brazil requires any specific CDM requirements to be fulfilled. But the project is considered to be in line with the sustainable development policies of Brazil as improvements to manure management as well as energy supply are relevant issues in the national Brazilian policy. The question can finally be answered after the issuance of the Letter of Approval by the Brazilian DNA.

It can be expected that the project will create additional environmental benefits by reducing emissions of Volatile Organics Compounds (VOCs). The project does moreover improve the quality of the fertilizer produced as a by-product to the farming activities.

The funding for the project does not lead to a diversion of official development assistance, as according to the information obtained by the audit team, ODA does not contribute to the financing of the project.

The project starting date and the operational lifetime are clearly defined. The crediting period is clearly defined.

3.1.2 Findings

Outstanding issue:

The project has not obtained a Letter of Approval/ Letter of Authorization from the Investor country and Brazilian government so far. No documentation has been submitted to the validation team. The issuance of these documents will also demonstrate whether the project is in line with sustainable development policies of the host country

Response: The response will be given by the issuance of the Letter of Approval. This has not happened so far as the approval of the project depends on the review of the validation report which has to be submitted in advance.

Clarification request 1:

The numbers of planned bio-digesters are not transparent enough in the PDD. Number of modules and size of each and in total has to be added. The number of modules partly varies between the PDD and the one identified by the validation team as the following table shows. AgCert should explain in the PDD by notes if they talk of modules or biodigester systems.

Farm	Validation	PDD
Frosvan	2	4
Ideal Pork **	16	18
Santa Emilia	2	2
Varginha	2	2

** for all 6 sites together

Response: Number of planned bio-digesters and sizes of each module has been posted to the support documentation CD. Table B1 indicates number of planned SYSTEMS as described in para A.4.3.

Corrective Action Request 1:

The project is generally in line with the relevant legislation and plans in the host country. However all environmental licenses, except the one of Fazenda Frosvan are lacking. They have to be submitted to the validation team.

Response: Environmental licenses posted to the AgCert support documentation CD (14/11/2005)

Clarification Request No. 3:

The project starting date could not be completely proven yet by the signed contracts between AgCert and the farmers. Therefore it is difficult to say if the operational lifetime is defined in a reasonable manner. All contracts, apart from the one of Fazenda Frosvan, are lacking. Therefore the project starting date could not be proven yet. The signed contracts have to be submitted to the validation team.

Response: All contracts have been posted to the AgCert support documentation CD (14/11/2005)

3.1.3 Conclusion

Given information are considered as sufficient and correct. The clarification requests and corrective action requests have been resolved and the project does comply with the requirements. However the outstanding issue has to be answered before the project can be submitted for registration.

Further details to that conclusion are documented in annex 1 of that validation report.

3.2 Baseline and Additionality

3.2.1 Discussion

The project is based on the approved methodology: AM0016 “Greenhouse gas mitigation from improved Animal Waste Management Systems in confined animal feeding operations”. The methodology has been approved by the CDM Executive Board at its 16th meeting in October 2004. The selected methodology has been designed for this project and hence the project is part of the methodology on which it is build upon. Therefore the respective baseline methodology is deemed to be the most applicable one for this project. The PDD responds convincingly to each of the applicability criteria which are outlined in the baseline methodology.

The application of the methodology and the discussion and determination of the baseline are transparent. The application follows exactly each of the steps outlined in the methodology and answers the corresponding sections in a proper manner.

The baseline is been determined using reliable assumptions. The parameter “population” as one of the decisive parameters for the quantitative prognosis is determined by using reliable data and is moreover based on date obtained from a three year period in the past. During the visit on site the availability of such comprehensive data could be observed predominantly. Hence plausible data has been provided from traceable sources ensuring the reliability of the parameter. As the parameter is moreover monitored ex-post and compared with the metered data for biogas flow the correct amount of emissions reductions will be determined in the verification process.

The baseline has been based on project specific data and does sufficiently take into account policies and developments regarding legal, economic and social issues. There is no legal requirement to capture and combust greenhouse gases produced by swine manure in AWMS.

There is currently also no planned legislation that is directed towards the emission of GHG as related to AWMS. The open air lagoon is hence considered the common AWMS practice in Brazil.

Concluding it can be stated that it has been made plausible that the chosen baseline scenario is the one deemed most realistic under the given frame conditions.

The project demonstrates via an economic analysis and the description of barriers that it is not the baseline scenario. Each step of the respective section of the methodology has hereby been applied in a correct manner. The elaborations in the PDD got substantiated by an external expert review. Concluding it has been made clear that the continuation of the AWMS by operating open air lagoons would be the most attractive course of action and hence the baseline scenario. During the visit on site the project owner substantiated these arguments by describing the financial result of the operations in the last two years.

