PRELIMINARY VALIDATION REPORT

RICKLI BIOMASS ELECTRICITY GENERATION PROJECT IN BRAZIL

REPORT NO. 2005-0172

REVISION NO. 02

DET NORSKE VERITAS

PRELIMINARY VALIDATION REPORT

DET NORSKE VERITAS AS

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Summary:

Det Norske Veritas Certification Ltd. (DNV Certification) is performing a validation of the Rikli Biomass Electricity Generation Project (hereafter called "the project") located in Carambei, State of Paraná, 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 and the subsequent decisions by the CDM Executive Board.

The project consists of the construction of a new biomass electricity co-generation unit with 5MW of installed capacity using biomass residues as fuel, supplying all of Rickli sawmill's demand and exporting the surplus to grid.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan (December 2004 to March 2005), ii) follow-up interviews with project stakeholders (11 January 2005) and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion (January 2005 to March 2005).

In summary, the Rickli Biomass Electricity Generation Project meets all present and relevant UNFCCC criteria and the simplified modalities and procedures for small-scale CDM project activities. However, the project has not yet been approved by the participating Parties, including a confirmation by the host Party that the project contributes to sustainable development in Brazil.

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Work verified by: Michael Lehmann		
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Table of Content ***Page***

Abbreviations

CAR	Corrective Action Request
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
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

Rickli and EcoSecurities have commissioned DNV Certification to validate the Rickli Biomass Electricity Generation Project in Brazil (hereafter called "the project"). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consisted of the following personnel:

Susanne Haefeli	DNV Norway	Team Leader, GHG auditor
Cintia Dias	DNV Brazil	GHG auditor
Luis Filipe Tavares	DNV Brazil	GHG auditor
Michael Lehmann	DNV Norway	Internal verifier, Energy sector expert

1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design. In The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, 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 (CERs).

1.2 Validation 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. The validation team has, based on the recommendations in the Validation and Verification Manual /10/, 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 The Rickli Biomass Electricity Generation Small Scale Project

The objective of this small-scale CDM project activity is the construction of a new biomass electricity co-generation unit with 5MW of installed capacity using climate change neutral biomass (wood chips and wood residue) as fuel, supplying all of Rickli sawmill's demand and exporting the surplus to the grid.

Emission reductions are generated by displacing fossil-fuel based grid-electricity and burning of biomass that would otherwise have been left to decay. Hence, the project also involves methane avoidance from biomass not being landfilled. Total emission reductions from the electricity and

methane components are estimated to be 2 687 265 tCO_2e over 21 years, which means an average annual emission reduction of 127 965 tCO_2e.

The electric power generation capacity is 5 MW. In house power demand is 0,5 MW, resulting in 4,5 MW generation capacity of electricity exports to the local electricity grid.

Part of the biomass used to generate electricity are residues from Rickli, while the remaining biomass will be sourced from third parties.

The project is located within the premises of the Rickli sawmill company, located in Carambei, Paraná. Rickli is a sawmill and its core business is the production of doors to be exported.

2 METHODOLOGY

The validation consists of the following three phases:

I a desk review of the project design and the baseline and monitoring methodology (December 2004 to March 2005);
II follow-up interviews with project stakeholders (11 January 2005);
III the resolution of outstanding issues and the issuance of the final validation report and opinion (January 2005 to March 2005).

This draft final validation report summarises the findings after phase I, II and parts of phase III of the validation.

2.1 Review of Documents

The initial Project Design Document (PDD) for the Rickli Biomass Electricity Generation Project of January 2005 /1/ and the revised versions of the PDD of February 2005 /2/ and March 2005 /3/, Excel sheets with regard to the data monitoring and emissions calculations /4//5//6/ submitted by EcoSecurities and two comments received by stakeholders during the period of call for inputs were reviewed.

In order to ensure transparency, a validation protocol was customised for the project, according to PCF's Preliminary Validation Manual /10/. 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 Rickli Biomass Electricity Generation Project is enclosed in Appendix A to this report.

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

2.2 Follow-up Interviews

On 11 January 2005 DNV performed site visits and interviews with Rickli and EcoSecurities in Carambei, Paraná State, to confirm and to resolve issues identified in the document review.

The main topics of the interviews were:

- Project technology: energy output, experience with biomass boiler technology and provisions for technology and capacity transfer, including training of local employees
- Biomass availability;
- Environment impacts & their control;
- Environmental licenses conditioning compliance;
- Cogeneration systems;
- Calibration requirements;
- QA/QC procedures;
- Emergency procedures/corrective actions, i.e. provisions to mitigate emergencies, i.e. fire, procedures for corrective actions and project performance reviews
- Evidence for demonstrating the additionality of the project;
- Consultation process with local stakeholders.

2.3 Resolution of Clarification and Corrective Action Requests

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

i) mistakes have been made with a direct influence on project results;
ii) validation protocol 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 validation team may also use a request for *Clarification* (CL), where additional information is needed to fully clarify an issue.

The validation has identified six *Corrective Action Requests* and two requests for *Clarification.* These requests were presented to the project participants in DNV's draft validation report of 4 February 2005. To address the issues raised by DNV, the project participants provided clarifications and additional information submitted in two revised versions of the PDD /2//3/. The clarifications and additional information provided by the project participants resolved all *Corrective Action Requests* and request for *Clarification* with the exception of the *Corrective Action Request* with regard to the approvals by the DNAs of the participating Parties. Upon receipts of these approvals, DNV will request the registration of the Rickli Biomass Electricity Generation Project.

To guarantee the transparency of the validation process, the concerns raised by DNV and the response provided by the project participants are documented in Table 3 of the validation protocol in Appendix A to this report.

3 PRELIMINARY VALIDATION FINDINGS

The findings of the validation 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.

3.1 Project Design

The project is a renewable energy project activity with an output capacity of less than 15 MW, i.e. 5 MW. The project also avoids methane emissions with project emissions being less than 15 kilotonnes of carbon dioxide equivalent annually, i.e. project emissions will be 4 848 tCO_2e per year. The project is thus eligible as category I.D and category III.E small-scale CDM project activity (*Renewable Energy Projects / Renewable electricity generation for a grid* and *Other project activities/Avoidance of Methane*, respectively) as outlined in Appendix B of the simplified modalities and procedures for a small-scale CDM project activities /8/.

