



PRELIMINARY VALIDATION REPORT

IRANI BIOMASS ELECTRICITY GENERATION PROJECT IN SANTA CATARINA - BRAZIL

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PRELIMINARY VALIDATION REPORT

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Summary:

DNV is currently validating the Irani Biomass Electricity Generation Project in Brazil, on the basis of UNFCCC and host Party criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the Kyoto Protocol criteria and the simplified modalities and procedures for small-scale CDM project activities. This preliminary validation report summarizes the preliminary findings of the validation.

The validation has been performed as a desk review of the project documents presented by Celulose Irani and EcoSecurities. Moreover, the project site was visited on 17 December 2004 and staff of Celulose Irani was interviewed. Initially the preliminary validation of the project raised some concerns. To address these concerns Celulose Irani and EcoSecurities revised the PDD and provided clarifications, which all are documented in Table 3 of the validation protocol in Appendix A to this report.

The project is likely to mitigate GHG emissions by using renewable fuel (wood waste) for a electricity plant and thereby displacing electric energy from the grid, as well as by methane avoidance from wood waste previously landfilled. In summary the Irani Biomass Electricity Generation Project meets all present and relevant UNFCCC criteria and the simplified modalities and procedures for small-scale CDM project activities, with one exemption. This exemption is related to the missing approval of the project by the participating Parties, including a confirmation by the host Party that the project contributes to sustainable development in Brazil.

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Appendix A Validation Protocol

***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)
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N ₂ O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
GWP	Global Warming Potential



1 INTRODUCTION

Celulose Irani has commissioned Det Norske Veritas Certification Ltd. (DNV) to validate the Irani Biomass Electricity Generation Project at Vargem Bonita, Santa Catarina State, Brazil (hereafter called “the project”).

The validation team consists of the following personnel:

Mr Luis Filipe Aboim Tavares	DNV Rio de Janeiro	Team leader, GHG auditor
Mr Michael Lehmann	DNV Oslo	Energy sector expert
Mr Einar Telnes	DNV Oslo	Internal verifier

1.1 Objective

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 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, the simplified modalities and procedures for small-scale CDM project activities and the relevant decisions by the CDM Executive Board. The validation team has, based on the recommendations in the Validation and Verification Manual /8/ 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 provide input for improvement of the project design.

1.3 GHG Project Description

The project activity consists of the construction and operation of a 9.43 MW biomass generation plant that will generate a part of the electricity required by the Celulose Irani plant in the paper manufacturing process. The plant capacity is expected to be expanded in 2008, but will still be under the small-scale limits. The project activity involves displacing more carbon intensive electricity from the grid with electricity generated by GHG neutral biomass (wood chips and wood residue).

The project also involves methane avoidance from biomass not being landfilled. In the absence of the project the wood residue, which will be used in the thermoelectric plant will continue to be landfilled.

During the first seven year crediting period starting on 1 January 2005, on average the project is expected to displace 33,389 tCO_{2e} per year through the generation of renewable energy and to



avoid 148,002 tCO_{2e} per year by resulting from methane emissions from biomass not being landfilled.

2 METHODOLOGY

The validation consists of the following three phases:

- I a desk review of the project design and the baseline and monitoring methodology
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

Findings established during the validation can either be seen as a non-fulfilment of validation 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) CDM or host Party requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The term *Clarification* may be used where additional information is needed to fully clarify an issue.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /8/. 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 validation 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 Irani Biomass Electricity Generation Project is enclosed in Appendix A to this report.

2.1 Review of Documents

The initial Project Design Document (PDD) /1/ submitted by Celulose Irani on 18 August 2004, a revised PDD of October 2004 /2/ and a further revised PDD of December 2004 /3/ were reviewed.

Others documents, such as Environmental Impact Assessment, the Environmental Installation Licence and the Invitation for Comments by Local Stakeholders were reviewed during the site visit.



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

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

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

Figure 1 Validation protocol tables



2.2 Follow-up Interviews

On 17 December 2004, DNV performed interviews with Celulose Irani /9//10//11/ and EcoSecurities /12/ during a site visit at Celulose Irani at Vargem Bonita, Santa Catarina State, to confirm and to resolve issues identified in the document review.

The main topics of the interviews were:

- Environment licenses conditioning compliance,
- Supply of biomass (wood waste) used to generate electricity,
- Verification that current practise is landfilling of biomass by Irani and other suppliers of wood waste,
- Verification of process to treat the wood waste.

2.3 Resolution of Clarification and Corrective Action Requests

The initial validation identified three *Corrective Action Requests* and seven requests for *Clarification*. Subsequently, Celulose Irani provided clarifications and additional information with regard to the clarification requests presented by DNV and submitted two revised PDDs /2/3/ and spreadsheets for the calculation of the combined margin /4/ and the calculation of the cash flow /5/. 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.

The response provided by Celulose Irani and the revised PDD sufficiently addressed the seven requests for *Clarifications* and two *Corrective Action Request*. However, one *Corrective Action Requests* with regard to the approval by the DNA of the participating Parties approve is still pending.