The PDD does moreover elaborate on the starting date of the project activity and hereby successfully responds to the requirements defined in “step 0” of the “tool for the demonstration and assessment of additionality” approved by the EB (EB 16, annex 1). During the validation process the audit team obtained the information and evidenced that the start of project activities has been before the registration date of the first clean development mechanism project. It is described in detail and based on defined dates how the CDM has been taken into account from the beginning of the project.

The economic performance, the legal constraints and the common practice have been identified as potential risks to the baseline. The subsequent evaluation resulted in the assessment that no major risks to the baseline exist. This assessment is considered as being plausible.

References have been made to all data sources used.

3.2.2 Findings

Clarification request 2:

The Annex 3 (Baseline Information) in the PDD does not indicate the months, i.e. it is not clear for what months the equivalent numbers are. It should be indicated the months to the relevant numbers for each farm.

Response: Months correspond to the months indicated in the table heading (e.g., Fazenda JK (June 2004 – May 2005). First column in table represents June 2004, Second column July 2004, etc. Since these numbers represent yearly average and the baseline is based on the total year, AgCert has opted to include the date range of the population.

3.2.3 Conclusion

The fact that the head line of tables is addressed as the period Jun. – Jul., the columns of the same table are addressed from Jan. – Dec. and the fact that the real data of June are in the column of January is a kind of inconsistency in the PDD of baseline information. For determining the baseline that inconsistency is not relevant, because relevant is the annual average of population. The issue is considered as solved. The corrective action request has been resolved and the project does comply with the requirements. Further details to that conclusion are documented in annex 1 of that validation report.

3.3 Monitoring Plan

3.3.1 Discussion

The project is based on an approved monitoring methodology. The methodology has been approved by the CDM Executive Board at its 16th meeting in October 2004.

The selected methodology has been designed for this project and hence the project is part of the methodology it is build upon. Therefore the respective monitoring methodology is deemed to be the most applicable one for this project. The PDD responds convincingly to each of the applicability criteria which are outlined in the monitoring methodology.

Details of the methodology as parameters to be obtained, recording frequency and archiving methods are considered being reasonable and appropriate.

The methodology and its application is described in detail and in a transparent manner. It is made clear that option “a) determination of GHG emissions using IPCC default parameters” has been chosen. During the visit on site the implementation of the operations and maintenance manual and the data management system in order to ensure a proper implementation of the monitoring plan could be evidenced.

The monitoring plan does include all relevant parameters to determine baseline and project emissions and it is possible to monitor and/or measure the currently specified GHG indicators. The indicators which are not measured can be obtained from IPCC documents. The parameters defined allow calculating the baseline and projecting emissions in a proper manner.

The monitoring plan does include all relevant parameters to determine leakage emissions. In general, leakage emissions in the proposed project activity type depend on practice changes imposed and do not apply to all projects carried out under the respective methodology. In the project assessed herewith leakage emissions are expected not to occur. In order to ensure a conservative approach respective parameters (electrical power use) are nevertheless included in the monitoring plan. Other potential leakage effects have been evaluated and it has been demonstrated that these effects do not apply to this specific project.

The project is considered to have no negative environmental, social and economic effects and a monitoring of such data is also not required by the applied monitoring methodology. This approach is deemed sufficient.

The PDD in combination with the Operations and Maintenance Manual does clearly indicate the authority and responsibilities within the given project structure. During the visit on site it has been described in detail how the respective organisational structure is already implemented and/ or planned. During the visit on site the validation team moreover realised that the project owner is well aware of the tasks and responsibilities.

The overall management responsibility is with AgCert International, Ireland. The company operates also trained staff in Brazil. The farm owner or representatives supports the AgCert staff during the on site audits and carries out the daily supervision of the project components and their performance. The responsibilities for each task are clearly defined and allocated to the Farm owners, AgCert and the service providers.

The quality and environmental management system (QMS and EMS), currently under implementation within AgCert, will help to support the project participants in operating the respective organizational structure.

3.3.2 Findings

None

3.3.3 Conclusion

The QA/QC manual for all involved staff is sufficiently. The validation team accept that according to AM0016 not all parameters are necessary to estimate the baseline emissions. However, it should be noticed that most of the other parameters can be used for demonstrating the plausibility of measured data.

The QA/QC manual for all involved staff and their responsibility regarding monitoring is ruled sufficiently. Signed contracts are submitted to the validation team.

The validation team can not identify any risks due to inadequate management structure or quality assurance.

3.4 Calculation of GHG Emissions

3.4.1 Discussion

The project spatial boundaries are clearly described and limited to the farm site. An exact and correct description of the project boundaries is included in chapter B.4 of the PDD. The PDD hereby also reflects correctly that emissions from barn systems and barn flushing systems are not considered as these emissions are not affected by the proposed practice change.

The projects components are clearly defined in the PDD and described in figure B1 of the PDD. During the visit on site the given information has been confirmed.