Category I.D comprises projects that "supply electricity to an electricity distribution system". The electric energy generated by the project will partly be used by the Rickli Plant and will reduce the imports from grid electricity and thus displace energy from the grid. As this project activity reduces grid electricity imports and thus avoids marginal fossil fuel based electricity generation, DNV is in favour of the project being considered under Category I.D. This is, however, subject to the final acceptance of the CDM Executive Board with regard to whether category I.D can also apply to projects that generate electricity for their own use.

The simplified modalities and procedures give no further guidance on which project emissions to include for determining whether the projects meet the small-scale eligibility threshold for category III.E, i.e. the project emissions shall be less than 15 000 tCO_2e per year. The selected definition of project emissions being the CH_4 and N_2O emissions due to incomplete combustion of biomass and the exclusion of biogenic CO_2 emissions from the combustion of biomass is in line with other approved baseline and monitoring methodologies.

The project design engineering reflects good practice, and the technology as well as know-how being promoted by this project is environmentally safe and sound. The thermoelectric plant will be powered by biomass residues from Rickli and complementary biomass with high granularity supplied by third parties. Due to its high granularity, the biomass used by the project is currently not utilised and dumped on landfills. In order to be able to utilise the biomass in a boiler to generate electricity, the biomass must be first processed in a new installed shredder to reduce the granularity and a set of sieves to allow mix adequate proportion of sawdust.

Employees have been trained on safety measures and the management capabilities for the new thermoelectric equipment. Social and other environmental effects than the reduction of GHG emissions are described. By promoting renewable energy and by using biomass residues from sawmills, the project will contribute to sustainable development in Brazil. Nonetheless, the Brazilian designated national authority (DNA) has not yet confirmed that the project contributes to sustainable development.

The validation did not reveal any information that indicates that the project's financing can be seen as a diversion of ODA funding towards Brazil.

3.2 Project Baseline

The project has two baseline components. The first baseline is established according to the simplified baseline methodologies for category I.D small-scale CDM project activities (Renewable Energy Projects / Renewable electricity generation for a grid).

The average of the approximate operating margin and build margin (combined margin) has been determined based on an International Energy Agency (IEA) study for Brazil /7/. Considering that such study was carried out recently and that the necessary data for determining the operating and build margin are not public available in Brazil, the use of the data from the IEA study are deemed adequate for calculating the combined margin.

The operating margin (the weighted average emissions of all generating sources serving the system excluding hydro, geothermal, wind, low-cost biomass nuclear and solar generation) and build margin (most recent 20% capacity additions to the system) were calculated according to the methodology given in the simplified baseline and monitoring methodologies for category I.D small-scale CDM project activities. Plants that are expected to start operation in the 2005 and 2006, which were included in the IEA study, were excluded. As a result, data from 435 plants (representing 62,860 MW of installed capacity) from the S-SE grid were used to calculate the operating and build margin (instead of the 582 used by EIA study).

The second baseline component is established according to the simplified baseline methodologies for category III.E small-scale CDM project activities (Other Projects Activities / Methane Avoidance). The amount of methane produced from decay of biomass landfilled in absence of the project is determined using adequate IPCC default emission factors.

3.3 Additionality

The barrier analysis presented in the PDD focus on the technological as well as investment barriers and barriers due to prevailing practice.

The project does not present any technological barrier since the technology involved in this scenario is available in the market and has been used effectively in Brazil. On the other hand, the project scenario implies a financial barrier due to the increased costs required to implement the renewable energy plant that would not be presented in the baseline scenario. Upon request, an investment analysis considering all savings and expenses associated to the project was presented. DNV acknowledges that the project without CER revenues has an IRR lower than the levels regarded as acceptable for other investments in Brazil. Although Rickli already operates one old boiler, the new cogeneration system has different conditions of operation, using the wood waste which is not readily utilised to generate electricity.

The common business practice for sawmills is the import of electricity from the grid and the landfilling of biomass residues. The project is not business as usual practice, is a deviation from the core business of the plant and requires changes in the production process and in the employees' activities. The project thus faces barriers due to prevailing practice. Hence, it is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are additional.

3.4 Monitoring Plan

The project applies the simplified monitoring methodology described for category I.D and III.E small-scale CDM project activities.

A transport emission factor (TEF) of 0.00674 tCO_2 /t of biomass transported from third parties has been calculated. For all biomass purchased by third parties this factor will be applied for determining emissions related to transports.

Detailed responsibilities and authorities for project management, monitoring procedures and QA/QC procedures have not been presented during interviews with Rickli. They are foreseen to be established during the second quarter of 2005 and their implementation should be checked during the first period verification of emission reductions.

3.5 GHG Emission Accounting

The calculations are transparently documented. Project emissions are considered zero for the renewable electricity generation component. For the methane avoidance component, the project emissions are calculated according to the simplified methodology for category III.E small-scale CDM project activities and will be determined using the most recent IPCC default values.

For project activities using biomass, leakage must be considered. Potential leakage effects from concurrent uses of biomass as well as from biomass transport are considered.

Emissions resulting from the transportation of the biomass to the site are accounted for, and the formula and assumptions used to calculate these emissions seem reasonable and conservative. It is demonstrated that the emissions originated from the transportation of sawmill residues to the site are much less than the amount that would be produced by the decay of biomass in normal conditions.

Leakage due to the potential diversion of biomass from other users and thereby increasing fossil fuel use by these users was also considered. However, it was verified during site visit that over 10 times the amount of biomass to be burned by the project is available and left to decay in the region. One of the main activities in the South region where the project is located is the wood industry, with many sawmills. Sawmills generate huge amounts of biomass residues (sawmill residues), and the Brazilian legislation prohibits the uncontrolled burning of that biomass. As a result, sawmills have huge amount of biomass that are left to decay. It was confirmed that the project represents a solution for the biomass residues problem in the region. Therefore, the project is not likely to result in biomass scarcity which could cause other biomass users to switch to other fuels (leakage effects).