3 PRELIMINARY VALIDATION FINDINGS

The preliminary 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 Participation Requirements

The project participants are Celulose Irani (Brazil), EcoSecurities (UK), Shell Trading International Limited (UK) and Showa Shell Sekiyu K.K. (Japan). All Parties involved, i.e., Brazil, the United Kingdom and Japan meet the requirements to participate in the CDM.

The project has not yet obtained approval by the participating Parties.

The project will be funded by Celulose Irani and the validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.

3.2 Project Design

The project is a renewable energy project activity with an output capacity of less than 15 MW, i.e. 9,43 MW. The project also avoids methane emissions with project emissions being less than 15 kilotonnes of carbon dioxide equivalent annually, i.e. 7,230.4 tCO_{2e} per year. Hence, the Irani Biomass Electricity Generation Project qualifies as a 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 /6/.

Category I.D comprises projects that “that supply electricity to an electricity distribution system”. The electric energy generated by the project will be used by the Celulose Irani 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 CH₄ and N₂O emissions due to incomplete combustion of biomass and the exclusion of biogenic CO₂ emissions from the combustion of biomass is in line with other approved baseline and monitoring methodologies.

The project design represents good practise. The thermoelectric plant will be powered by biomass residues from Irani and complementary suppliers of biomass with high granulometry, which is currently dumped on a landfill. These residues pass through a new installed shredder to reduce the granulometry and a set of sieves to allow mix adequate proportion of sawdust and is utilised in a boiler to generate electricity. The project thus avoids landfilling the biomass residues.



Although the project is in line with sustainable criteria, the Brazilian designated national authority (DNA) has not yet confirmed that the project contributes to sustainable development.

3.3 Baseline and additionality

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 baseline is established according to paragraph 29 (a) of Appendix B.

The determination of the combined margin is 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 is not publicly available in Brazil, the use of the data from the IEA study are deemed adequate and the most available 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 Brazilian S-SE grid were used to calculate the operating and build margin (instead of the 582 plants 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.

The additionality of the project is demonstrated through a barrier test considering two scenarios: the scenario without the project (baseline) and the implementation of the project. The test considers financial/economic barriers, technical barriers and prevailing business practice. Upon request, an investment analysis considering all savings and expenses associated to the project was presented. The analysis shows that the carbon revenues increase the IRR from 9.95% to 23,28%. Moreover, it is demonstrated that the installation of shredder and set of sieves to allow use sawdust and over size wood waste is not prevailing business practise. DNV acknowledges that the project without CER revenues is lower than the levels regarded as acceptable for other investments in Brazil. Although Celulose Irani already operates two old biomass power plants, the new boiler 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.

3.4 Monitoring Plan

The Irani Biomass Electricity Generation Project applies the monitoring methodology established according to paragraph 31 of Appendix B of the simplified procedures for small-scale CDM projects for the the electricity generation component (Category I.D) and according to paragraph 95 and 96 for the methane avoidance baseline (Category III.E). The main parameters are electricity generated and biomass burned in the cogeneration unit. These parameters are



consistent with the simplified monitoring methodology. Upon request, the PDD was revised to clarify how the net electricity produced by the new cogeneration plant and the quantity of waste wood purchased will be monitored.

Detailed responsibilities and authorities for project management, procedures for monitoring and reporting, and QA/QC procedures are assured through ISO 9001 certification of Celulose Irani, however these procedures were not implemented yet and should be assessed on verification phase.

3.5 Calculation of GHG Emissions

The baseline calculations are according to two approaches. The first approach is according to paragraph 29 (a) of Appendix B of the simplified modalities and procedures for small-scale CDM project activities: The average of the “approximate operating margin - OM” and the “build margin - BM” (kgCO₂e/kWh).

The second approach is according to item 92 of of Appendix B of the simplified modalities and procedures for small-scale CDM project activities:

$$BE_y = Q_{\text{biomass}} * CH4_IPCC_{\text{decay}} * GWP_CH_4$$

Where:

BE_y = Baseline methane emissions from biomass decay (tonnes of CO₂ equivalent)

Q_{biomass} = Quantity of biomass treated under the project activity (tonnes)

CH_4_GWP = GWP for CH₄ (tonnes of CO₂ equivalent/tonne of CH₄)

and

$$CH4_IPCC_{\text{decay}} = (MCF * DOC * F * 16/12)$$

Where:

$CH_4_IPCC_{\text{decay}}$ = IPCC CH₄ emission factor for decaying biomass in the region of project activity (tonnes of CH₄/tonne of biomass or organic waste)

MCF = methane correction factor (fraction) (default is 0.4)

DOC = degradable organic carbon (fraction, see equation below or default is 0.3)

DOCF = fraction DOC dissimilated to landfill gas (default is 0.77)

F = fraction of CH₄ in landfill gas (default is 0.5)

The methane avoidance was determined using the IPCC default MCF for unmanaged, shallow (< 5 m waste) landfills, a DOC of 0.3 for wood waste and a the IPCC default DOC_f of 0.77. The selection of these factors is reasonable.