Details of direct and indirect emissions are discussed in the PDD in an appropriate manner. All aspects are covered by the current approach. Methane (CH₄), nitrous oxide (N₂O) and carbon dioxide (CO₂) emissions have been considered.

The calculations resulting in the final numbers have been submitted. The formulae used are correctly applied.

Since most estimates are derived from accepted international sources, it seems reasonable to assume that they are accurate. In addition the uncertainty of parameters applied has been evaluated and is documented in Table E1-1 in section E of the PDD. The approach is deemed sufficient.

Leakage emissions from increased electrical power consumption have been identified as being theoretically a source of leakage. But in the project leakage emissions are expected not to occur. In order to ensure a conservative approach the respective parameters are nevertheless calculated resulting in a positive leakage effect. The emission factor is hereby derived from one of the options mentioned in the methodology, but is not specifically addressed to the project site. The positive leakage effect is in accordance with the methodology not taken into account.

Concluding it can be stated that the project emissions will be reduced compared to the baseline scenario by 678,250 tonnes CO_{2e} over a crediting period of ten years, resulting in a calculated annual average of 67,825 tonnes CO₂ over a crediting period of ten years.

3.4.2 Findings

None

3.4.3 Conclusion

The calculation of GHG emissions and used data are according to applied methodology and its requirements.

3.5 Environmental Impacts

3.5.1 Discussion

The environmental impacts can be seen as being low. These low impacts have been sufficiently described in the PDD. The legislation does not require an EIA for this type of project. But an environmental license for the site is necessary. This requirement for approval has been fulfilled.

Negative environmental effects are not expected to be created by the project. Given the nature of the project design this seems to be reasonable. Transboundary effects are not expected as the project site is far from the national boundary.

As no significant environmental impacts are expected, such impacts have not influenced the project design.

3.5.2 Findings

None

3.5.3 Conclusion

The project does comply with the requirements.

3.6 Comments by Local Stakeholders

3.6.1 Discussion

A formal consultation process with local stakeholders has taken place and corresponding information has been submitted to the audit team. The stakeholders consulted included people from the local community and also the representatives of the local communities and the State of Minas Gerais and São Paulo. In addition neighbors to the site have been interviewed.

The stakeholders have been invited to meetings via post and electronic mail and which has also been published in local and regional newspapers.

No stakeholder process is required according to national legislation.

The comments to the project design have been recorded and provided. As all comments have been positive, the project design has not been changed due to stakeholder comments.

3.6.2 Findings

None

3.6.3 Conclusion

Comments of stakeholders were throughout positive. The project does comply with the requirements.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on its website from August 04 to September 02 2005 and invited comments within 30 days, by Parties, stakeholders and non-governmental organisations.

Published on http://www.netinform.de/KE/Wegweiser/Ebene1.aspx?Ebene1_ID=26. During the commenting period there have been no comments received.



5 VALIDATION OPINION

The Certification Body "Climate and Energy" has been ordered by AgCert International LLC, Ireland (AgCert International) to perform a validation of the above mentioned project.

In summary, it is TÜV SÜD's opinion that the project "AWMS GHG Mitigation Project BR05-B-11, Mato Grosso, Minas Gerais and São Paulo, Brazil", as described in the revised project design document of November 2005, meets all relevant UNFCCC requirements for the CDM, set by the Kyoto Protocol, the Marrakech Accords and relevant guidance by the CDM Executive Board and that the project furthermore meets all relevant host country criteria and correctly applies the baseline and monitoring methodology AM0016 / Ver. 02 entitled "*Greenhouse gas mitigation from improved Animal Waste Management Systems in confined animal feeding operations.*"

Hence, TÜV SÜD will recommend the project for registration as CDM project activity by the CDM Executive Board.

Prior to the submission of this validation report to the CDM Executive Board, TÜV SÜD will have to receive the written approval of the DNA of involved parties, including confirmation by the DNA of Brazil that the project assists in achieving sustainable development.

By avoiding GHG emissions from open air lagoons, the project results in reductions of GHG emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An economic comparison with alternative scenarios and an analysis of the investment and technological barriers 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.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 678,250 tonnes CO_{2e} over a crediting period of ten years, resulting in a calculated annual average of 67,825 tonnes CO₂ represents a reasonable estimation using the assumptions given by the project documents.

The validation is based on the information made available to us and the engagement conditions detailed in this report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

Munich, 2006, April 19

Munich, 2006, April 19

A handwritten signature in purple ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Werner Betzenbichler

Head certification body
"climate and energy"

A handwritten signature in blue ink, featuring a stylized 'M' and 'K' followed by a long horizontal stroke.