3.6 Environmental Impacts

According to Brazilian regulations renewable energy projects are required to have a permit for construction. The renewable energy plant received its permit for construction from ANEEL, the Brazilian Electricity Energy Agency (Resolution ANEEL n°205 of 2001/06/06, and License ANEEL nº123, published in the Brazilian Official Diary, n° 45 section 1, 7 March 2002).

According to the PDD, there are no foreseen environmental impacts. The environmental impacts of the project were extensively discussed during the interviews with Rickli /11/ /12/ and /13/. The environmental permit for operation from the Environmental Agency of Paraná state (IAP – Instituto Ambiental do Paraná) has the number 4361, and was issed on 6 April 2004 and is valid until 6 April 2006. Adverse impacts, such as noise, were sufficiently taken into account.

3.7 Comments by Local Stakeholders

On 15 December 2004, local stakeholders were invited to comment on the project according the requirements of resolution 1 of the Brazilian DNA. The main Brazilian stakeholders received letters of invitation and were asked to provide comments within a period of 30 days. These letters were verified during the site visit.

The selected stakeholders were: City Hall of Carambei, Chamber of Carambei, Environment agencies from the state and Local Authority, Brazilian Forum of NGOs, District Attorney (known in Portuguese as Ministério Público, i.e. the permanent institution essential for legal functions responsible for defending the legal order, democracy and social/individual interests) and local communities. No comments were received.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the validation of CDM projects, the validator shall make publicly available the project design document and receive, within 30 days, comments on the validation requirements from Parties, stakeholders and UNFCCC accredited Non-governmental Organisations (NGO) and make them publicly available.

The PDD was published on http://www.dnv.com/certification/ClimateChange until. and stakeholders were through the UNFCCC CDM web site invited to provide comments from 4 February 2005 to 6 March 2005. Two comments were received.

The comments (in unedited form) are given in below text boxes and an explanation of how DNV has taken due account of the comments received is given.

Comment by: Axel Michaelowa, Hamburg Institute of International Economics (HWWA)

Inserted on: 2005-02-24

Subject: Unconvincing barrier test and data for baseline calculation

Comments:

* The methane reduction component has annual emission reductions above 15kt and thus is above the threshold set by the small-scale project rules.

* The baseline emission factors are from an outdated (three-year old) IEA study and should be updated with more recent data.

How DNV has taken due account of the comment:

Both issues raised by the comment were considered in DNV's validation of the project. The first comment seems to be a misunderstanding about the eligibility criteria for type III small-scale CDM project activities. Paragraph 4 of the simplified modalities and procedures for small-scale CDM project activities states that "type (iii) projects shall not exceed total direct emissions of 15 kilotonnes of carbon dioxide equivalent annually and must reduce greenhouse gas emissions". Hence, the interpretation by Mr. Axel Michaelowa is not correct and paragraph 4 only requires that project emissions shall be below 15 kilotonnes of of carbon dioxide equivalent annually.

As for the second comment, considering that the IEA study /6/ was carried out recently and that the necessary data for determining the most recent operating and build margin is not publicly available in Brazil, the use of the data from the IEA study is deemed adequate for calculating the combined margin.

Comment by: Gabriel Mann dos Santos, Tractebel Energia

Inserted on: 2005-03-05

Subject: Project Boundary and Biomass Supply

Comments:

The III.E simplified methodology is used by this project activity, according to defined in the PDD. As defined in III.E, the project boundary shall be the physical, geographical site where the

treatment of biomass takes place and, the baseline scenario shall be the situation where, in the absence of the project activity, biomass is left to decay within the project boundary and the methane is emitted to the atmosphere. According to A.2 section of the PDD, the biomass residues to be used by the generation unit comes part from Rickli and part from third parties. Thus, the biomass amount coming from third parties and used by the project should not be considered to calculate the emission reductions from the methane avoidance because, otherwise, this amount would be left to decay in the third parties' sites.

What the amount coming from each part? Would all biomass amount coming from Rickli be left to decay in the project boundary if the project is not implemented? If no, the biomass amount that would not be left to decay in the project boundary should also not be considered to calculate the emission reductions from the methane avoidance.

In spite of III.3 simplified methodology to establish no leakage claculation is required, the Appendix B of the simplified modalities and procedures, in the item 8 of the General Guidance, establishes that to project activities using biomass, leakage shall be considered. For instance, there is the leakage related to transportation of the biomass amount from the third parties to the project site.

How DNV has taken due account of the comment:

With regard to the project boundary issue: The III.E simplified methodology states that the boundary comprises the physical, geographical site where the treatment of biomass takes place. Where the biomass used by the project comes from is not relevant in terms of the project boundary.

With regard to the amount left for decay in the baseline scenario: The project is going to use sawmill residues only as fuel for the boiler. These residues have currently no economic value. DNV agrees that the PDD could be improved to better clarify which part of the biomass that has been used earlier, such as the biomass used to produce steam in the old boiler. However, the additional information provided by the project participants sufficiently demonstrated that all biomass used by the project would have been left for decay (see Table 3 of the validation protocol in Appendix A to this report).

The issue of transport emissions due to necessary transports of biomass was raised in the validation of the project. The project design was revised to account for emissions resulting from the transportation of the biomass to the site (see Table 3 of the validation protocol in Appendix A to this report).

5 PRELIMINARY VALIDATION OPINION

Det Norske Veritas Certification (DNV Certification) has validated the Rickli Biomass Electricity Generation Project in Brazil (hereafter called "the project"). The validation was performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the Kyoto Protocol criteria for the CDM, the CDM modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project activities and relevant decisions by the CDM Executive Board.

Being a renewable energy project activity with an output capacity of less than 15 MW and having less than 15 000 tCO_{2e} project emissions, the project meets the criteria for Renewable electricity generation for the grid (Type I.D) and Methane avoidance (Type III.E) as defined in Appendix B of the simplified modalities and procedures for small-scale CDM project activities.

Category I.D comprises projects "that supply electricity to an electricity distribution system". The electric energy generated by the project will partly be used by the Rickli Plant and will reduce the imports from the grid electricity, thus, displacing energy from the grid. As this project activity reduces grid electricity imports and thus avoids marginal fossil fuel based electricity generation, DNV is in favour of the project being considered under Category I.D. This is, however, subject to the final acceptance of the CDM Executive Board.

The simplified modalities and procedures for small-scale CDM project activities give no further guidance on which project emissions to include for determining whether the projects meet the small-scale eligibility threshold for type III small-scale CDM project activities. However, the selected definition of project emissions being the CH_4 and N_2O emissions due to incomplete combustion of biomass and the exclusion of biogenic CO_2 emissions from the combustion of biomass is in line with other approved baseline and monitoring methodologies.

The project applies two of the simplified baseline methodologies proposed for this project activity category. The average of the approximate operating margin and the build margin is applied for the renewable electricity generation component of the project. The determination of the combined margin is based on an International Energy Agency (IEA) study for Brazil. Considering that such study was carried out recently and that the necessary data for determining the operating and build margin is not public available in Brazil, the use of the data from the IEA study are deemed adequate for calculating the combined margin. For the methane avoidance component of the project, the amount of methane produced from decay of biomass landfilled in absence of the project is determined using adequate IPCC default emission factors.

An analysis of relevant barriers demonstrates that the proposed project is not a likely baseline scenario and emission reductions are hence additional to any that would occur in its absence of this proposed CDM project activity. The additionality of the project is demonstrated through a barrier test. Upon request, an investment analysis considering all savings and expenses associated to the project was presented. DNV acknowledges that the project without CER revenues has an IRR lower than the levels regarded as acceptable for other investments in Brazil. Although Rickli already operates one old boiler, the new cogeneration system has different conditions of operation, using the wood waste which is not readily utilised to generate

electricity. Hence, it is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are additional.

The project applies the simplified monitoring methodology described for category I.D and III.E small-scale CDM project activities. Detailed responsibilities and authorities for project management, monitoring procedures and QA/QC procedures have not been presented during interviews with Rickli. They are foreseen to be established during the second quarter of 2005 and their implementation should be checked during the first period verification of emission reductions.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. Total emission reductions from the electricity and methane components are estimated as 2 687 265 tCO_2e over 21 years, which means an average annual emission reduction of 127 965 tCO_2e.

The project design is sound and the project will use state of the art technology fully used in Brazil. Social and environmental impacts of the project have been previously addressed, allowing the permit of construction as well as the environmental permit by the environmental authority of Paraná. By promoting renewable energy and by using biomass residues from sawmill industries; the project will contribute to Brazil's sustainable development. However, the DNA of Brazil has not yet confirmed the project's contribution to sustainable development.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.

A local consultation process with relevant stakeholders has been conducted and no comments were received during the consultation process. This has been checked during site visit.

Parties, stakeholders and NGOs were invited to provide comments and all issues raised by stakeholders were taken into account during the validation.

In summary, the Rickli Biomass Electricity Generation Project meets all present and relevant UNFCCC criteria and the simplified modalities and procedures for small-scale CDM project activities. However, the project has not yet obtained approval by the participating Parties, including a confirmation by the host Party that the project contributes to sustainable development in Brazil

6 REFERENCES

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

/1/ Ecosecurities, *PDD of the Rickli biomass electricity generation project*, January 2005

/2/ Ecosecurities, *PDD of the Rickli biomass electricity generation project*, February 2005

/3/ Ecosecurities, *PDD of the Rickli biomass electricity generation project*, March 2005

/4/ Ecosecurities, *Emission Calculations*, Excel sheets, 17 February 2005

/5/ Ecosecurities, *Monitoring and data tables*, Excel sheets, 17 February 2005

/6/ Ecosecurities, *Emission Calculations*, Excel sheets, 11 March 2005

/7/ Bosi, M. et al. 2002. *Road-Testing Baselines for Greenhouse Gas Mitigation Projects in the Electric Power Sector*, OECD and IEA Information Paper COM/ENV/EPOC/IEA/SLT - 2002 6, Paris, available at: http://www.oecd.org/env/cc (4 February 2005)

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

/8/ Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories, version 05 of 23 February 2005.

/9/ IPCC, *Good Practise Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. 2000

/10/ International Emission Trading Association (IETA) & Prototype Carbon Fund (PCF) Det Norske Veritas (DNV), *Validation and Verification Manual*, available at: www.vvmanual.info

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

/11/ Marcelo Los Rickli – Madereira Rickli –Administrative Director

/12/ Luis C. Figueiredo – Madereira Rickli – Production Manager

/13/ Flavia Resende – Ecosecurities – Consultant

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APPENDIX A

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	OK	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, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	**CAR 1**	Table 2, Section A.3 The Brazilian DNA has not yet formally confirmed the project's contribution to sustainable development
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, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	**CAR 1**	The project has not yet been formally approved by the Brazilian designated national authority (DNA) and the DNA of the UK .
5. The emission reductions should 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.1 to E.4
6. Reduction in GHG emissions must 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. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	OK	Table 2, Section B.2.1
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development	Decision 17/CP.7	OK	The validation did not reveal any information that indicates that the

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
assistance			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". The UK designated national authority for the CDM is the "The Department for Environment, Food and Rural Affairs".
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities and Procedures § 30, 31b	OK	Brazil has ratified the Kyoto Protocol on 23 August 2002. UK has ratified the Kyoto Protocol on 31 May 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	OK	UK calculated and recorded its assigned amount units..
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	OK	UK has in place a national registry and reported in October 2001 their 3rd communication.
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
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** ~~**CAR 2**~~	The revised PDD is in line with the CDM-PDD for small-scale CDM project activities (version 01 of 21 January 2003).

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
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 Project activity 1.D and 3.E.
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 No comments were provided by the local stakeholders.
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 The validator checked the "Environmental Control Plan" and also the ANEEL license and Operation License (number 4361) during the site visit.
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 has been published for comments on http://www.dnv.com/certification/ClimateChange. Parties, stakeholders and NGOs have been – through the CDM website – invited to provide comments on the validation requirement from 4 February 2005 to 6 March 2005. Two comments were received and addressed in the validation report.