Markus Knödseder

Project Manager



Industrie Service

Validation of the Project AWMS GHG Mitigation Project BR05-B-11,
Mato Grosso, Minas Gerais and São Paulo, Brazil



Industrie Service

Appendix A: Validation Protocol



Table 1 Mandatory Requirements for 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	See below	Table 2, Section E.4.1
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, Marrakesh Accords, CDM Modalities §40a	See below	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	See below	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a	<u>Outstanding issue</u>	The project has not obtained such an approval from the Brazilian government so far. No documentation has been submitted to the validation team.
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	See below	Table 2, Section E
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, Marrakesh Accords, CDM Modalities §43	See below	Table 2, Section B.2
7. Potential public funding for the project from Parties in Annex I	Marrakech	<input checked="" type="checkbox"/>	The funding for the project does



REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
shall not be a diversion of official development assistance	Accords		not lead to a diversion of official development assistance as ODA does not contribute to the financing of the project.
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords, CDM Modalities §29	☑	Brazil as Host Country has a designated national authority (DNA) for the CDM in place.
9. The host country shall be a Party to the Kyoto Protocol	Marrakech Accords, CDM Modalities §30	☑	Brazil has ratified the Kyoto Protocol on August 23, 2002.
10. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	Marrakech Accords, CDM Modalities §37b	See below	Table 2, Section G
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be CRried out.	Marrakech Accords, CDM Modalities §37c	See below	Table 2, Section F
12. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel	Marrakech Accords, CDM Modalities §37e	See below	Table 2, Section B.1.1 and D.1.1
13. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	Marrakech Accords, CDM Modalities §37f	See below	Table 2, Section D



REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	Marrakech Accords, CDM Modalities, §40	Open	A global public stakeholder process on the UNFCCC website is taking place. Commenting period will be closed November 11, 2005.
15. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, CDM Modalities, §45c,d	See below	Table 2, Section B.2
16. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	See below	Table 2, Section B.2
17. The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	☑	The PDD is in conformance with the CDM Project Design Document (version 02).



Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	1,2,3,4	DR, I	The project spatial boundaries are sufficiently transparent described. All barns and types of pigs are connected to the defined lagoons a/o will be connected to the bio digesters.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	1,2,3,4	DR, I	The projects components are defined. Following adjustments are recommended: <u>Clarification Request No.1:</u> The numbers of planed bio-digesters are not transparent enough in the PDD. Number of modules and size of each and in total has to be added. The number of modules partly varies between the PDD and the one identified by the validation team as the following table shows. AgCert should explain in the PDD by notes if they talk of modules or biodigester systems.	CR 1	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl															
			<table border="1"> <tr> <td>Farm</td> <td>Validation</td> <td>PDD</td> </tr> <tr> <td>Frosvan</td> <td>2</td> <td>4</td> </tr> <tr> <td>Ideal Pork **</td> <td>16</td> <td>18</td> </tr> <tr> <td>Santa Emilia</td> <td>2</td> <td>2</td> </tr> <tr> <td>Varginha</td> <td>2</td> <td>2</td> </tr> </table> <p>** for all 6 sites together</p>	Farm	Validation	PDD	Frosvan	2	4	Ideal Pork **	16	18	Santa Emilia	2	2	Varginha	2	2		
Farm	Validation	PDD																		
Frosvan	2	4																		
Ideal Pork **	16	18																		
Santa Emilia	2	2																		
Varginha	2	2																		
<p>A.2. Technology to be employed</p> <p><i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i></p>																				
<p>A.2.1. Does the project design engineering reflect current good practices?</p>	<p>1,2,3,4,9,14,15,16,20,21</p>	<p>DR, I</p>	<p>Yes, the project design does reflect current good practice. The design has been professionally developed. But a validation of the compatibility of the single components could not be evidenced during the visit on site. However this could be clarified at the AgCert office</p>	<p><input checked="" type="checkbox"/></p>	<p><input checked="" type="checkbox"/></p>															
<p>A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used</p>	<p>1,2,3,4,9,14,15,16</p>	<p>DR, I</p>	<p>Yes, the project does apply state of the art equipment. See also:</p>	<p><input checked="" type="checkbox"/></p>	<p><input checked="" type="checkbox"/></p>															