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. **Project Description** The project design is assessed.					
A.1. Small scale project activity 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/, /2/	DR	The Project conforms to the small-scale project Type I.D since the nominal installed capacity of the Project is below the 15 MW threshold and the plant will sell its generated electricity to the grid. In addition, the methane avoidance component of the project is eligible under Type III.E because in the project scenario the emissions related to the combustion of the biomass will be lower than 15 000 tCO_2e annually.		OK
A.1.2. The small scale project activity is not a debundled component of a larger project activity?	/1/, /2/	DR	This small-scale renewable energy project is not part of a larger emission-reduction project.		OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	/1/, /2/	DR	The project is a "Renewable electricity generation for a grid project activity" (Type I.D) and "Methane avoidance" (Type III.E) small-scale CDM project activity as defined in the simplified modalities and procedures for small-scale CDM project activities.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2. Project Design 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/, /2/	DR	The project is located in the Rickli main industrial complex, situated in the municipality of Carambei, Paraná state (PR 151, Km 130, Carambei, Paraná state, CEP 84145-000).		OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/, /2/	DR	The project comprises a new 5 MW biomass electricity generation plant, using biomass from *pinus* waste that on normal conditions is dumped opened air and left to decay. The electric energy will be used by the Rickli plant, reducing the imports from grid electricity, and the surplus generated electricity will be sold to the grid.		OK
A.2.3. Does the project design engineering reflect current good practices?	/1/, /2/	DR	The plant to be installed is composed by a boiler manufactured by H.Bremer & Filhos Ltda, model Lignudin with an installed capacity of 25 tonnes of steam per hour (temperature of 400°C and pressure of 42 Kgf/cm2). The turbine is manufactured by Dresser Rand, working at 5700 rpm. The generator is from Toshiba with installed capacity of 6250 MVA, or 5 MW of electricity generation. There is also automation software developed by Siemens for controlling and monitoring all system. The equipment's year and nameplate values have been checked during site visit. The technology was		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			analyzed and it is considered adequate to the project.		
A.2.4. Will the project result in technology transfer to the host country?	/1/, /2/	DR	No. The technology is fully used in Brazil.		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/, /2/	DR	The project requires new safety measures as well as management capacity. The PDD is not clear about new training for the employees or about maintenance efforts. During the site visit it has been verified that the employees have already been trained concerning new safety measures and management capacity for operating the new thermoelectric equipment and at the end each one received a certification as checked during the site visit.		OK
A.3. Contribution to Sustainable Development 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/, /2/	DR	The project is likely to mitigate the environmental impacts: it will prevent the decay of biomass, will use clean technology and will optimise the use of natural resources. For the social benefits: it will increase job opportunities due to the new plant.		OK
A.3.2. Will the project create any adverse environmental or social effects?	/1/, /2/	DR	The mixture of the biomass burned is not clear and it is not clear how much of the biomass needs to be	~~CAR 3~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			transported from other sites thus creating transport emissions and noise.		
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/, /2/	DR	The project is in line with current sustainable development priorities in Brazil. Nevertheless, the Designated National Authority (Interministerial Commission on Global Climate Change) has not yet confirmed the project's contribution to sustainable development in Brazil.	CAR 1	
A.3.4. Is the project in line with relevant legislation and plans in the host country?	/1/, /2/	DR	See Table 1 - 17. The validator checked the "Environmental Control Plan" and also the ANEEL license and Operation License (number 4361) during the site visit.		OK
B. **Project Baseline** 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 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/, /2/	DR	Yes. The project applies two of the simplified baseline methodologies proposed for this project activity; category I.D. (Renewable electricity generations for the grid), i.e. the average of the approximate operating margin and the build margin, and Category III.E (Methane avoidance), i.e. comprises measures that avoid the production of		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			methane from biomass that would have otherwise been left to decay.		
B.1.2. Is the baseline methodology applicable to the project being considered?	/1/, /2/	DR	Yes. The determination of the combined margin is based on the data used for the International Energy Agency (IEA) study for Brazil /6/. Considering that current data for determining the operating and build margin is not publicly available in Brazil, the use of the data from the IEA study is deemed adequate for calculating the combined margin. The operating margin (the weighted average emissions of all generating sources serving the system excluding hydro, geothermal, wind, low-cost biomass nuclear and solar generation) and build margin (most recent 20% capacity additions to the system) were calculated according to the methodology given in the simplified baseline and monitoring methodologies for category I.D small-scale CDM project activities.		OK
B.2. Baseline Determination 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/, /2/	DR	Barriers according to Attachment A are presented to demonstrate the additionality of the project, including financial, technical and prevailing practice barriers. Technical: there are no significant technical/	~~CAR 4~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
prevailing practice or other barriers?			technological barriers. All the technologies involved in this scenario are available in the market, and have been used effectively in Brazil. Barriers due to prevailing practice: The Brazilian technologies in sawmills are very poor, and less than 50% of wood is transformed into products. The other 50% are wood residues. The construction of a new renewable energy plant represents a deviation from the company's core business, so a new, expensive, and complex process must be installed.		
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	/1/, /2/	DR	Two baselines were chosen. The first one calculates the displacement of grid electricity as the average of the build margin and the operating margin. The standard 0.8tCO_2/MWh emission factor is not used because the grid is not based only on fuel oil or diesel fuel. The baseline determination is based on compiled data on 1 479 plants, in operation (1 174) or under construction (305) as of July 3, 2002. The data obtained for the South- Southeast and Mid-West grid (relevant for Rickli) were used. In order to adequate the operation margin to the Brazilian grid, which has hydro predominance, a reduction factor was implemented using ANEEL/ONS figures. Considering that such study was carried out recently and that the necessary data for determining the operating and build margin is not publicly available in Brazil, the use of the data from the IEA study is adequate.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The application of the baseline equation for the methane avoidance component is straight forward and has been done correctly.		
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	/1/, /2/	DR	For methane avoidance no policy is established with respect to uncontrolled biomass burning. It needs to be clarified why the project did not qualify to receive subsides under PROINFA, the Brazilian government programme to promote renewable energy.	~~CL 1~~	OK
B.2.4. Is the baseline selection compatible with the available data?	/1/, /2/	DR	Yes.		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/, /2/	DR	See B.2.1	~~CAR 4~~	OK
C. **Duration of the Project / Crediting Period** 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/, /2/	DR	The project's starting date is 17 June 2004 and the expected operation lifetime of the project is 30 years.		OK
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/, /2/	DR	A crediting time of 7 years starting on 1 January 2005 with two possible renewals is selected.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D. **Monitoring Plan** 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 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/, /2/	DR	Yes, both selected monitoring methodologies are according to the methodologies established for small scale projects categories I.D and III.E.		OK
D.1.2. Is the monitoring methodology applicable to the project being considered?	/1/, /2/	DR	Yes, it complies with the monitoring requirements for small scale projects categories I.D and III.E.		OK
D.1.3. Is the application of the monitoring methodology transparent?	/1/, /2/	DR	It needs to be specified how the amount of biomass used will be monitored.	~~CL 2~~	OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	/1/, /2/	DR	To determine the amount of electricity displaced by the project the net electricity produced by Rickli cogeneration plant is monitored. The revised PDD clearly presents this information as well as the analysis made in the excel sheet sent to DNV on 02/17/2005. The emissions from the combustion in terms of CH_4 and N_2O emissions are going to be calculated based on the quantity of biomass combusted and the IPCC default values for CH_4 (default value is 300) and N_2O in kg/TJ (default value is 4).		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.2. Monitoring of Project Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. Are the choices of project emission indicators reasonable?	/1/, /2/	DR	Yes. There are only two gases to be measured: CH_4 and N_2O from incomplete combustion of biomass. The CO_2 is climate neutral since it results from biomass generation.		OK
D.2.2. Will it be possible to monitor / measure the specified project emission indicators?	/1/, /2/	DR	Yes. It is easy to measure the net electricity generated by the biomass plant.		OK
D.2.3. Do the measuring technique and frequency comply with good monitoring practices?	/1/, /2/	DR	The project is going to use electricity from the generation unit. The net electricity produced will displace electricity imported from grid, and the surplus will be exported to the grid.		OK
D.2.4. Are the provisions made for archiving project emission data sufficient to enable later verification?	/1/, /2/	DR	Yes. For the crediting period plus two years.		OK
D.3. Monitoring of Leakage It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. If applicable, are the choices of leakage indicators reasonable?	/1/, /2/	DR	Although it is written in the Appendix B that in the case of projects activities using biomass, leakage shall be considered, it is not provided in the PDD. It needs to be clarified the amount of biomass collected outside the project boundary, the trucks	~~CAR 5~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			capacity and number of trips. During site visit, it was demonstrated that the Rickli project is a solution for the biomass residues problem in the region. It was verified that over 10 times the amount of biomass burned by the project is available and left to decay in the region. There are more than 25 sawmills around the region, and they will supply the project. However, the project proponent needs to be clearer about what part of the biomass has been used earlier, such as the biomass used to produce steam in the old boiler. It needs to be more clarified how this amount is calculated and it needs to be deducted from the emission reductions in the methane avoidance component.		
D.3.2. If applicable, will it be possible to monitor / measure the specified leakage indicators?	/1/, /2/	DR	See D.3.1	~~CAR 5~~	OK
D.3.3. If applicable, do the measuring technique and frequency comply with good monitoring practices?	/1/, /2/	DR	See D.3.1	~~CAR 5~~	OK
D.3.4. If applicable, are the provisions made for archiving leakage data sufficient to enable later verification?	/1/, /2/	DR	See D.3.1	~~CAR 5~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.4. Monitoring of Baseline Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/, /2/	DR	The project is going to use electricity from the generation unit. The net electricity produced will displace electricity imported from grid, and the surplus will be exported to grid. See A.3.2 The emissions of methane are based on the amount of biomass used to generate electricity, but the mixture of fuel used to provide energy is not clear.	~~CAR 6~~	OK
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	/1/, /2/	DR	See A.3.2	~~CAR 3~~	OK
D.4.3. Do the measuring technique and frequency comply with good monitoring practices?	/1/, /2/	DR	Yes		OK
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	/1/, /2/	DR	Yes.		OK
D.5. Project Management Planning 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/, /2/		The procedures for QA/QC will be establish and implement before start up of project.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The implementation of these procedures should be checked during the first periodic verification of emission reductions.		
E. **Calculation of GHG emission** 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 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/, /2/	DR	Yes. There are only two gases to be measured: CH_4 and N_2O from combustion of biomass. The CO_2 is climate neutral since it results from biomass generation		OK
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	/1/, /2/	DR	Yes, see E.1.1		OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?	/1/, /2/	DR	Yes, according to the formulae established by the simplified baseline and monitoring methodologies for small scale project type I.D and III.E.		OK
E.1.4. Are the calculations documented in a complete and transparent manner?	/1/, /2/	DR	Complementary information was provided by the project proponent: the Energy content of biomass was based on Brand *et al* (2001) from UNIPLAC, Brazilian Institution. The revised PDD clearly		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			presents this information in tables in E.2		
E.1.5. Have conservative assumptions been used?	/1/, /2/	DR	To be verified if the quantity of biomass forecasted can be considered realistic, after the revised calculation sheet is received.	~~CAR 5~~	OK
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	/1/, /2/	DR	No uncertainties are foreseen.		OK
E.2. Leakage 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/, /2/	DR	See D.3.1.	~~CAR 5~~	OK
E.2.2. Are potential leakage effects properly accounted for in the calculations (if applicable)?	/1/, /2/	DR	See D.3.1	~~CAR 5~~	OK
E.2.3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)?	/1/, /2/	DR	See D.3.1	~~CAR 5~~	OK
E.2.4. Are the calculations documented in a complete and transparent manner and (if applicable)?	/1/, /2/	DR	See D.3.1	~~CAR 5~~	OK
E.2.5. Have conservative assumptions been used (if applicable)?	/1/, /2/	DR	See D.3.1	~~CAR 5~~	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.2.6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	/1/, /2/	DR	See D.3.1	~~CAR 5~~	OK
E.3. Baseline GHG Emissions 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/, /2/	DR	For the treatment of the biomass the boundaries are defined as the physical, geographical site where the project takes place. The system boundary for the electricity generation is the sub-national interconnected grid of the South-Southeast of Brazil.		OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	/1/, /2/	DR	All direct baseline emissions are captured. The baseline grid electricity emission factor is established as the average of the operating and build margin using data from an IEA study. See B.1.2 The emissions related to the methane avoidance are determined based on the formula established for small scale project type III.E. Indirect baseline emissions have to be considered. See D.3.1.	~~CAR 5~~	OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	/1/, /2/	DR		~~CAR 5~~	OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	/1/, /2/	DR		~~CAR 5~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.3.5. Are the calculations documented in a complete and transparent manner?	/1/, /2/	DR	See D.1.3	~~CL 2~~	OK
E.3.6. Have conservative assumptions been used?	/1/, /2/	DR	The assumptions are based on publicly available data from independent high-quality sources such as IPCC and IEA.		OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	/1/, /2/	DR	No uncertainties are foreseen.		OK
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 case?	/1/, /2/	DR	Yes. The estimate of total reductions from the methane component is 2 117 787 tCO_2e over 21 years. Total emission reductions from the electricity and methane components are estimated as 2 687 265 tCO_2e over 21 years, which means an average annual emission reduction of 127 965 tCO_2e.		OK
***F.* Environmental Impacts** 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/, /2/		The project has received permit for construction from ANEEL, the Brazilian electricity energy National Agency (License ANEEL n°123, published in the Brazilian Official Diary, n° 45 section 1, 7 March 2002).		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The environmental permit for operation from the Environmental Agency of Paraná state (IAP – Instituto Ambiental do Paraná) has the number 4361, and was issued on 6 April 2004 and is valid until 6th April 2006.		
F.1.2. Does the project comply with environmental legislation in the host country?	/1/, /2/	DR	The licenses were checked during the site visit, the project complies with national environmental legislation. Adverse environmental impacts such as emissions to air, noise and waste disposal are will be managed accordingly.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/, /2/ /11/, /12/, /13/	DR	According to the PDD, there are no foreseen environmental impacts.		OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	/1/, /2/	DR	The environmental impacts of the project were extensively discussed during the interviews with Rickli. Adverse impact, such as noise, were sufficiently taken into account.		OK
G. **Comments by Local Stakeholder** Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	/1/, /2/		According to the Brazilian DNA Resolution 1, letters to main local stakeholders were issued.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/, /2/		Comments by stakeholders were verified during interviews with DNA or local municipalities.		OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host	/1/, /2/		Yes		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/2/				
G.1.4. Is a summary of the comments received provided?	/1/, /2/		No comments were received		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to Table 2	Summary of project participants' response	Validation team conclusion
CAR 1 The project has not yet been formally approved by the Brazilian designated national authority (DNA) and the DNA of the UK. The Brazilian DNA has not yet confirmed the project's contribution to sustainable development in Brazil.	Table 1 - 1 and 4 A.3.3	The standard procedure in Brazil to request the confirmation of the project's contribution to sustainable development by the DNA is to submit a preliminary validation protocol to the DNA. Once they receive all the documentation, they can issue the letter of approval.	Project has not yet formally approved by Brazilian DNA and the UK.
CAR 2 The PDD is not entirely in line with the template on http://cdm.unfccc.int. Headings have been changed. The final PDD needs to be in total conformance with the formatting, headings, logos, etc. No alteration is tolerated by the Secretariat.	Table 1	The PDD is being changed accordingly.	OK. The revised PDD is in line with the CDM-PDD for small-scale CDM project activities (version 01 of 21 January 2003).
CAR 3 The mixture of the biomass burned is not clear and it is not clear how much of the biomass needs to be transported from other sites thus creating transport emissions and noise.	A.3.2 D.4.2	The unique type of biomass that Rickli is going to use is sawmill residues as fuel for the boiler. From the total of biomass used by the boiler, 72 ktonnes of biomass/year is from third parties and therefore it will be transported from other sites. The methodology applied to the project does not require monitoring of transport emissions. Besides, it would be expensive and difficult to monitor	OK. The additional information provides the requested information. Emissions resulting from the transportation of the biomass to the site are accounted for, and the formula and assumptions used to calculate these emissions seem reasonable and conservative.

Draft report clarifications and corrective action requests by validation team	Ref. to Table 2	Summary of project participants' response	Validation team conclusion
		emissions released by biomass transportation. Therefore, it was created a transport emission factor (TEF) where each tonne of biomass releases 0,006 tCO_2/year. For all biomass purchased by third parties this factor will be applied as leakage calculation. The amount of biomass is already monitored by the monitoring plan and therefore, it is not necessary to monitor emissions reductions by transportation. Also, all impacts relevant to the project were considered and mitigated by the "Environmental Control Plan" elaborated by Rickli. No impacts were identified concerning transport noise. Both clarifications were detailed on itens A.2, D.2 and E.1.2.2 of PDD.	
CAR 4 Barriers according to Attachment A are presented to demonstrate the additionality of the project, including financial, technical and prevailing practice barriers. Technical: there are no significant technical/technological barriers. All the technologies involved in this scenario are available in the market, and have been used effectively in Brazil.	B.2.1 B.2.5	The investment analysis considers all savings and expenses associated to the project such as the revenues from costs reduction with electricity and fuel purchases and the costs associated to the installation and operation of new plant. This can be clearly demonstrated by "Rickli Type 1D 3E and financial analysis 16 02 05" spreadsheet.	A datasheet has been submitted to DNV on 02/16/2005 The NPV analysis provided needs to be amended in the following way: - the sale of CERs should not be included - the sale of electricity should be included as a revenue - direct costs include investment,