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
technologies in the host country?	,20,21		<u>Clarification Request No.1:</u> The numbers of planed bio digesters are not transparent enough in the PDD. Number of modules and size of each and in total has to be added.		
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1,2,3, 4, 7, 9,14,15,16,20,21	DR, I	No the project equipment can be expected to run for the whole project period and it can not be expected that it will be replaced by more efficient technologies, but additional components could be added using biogas to heat the barns a/o produce electricity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1,2,3, 4	DR, I	Yes, initial training and maintenance efforts are required. During the visit at the project site the project developer confirmed that such training has taken place and/or is envisaged.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.5. Does the project make provisions for meeting training and maintenance needs?	1,2,3, 4,10	DR, I	See comment above.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	1,2,3, 4,11	DR, I	The project is generally in line with the relevant legislation and plans in the host country.	CAR 1	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			<p><u>Corrective Action Request 1:</u></p> <p>However all environmental licenses, except the one of Fazenda Frosvan are lacking. They have to be submitted to the validation team.</p>		
A.3.2. Is the project in line with host-country specific CDM requirements?	1,2,3, 4,11	DR, I	Brazil has published specific CDM requirements.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3.3. Is the project in line with sustainable development policies of the host country?	1,2,3, 4,11	DR, I	Yes, the project is in line with the sustainable development policies of Brazil as improvements to manure management as well as energy supply are relevant issues in the national Brazilian policy.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	1,2,3, 4	DR, I	<p>Yes. It can be expected that the project will create additional environmental benefits by reducing emissions of Volatile Organics Compounds (VOCs) and odors by better fertilizing output.</p> <p>Additionally, the old manure management will be improved, and parts of the equipment modernized, which helps to protect the environment.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	1,2,3,4	DR, I	Yes, the project is based on an approved methodology: AM0016 “GHG emission reduction from manure management systems”.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	1,2,3,4	DR, I	Yes, the methodology is one out of two existing for the respective project type being most applicable for this project.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2. Baseline Determination <i>The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.</i>					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	1,2,3,4,	DR, I	Yes, the application is transparent.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.2.2. Has the baseline been determined using conservative assumptions where possible?	1,2,3,4,	DR, I	Yes, the baseline has been determined to use conservative assumptions where possible.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.3. Has the baseline been established on a project-specific basis?	1,2,3,4	DR, I	Yes, the baseline has mainly been based on project specific data but the data for Step 3 "Economic comparison" is not project specific but refers to a typical swine farm and is reviewed by economist.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	1,2,3,4	DR, I	Yes, the baseline scenario sufficiently takes into account the respective effects.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.5. Is the baseline determination compatible with the available data?	1,2,3,4	DR, I	Yes, the baseline determination is compatible with the available data.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	1,2,3,4	DR, I	Yes, it has been made plausible that the chosen baseline scenario is the one deemed most realistic under the given frame conditions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more	1,2,3,4,7	DR, I	The project demonstrates via an economic analysis and the description of various barriers that it is not the baseline scenario.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
likely, (c) a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or (d) an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations)?					
B.2.8. Have the major risks to the baseline been identified?	1,2,3,4	DR, I	As already mentioned the manner of determination of the population and the change of population is one of the major risks.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2.9. Is all literature and sources clearly referenced?	3,4	DR, I	Literature is mainly referenced well, but some sources of relevant baseline data are not referenced. <u>Clarification Request No. 2:</u> The Annex 3 (Baseline Information) in the PDD does not indicate the months, i.e. it is not clear for what months the equivalent numbers are. It should be indicated the months to the relevant numbers for each farm.	CR 2	<input checked="" type="checkbox"/>
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	1,2,3,4	DR, I	The project starting date could not be completely proven yet by the signed	CR 3	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			<p>contracts between AgCert and the farmers. Therefore it is difficult to say if the operational lifetime is defined in a reasonable manner.</p> <p><u>Clarification Request No. 3:</u></p> <p>All contracts, apart from the one of Fazenda Frosvan, are lacking. Therefore the project starting date could not be proven yet. The signed contracts have to be submitted to the validation team.</p>		
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?	1,2,3,4	DR, I	Yes, the crediting period should start on 01.03.2006.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<p>D. Monitoring Plan</p> <p><i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).</i></p>					
<p>D.1. Monitoring Methodology</p> <p><i>It is assessed whether the project applies an appropriate baseline methodology.</i></p>					
D.1.1. Is the monitoring methodology previously approved by the CDM Methodology Panel?	1,2,3, 4, 24	DR, I	Yes, the project is based on an approved methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	1,2,3, 4, 24	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	1,2,3, 4, 24	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	1,2,3, 4, 24	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<p>D.2. Monitoring of Project Emissions</p> <p><i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i></p>					
D.2.1. Does the monitoring plan provide for the	1,2,3,	DR,	Yes, the monitoring plan does include all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	4, 17,18, 19, 22-26	I	parameters to determine project emissions according to the requirements of the methodology. In order to keep the flare operating natural gas has to be burned. The amount of gas should be taken into account or at least mentioned, that amount can be considered as negligible.		
D.2.2. Are the choices of project GHG indicators reasonable?	1,2,3, 4	DR, I	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	1,2,3, 4	DR, I	Yes, it is possible to monitor and/or measure the currently specified GHG indicators.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	1,2,3, 4	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.5. Will the indicators enable comparison of project data and performance over time?	1,2,3, 4	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.3. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	1,2,3, 4	DR, I	It has been demonstrated in a plausible manner that leakage emissions are not expected to occur in a different manner	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			between both scenarios. Physical leakages are minimized; guarantees of the manufacturers demonstrate that clearly.		
D.3.2. Have relevant indicators for GHG leakage been included?		DR, I	See comment D.3.1	Open	<input checked="" type="checkbox"/>
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?		DR, I	See comment D.3.1	Open	<input checked="" type="checkbox"/>
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?		DR, I	See comment D.3.1	Open	<input checked="" type="checkbox"/>
D.4. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	1,2,3, 4,13, 17,18, 19, 22-26	DR, I	Yes, the monitoring plan does include all minimum parameters to determine baseline emissions according to the requirements of the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	1,2,3, 4	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.4.3. Will it be possible to monitor the specified	1,2,3,	DR,	Yes, it is possible to monitor and/or	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
baseline indicators?	4	I	measure the currently specified GHG indicators.		