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Prevailing practice: The Brazilian technologies in sawmills are very poor, and less than 50% of wood is transformed into products. The other 50% are wood residues. The construction of a new renewable energy plant represents a deviation from the company's core business, so a new, expensive, and complex process must be installed. The financial evaluation considers only the risk of financing, but does not include savings due to the reduced need of purchasing electricity from the grid nor the selling of the surplus to the grid. An IRR analysis or any other financial analysis is requested to evidence the financial barrier.			operating, monitoring and verification costs and taxes. - depreciation should not be included as a direct cost but to calculate the tax incurred, which is a direct cost. DNV awaits a revised excel sheet detailing the NPV and IRR analysis, comparing the IRR to rates for similar investments in Brazil.
CAR 4 **(continued)** The NPV analysis provided needs to be amended in the following way: - the sale of CERs should not be included - the sale of electricity should be included as a revenue - direct costs include investment, operating, monitoring and verification costs and taxes. - depreciation should not be included as	B.2.5	In reviewing the spreadsheet we noted that cost associate to CER were wrongly taken into account in the cash flow without carbon. This was corrected by replacing: From: D54=D13-D37-D52 To: D54=D13-D37-D52+D34 We confirm that in the original spreadsheet (form 16/02/05) the sale of CERs is not included in the cash flow without carbon and is only included in	OK. The new datasheet considered all the information required and it is considered transparent and conservative.

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a direct cost but to calculate the tax incurred, which is a direct cost. DNV awaits a revised excel sheet detailing the NPV and IRR analysis, comparing the IRR to rates for similar investments in Brazil.		the cash flow with carbon. We confirm that the sale of electricity is included in both with and without carbon cash flows. We confirm that the direct costs included in the calculation include: investment, operating, monitoring and verification (only in the case with carbon), and taxes. We confirm that depreciation was not included as a direct cost but only to calculate tax. <u>Regarding the IRR for similar investments:</u> The PDD will be changed from: "The carbon revenues increase the returns of the project to an acceptable level compared to other investments in Brasil." To: "The carbon revenues increase the returns of the project to an acceptable level compared to other investments in Brazil (8.95% yield of the 20 years Brazilian government bond of maturity date 02/04/2025 according to Bloomberg on 10/10/2005)."	
CAR 5 Although it is written in the Appendix B that in the case of project activities using biomass,	D.3.1	The project is considering transport emissions to calculate the total emissions reductions achieved. Total	With regards to the leakage due to biomass diverted from other uses. The Rickli project is a solution for the

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leakage shall be considered, it is not provided in the PDD. The amount of biomass collected outside the project boundary, the trucks capacity and number of trips need to be clarified.	E.2.1 E.3.2	biomass collected outside the project boundary is 72 ktonnes/yr; each truck has the capacity to transport 20 tonnes per journey, therefore, they will realise 3,600 journeys per year. Clarification made on item E.1.2.2 on the PDD.	biomass residues problem in the region. It has been verified that over 10 times the amount of biomass burned by the project is available and left to decay in the region. However, the project proponent needs to be clearer about what part of the biomass has been used earlier, such as the biomass used to produce steam in the old boiler. It needs to be clarified how this amount is calculated and it needs to be deducted from the emission reductions in the methane avoidance component. The project is also considering transport emissions to calculate the total emissions reductions achieved. Total biomass collected outside the project boundary is about 72 ktonnes/yr; each truck has the capacity to transport 20 tonnes per journey, therefore, they will realise 3 600 journeys per year. This leakage is considered in the revised PDD. A default factor of 0.00674 tCO_2/ton biomass transported will be subtracted from the emission reductions. It is not clear why the diesel consumption is 180 000 l / year and not

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			only 90 000 if the total amount of biomass from third parties is 72 000 tonnes?
CAR 5 **(continued)** The project proponent needs to be clearer about what part of the biomass has been used earlier, such as the biomass used to produce steam in the old boiler. It needs to be clarified how this amount is calculated and it needs to be deducted from the emission reductions in the methane avoidance component. It was considered 14.400 tonnes used by the old boiler.	E.3.2	On transport emissions: The average distance to the suppliers is multiplied by two to reflect the total distance of a return journey. On the biomass used in the baseline: The calculation of the biomass used in the baseline was based on the past consumption of biomass by the old boiler deactivated by the project. According to Rickli's data the old boiler consumed 4.7 m^3/h of biomass. The conversion of biomass volume to mass being 2.6m^3/t. The average working hours of the old boiler was 660hs/month.	OK. The table that shows the calculation and that can be found in the spreadsheet "D Rickli Ers Calculation Rev 20050310" in the "Biomass" sheet is considered transparent and conservative.
CAR 6 The project is going to use electricity from the generation unit. The net electricity produced will displace electricity imported from grid, and the surplus will be exported to grid.	D.4.1	The revised PDD clearly presents this information as well as the analysis made in the excel sheet sent to DNV on 02/17/2005. See A.3.2 The emissions of methane are based on the amount of biomass used to generate electricity, but the mixture of fuel used to provide energy is not clear.	The project proponent sent the monitoring plan on 02/17/2005 and due to the simplicity of the monitoring plan, the compliance verification by the second part can be considered sufficient. It has to clarified how the amount of 81 000 of biomass was calculated and how the project proponent reached this number.

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CAR 6 **(continued)** It has to be clarified how the amount of 81 000 of biomass was calculated and how the project proponent reached this number, the discount and the efficiency as well as the type of biomass.		The estimation of the biomass used in the project is based on the new boiler capacity and on the expected biomass use. According to the equipment supplier (H.Bremer) the new boiler should consume 25 m^3/h of biomass. Utilisation will be higher than the one of the old boiler: 730h/month. Rickli uses a 14% Uncertanty & Losses factor on the top of the supplier figure. The conversion of biomass volume to mass is the same of the one used in the baseline: 2.6m^3/t.	OK. The new calculations considered in the "D Rickli Ers Calculation Rev 20050310" in the "Biomass" sheet were considered clear enough.
CL 1 It needs to be clarified why the project did not qualify to receive subsides under PROINFA, the Brazilian government programme to promote renewable energy.	B.2.3	The PROINFA Brazilian Government Programme is a compulsory program, which promotes renewable energies. However, the project proponents has opted to not receive subsides under PROINFA. Besides, part of the electricity will be consumed internally and therefore will not be sold for the grid. This was better detailed on financial barrier on item B.3	OK
CL 2 It has to be specified how the amount of biomass used will be monitored.	D.1.3 E.3.5	Rickli will use biomass by third parties and produced by their own. Both were considered on the monitoring plan. During the project, Rickli is going to monitor the amount of biomass	OK. The Revised PDD sent on 02/17/2005 is clear about this how the amount of biomass will be monitored.

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		purchased through invoices. Also the quantity of biomass produced by their own. It was made one comment concerning this issue on table 3 of item D.3 of PDD.	

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