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	1,2,3, 4	DR, I	No, as a monitoring of such data is not required by the applied monitoring methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	-	DR, I	See comment D.5.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	-	DR, I	See comment D.5.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	-	DR, I	See comment D.5.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.6.1. Is the authority and responsibility of project management clearly described?	1,2,3, 4,13,	DR, I	The audit findings on site showed that the responsibilities are defined and	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
	17,18,19,22-26		communicated. The validation of the currently implemented management systems through an independent auditor demonstrates the correct implementation of the system		
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	1,2,3,4,17	DR, I	<p>The responsibilities for all project participants are clearly described in the PDD.</p> <p>Current O&M Plan were delivered and describe operation and maintenance in appropriate manner. For the operation personnel the O&M Plan does also exist in Portuguese language.</p> <p>The responsibilities for project personnel are also clearly described in the O&M Plan.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6.3. Are procedures identified for training of monitoring personnel?	1,2,3,4,17	DR, I	Yes. See translated document "Especificação do Método", chapter 6.0.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	1,2,3,4,17	DR, I	<p>Yes.</p> <p>The procedures for Emergency Maintenance notification are described in 4.3.1 of the O&M Plan. "Alternative Operating Procedures" designed to prevent unintended emissions are found in 4.2.2.7, 4.2.3.6, 4.2.4.5, and 4.2.5.5 of</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			the O&M Plan. See translated document “Especificação do Método”, chapter 4.2 and 4.3.		
D.6.5. Are procedures identified for calibration of monitoring equipment?	1,2,3,4,17	DR, I	Yes. See translated document “Especificação do Método”, chapter 6.1.3.4, 6.2.3.4, 6.3.3.4, 6.4.3.4, 6.5.3.4, 6.6.3.4, 6.7.3.4 and 6.8.3.4.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	1,2,3,4,17	DR, I	Yes. See translated document “Especificação do Método”, chapter 4.0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6.7. Are procedures identified for monitoring, measurements and reporting?	1,2,3,4,17	DR, I	Yes. The processes for “Collecting” and “Handling” of data are described in the O &M Plan. Including QA/QC measures. See translated document “Especificação do Método”, chapter 6.0 and 7.0.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	1,2,3,4,17	DR, I	Yes. See translated document “Especificação do Método”, chapter 6.0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	1,2,3,4,17	DR, I	Yes. See translated document “Especificação do Método”, chapter 4.2 and 4.3.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6.10. Are procedures identified for review of reported results/data?	1,2,3,4,17	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	1,2,3, 4,17	DR, I	Yes. See document I020-2, QA Process-Product Audits from 11/05/03.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	1,2,3, 4,17	DR, I	Yes. See document P025, Control of Measuring & Monitoring Devices (MMD) and document I031-5 Receiving Inspection from 19.02.04.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	1,2,3, 4,17	DR, I	Yes. See document I005-1, Corrective and Preventive Actions from 21.07.03.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E. Calculation of GHG Emissions by Source <i>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.</i>					
E.1. Predicted Project GHG Emissions <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	1,2,3, 4,6	DR, I	Yes, all significant aspects are covered by the current approach.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	1,2,3, 4,6	DR, I	The calculations resulting in the final numbers have been submitted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	1,2,3, 4,6	DR, I	According to the methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.2. Leakage <i>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.</i>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.2.2. Have these leakage effects been properly accounted for in calculations?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.2.4. Are the calculations documented in a complete and transparent manner?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.2.5. Have conservative assumptions been used	1,2,3,	DR,	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
when calculating leakage?	4,6	I			
E.2.6. Are uncertainties in the leakage estimates properly addressed?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3. Baseline Emissions <i>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.</i>					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
assumptions?					
E.4. Emission Reductions 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 scenario?	1,2,3, 4,6	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	1,2,3, 4	DR, I	Yes, the environmental impacts can be seen as being low. These low impacts have been sufficiently described in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1,2,3, 4	DR, I	An EIA is not necessary.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.3. Will the project create any adverse environmental effects?	1,2,3, 4	DR, I	No, negative environmental effects are not expected to be created by the project.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.4. Are transboundary environmental impacts considered in the analysis?	1,2,3, 4	DR, I	Positive transboundary environmental impacts are expected, due to the new equipment and the need for regular	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			monitoring accidents can be identified easier.		
F.1.5. Have identified environmental impacts been addressed in the project design?	1,2,3,4	DR, I	As no significant environmental impacts are expected, such impacts have not influenced the project design.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.6. Does the project comply with environmental legislation in the host country?	1,2,3,4	DR, I	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
G. Stakeholder Comments <i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?	1,2,3,4,12	DR, I	Yes, the stakeholders included people from the local community and representatives of the appropriate states where the farms are located. Besides, the project was published in a regional newspaper.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	1,2,3,4,12	DR, I	Yes, the stakeholders have been invited to a meeting. See G.1.1.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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?	1,2,3,4,12	DR, I	A stakeholder process is required and has been performed.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
G.1.4. Is a summary of the stakeholder comments received provided?	1,2,3,4,12	DR, I	According to the project developer no comments received;	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
G.1.5. Has due account been taken of any stakeholder comments received?	1,2,3,4,12	DR, I	Adverse comments against the projects are not identified.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and Clarification Requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion															
<p>The projects components are defined. Following adjustments are recommended: <u>Clarification Request No.1:</u> The numbers of planned bio-digesters are not transparent enough in the PDD. Number of modules and size of each and in total has to be added. The number of modules partly varies between the PDD and the one identified by the validation team as the following table shows. AgCert should explain in the PDD by notes if they talk of modules or biodigester systems.</p> <table border="1" data-bbox="181 935 736 1190"> <thead> <tr> <th>Farm</th> <th>Validation</th> <th>PDD</th> </tr> </thead> <tbody> <tr> <td>Frosvan</td> <td>2</td> <td>4</td> </tr> <tr> <td>Ideal Pork **</td> <td>16</td> <td>18</td> </tr> <tr> <td>Santa Emilia</td> <td>2</td> <td>2</td> </tr> <tr> <td>Varginha</td> <td>2</td> <td>2</td> </tr> </tbody> </table> <p>** for all 6 sites together</p>	Farm	Validation	PDD	Frosvan	2	4	Ideal Pork **	16	18	Santa Emilia	2	2	Varginha	2	2	<p>Table 2, A.1.2</p>	<p>CR1 – Number of planned bio-digesters and sizes of each module has been posted to the support documentation CD. Table B1 indicates number of planned SYSTEMS as described in para A.4.3</p>	<p>Given information are considered as sufficient.</p> <p style="text-align: center;"><input checked="" type="checkbox"/></p>
Farm	Validation	PDD																
Frosvan	2	4																
Ideal Pork **	16	18																
Santa Emilia	2	2																
Varginha	2	2																
<p><u>Corrective Action Request 1:</u> The project is generally in line with the</p>	<p>Table 2, A. 3.1</p>	<p>CAR 1 EL posted to the AgCert support</p>	<p>Given information are considered as sufficient and correct.</p>															



Draft report clarifications and Clarification Requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
relevant legislation and plans in the host country. However all environmental licenses, except the one of Fazenda Frosvan are lacking. They have to be submitted to the validation team.		documentation CD	☑
<p>Literature is mainly referenced well, but some sources of relevant baseline data are not referenced.</p> <p><u>Clarification Request No. 2:</u></p> <p>The Annex 3 (Baseline Information) in the PDD does not indicate the months, i.e. it is not clear for what months the equivalent numbers are. It should be indicated the months to the relevant numbers for each farm.</p>	Table 2, B.2.9	<p><u>CR 2</u></p> <p>Months correspond to the months indicated in the table heading (e.g., Fazenda JK (June 2004 – May 2005). First column in table represents June 2004, Second column July 2004, etc. Since these numbers represent yearly average and the baseline is based on the total year, AgCert has opted to include the date range of the population.</p>	<p>The fact that the head line of tables is addressed as the period Jun. – Jul., the columns of the same table are addressed from Jan. – Dec. and the fact that the real data of June are in the column of January is a kind of inconsistency in the PDD of baseline information. For determining the baseline that inconsistency is not relevant, because relevant is the annual average of population. The issue is considered as solved.</p> <p style="text-align: center;">☑</p>
<p><u>Clarification Request No. 3:</u></p> <p>The project starting date could not be completely proven yet by the signed contracts between AgCert and the farmers. Therefore it is difficult to say if the operational lifetime is defined in a reasonable manner. All</p>	Table 2, C.1.1	<p><u>CR 3</u> - All contracts have been posted to the AgCert support documentation CD</p>	<p>Given information are considered as sufficient and correct.</p> <p style="text-align: center;">☑</p>



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Draft report clarifications and Clarification Requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
contracts, apart from the one of Fazenda Frosvan, are lacking. Therefore the project starting date could not be proven yet. The signed contracts have to be submitted to the validation team.			

Validation of the Project AWMS GHG Mitigation Project BR05-B-11,
Mato Grosso, Minas Gerais and São Paulo, Brazil




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Appendix B: Information Reference List

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Reference No.	Document or Type of Information
1.	On-site interview at the offices of Agcert in São Paulo with the project developer conducted on August 11 and 18, 2005 by auditing team of TÜV SÜD Validation team on-site: Wilson Roberto Tomao TÜV Industrie Service GmbH TÜV SÜD Group Interviewed persons: Miguel Gastão Agcert David Lawrence Agcert
2.	On-site interview at the sites by auditing team of TÜV SÜD Validation team on-site: Wilson Roberto Tomao TÜV Industrie Service GmbH TÜV SÜD Group Interviewed persons: Arlindo Felipe Santiago Fazenda Frosvan Agropecuária Olavo Pivetto Fazenda Ideal Pork Norberto A . dos Santos Sítio Santa Emilia Silvério M. de Araújo Sítio Varginha Thomas Jefferson Agcert Afonso Rosalen Agcert
3.	Project Design Document "AWMS GHG Mitigation Project BR05- B – 11 in the Minas Gerais, Mato Grosso and São Paulo, Brazil", AgCert International Ltd, August 2005
4.	Project Design Document "AW AWMS GHG Mitigation Project BR05- B – 11 in the Minas Gerais, Mato Grosso and São Paulo, Brazil", AgCert International Ltd, November 2005

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Reference No.	Document or Type of Information
5.	Carbon Contracts with each farm, pdf-files on CD, submitted August 2005
6.	Calculation of baseline and project emissions "AWMS GHG Mitigation Project BR05- B – 11 in the Minas Gerais, Mato Grosso and São Paulo, Brazil", AgCert, excel file, September 2005
7.	Economic Analysis, Word file on CD, submitted August 2005
8.	Farm Production Data of each farm, pdf-files on CD, September July 2005 (confidential)
9.	AWMS Technical Specifications, Word-files on CD, submitted August 2005
10.	Training Documentation, Participants list, Training Schedule, Presentation, Word-, Excel-, pdf-Files on CD; submitted July 2005
11.	Licenses and Permits, pdf-Files on CD, submitted on November 2005
12.	Correspondence Stakeholder, Published invitations to Stakeholder Meeting in newspapers, emails and pdf-files on CD, submitted September 2005
13.	Project Management, Responsibilities and Process flow, word-files on CD, submitted August 2005
14.	Technical specification of the PVC flexible film (biodigester cover) submitted August, 2005 (confidential)
15.	Technical specification on flare unit, submitted August, 2005 (confidential)
16.	Technical specification on biodigester, submitted August, 2005 (confidential)
17.	Operations and Maintenance (O&M) Plan for AWMS Greenhouse Gas (GHG) Mitigation Projects, dated 23 May 2005 (confidential)
18.	AgCert Quality and Environmental Management System Handbook, August 2004
19.	Pre-Assessment Checklist for ISO 9001/ISO14001 certification, issued by QMI
20.	Flare Unit Service Specifications, submitted August, 2005 (confidential)
21.	Gasflow Meter Service Specifications, submitted August, 2005 (confidential)

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	Information Reference List		

Reference No.	Document or Type of Information
22.	Annual Data Collection, AgCert Form B, October 04, file on CD, submitted September 2005
23.	Post Construction Assessment, AgCert Form, May 2005, file on CD, submitted September 2005
24.	Monthly Inventory Reporting, AgCert Form, pdf-file on CD, submitted September 2005
25.	Monthly Monitoring Form, AgCert Form MS004-F2, pdf-file on CD, submitted September 2005
26.	Weekly Monitoring Form, AgCert Form MS004-1F1, pdf-file on CD, submitted September 2005
27.	Invitation to stakeholder meeting performed from January to March, 2005 , email text
28.	Approved baseline methodology AM0016: Greenhouse gas mitigation from improved Animal Waste Management Systems in confined animal feeding operations. UNFCCC, 2004
29.	IPCC: Revised 1996 Guidelines for National Greenhouse Gas Inventories
30.	IPCC: 2000, Good Practice Guidance
31.	UNFCCC, CDM: Tool for the demonstration and assessment of additionality" approved by the EB (EB 16, annex 1).
32.	Validation and Verification Manual, IETA/World Bank (PCF), http://www.vvmanual.info
33.	Calculation of leakage effect based on IEA (2002) figures, January 2005
34.	IEA (2002): Road-Testing Baselines for Greenhouse Gas Mitigation Projects in the Electric Power Sector
35.	O mercador Newspaper, 18 January, 2005
36.	Folha de São Gabriel Newspaper, 15 January, 2005
37.	Correio Uberlandense Newspaper, 17 January, 2005
38.	Interim Measures for Operation and Management of Clean Development Mechanism Projects, NDRC, June 2004
39.	http://www.ambientebrasil.com.br

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Reference No.	Document or Type of Information
40.	http://www.gaemg.org.br