3.6 Leakage Effects

Possible leakage effects related to the use of biomass are not discussed according to paragraph 8 of the simplified baseline and monitoring methodologies for small-scale CDM project activities, which require that leakage, shall be considered in the case of project activities using biomass. However, it was demonstrated that the biomass used by the project is currently not used by other users. Furthermore, the renewable energy technology used is not equipment transferred from another activity. No leakage effects are thus expected to be caused by the project.

Part of wood waste is purchased from several suppliers and transported by truck. DNV requested an assessment of the emissions resulting from transporting biomass. The project proponents have demonstrated that these emissions are not significant.



3.7 Environmental Impacts

According to Brazilian Environment Legislation it is necessary to acquire an Environmental License for a new facility which could have potential environment impact. The licence is obtained in three steps: Preliminary Environment License at design phase, Installation Environment License at construction phase and Operation Environment License at operation phase. Celulose Irani has received the Preliminary Environment License number 709/2003 and Installation Licence number 481/04 from FATMA (State Environment Agency). All licenses and conditional clauses were verified during the site visit. According to the Brazilian procedures, an Operational Environmental Licence can only be obtained after construction of the project is completed. The Operational Environmental Licence will thus need to be verified during the first verification of emission reductions.

3.8 Comments by Local Stakeholders

According Resolution 1 of the Brazilian Inter-ministerial Commission for Global Climate Change, the CDM project should invite selected local stakeholders to comment on the project. The relevant stakeholders were invited by letters, which were verified during the site visit.

In the PDD of December 2004 it was mention that three comments that were supportive of the project were received and that there was thus no need to modify the project.



4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

DNV Certification published the initial PDD of June 2004 on the DNV Climate Change web site (<http://www.dnv.com/certification/ClimateChange>) and stakeholders were through the UNFCCC CDM web site invited to provide comments within a 30 days period from 19 September 2004 to 19 October 2004. One comment was received in this period. The comment (in unedited form) and DNV Certification's response is given the below text box.

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

Inserted on: 2004-09-28

Subject: Unconvincing barrier test and data for baseline calculation

Comment:

The project proponent does not provide convincing evidence for the existence of a prohibitive investment barrier. The prevailing practice test alone is insufficient.

The baseline data suffer from the same problems I have flagged concerning the UTE Barreiro S.A. Renewable Electricity Generation Project.

[*Comment on UTE Barreiro S.A. Renewable Electricity Generation Project:* The use of the IEA study BM data is not acceptable, as the IEA in 2001/2 could obviously not calculate the BM according to the 2004 rules for the BM (EB revision of March 2004 changing the rules for the BM). The latter tends to overestimate the baseline emission factor.]

DNV Certification's response:

Both issues raised by the comment were considered in DNV's validation of the project. Further evidence for an investment barrier was presented and the combined margin was recalculated according to paragraph 29 (a) of Appendix B of the simplified modalities and procedures for small-scale CDM project activities. The project proponents revised the PDD and submitted complementary spreadsheets (see section 3.3 of this validation report).



5 PRELIMINARY VALIDATION OPINION

Det Norske Veritas Certification (DNV) is currently performing a validation of the Irani Biomass Electricity Generation Project from Celulose Irani and EcoSecurities, at Vargem Bonita Santa Catarina State, Brazil (hereafter called “the project”). The validation was performed on the basis of UNFCCC criteria for small-scale CDM project activities and relevant Brazilian criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The proposed thermoelectric power project with a capacity of 9,43 MW will generate electricity utilizing biomass of wood chips and wood waste from eucalyptus and pinus production in Irani forests. Utilising the biomass waste instead of landfilling it, the project will also avoid methane emissions.

The project is not expected to have considerable environmental impacts. A preliminary Environmental License and Installation Environment License was received from the State Environment Agency FATMA as required by Brazilian law and the subsequent Operation Environment License is expected to be issued after project start.

By promoting renewable energy, the project is in line with the current sustainable development priorities of Brazil. Nevertheless, the Brazilian DNA has not yet confirmed that the project assists Brazil in achieving sustainable development.

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 “that supply electricity to an electricity distribution system”. The electric energy generated by the project will be used by the Celulose Irani 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. 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 of project emissions being less than 15 kilo tCO_{2e}. The selected definition of project emissions being the CH₄ and N₂O emissions due to incomplete combustion of biomass and the exclusion of biogenic CO₂ 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 this study was carried out recently, is the only publicly available information on the Brazilian grid and that other 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.

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 Celulose Irani already operates two old biomass power plants, the new boiler 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.

By displacing fossil fuel-based electricity and avoidance of methane emission, the project results in reductions of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

The monitoring plan sufficiently specifies the monitoring requirements of the main project indicators. Detailed responsibilities and authorities for project management, procedures for monitoring and reporting, and QA/QC procedures are assured through ISO 9001 certification of Celulose Irani, however these procedures were not implemented yet and should be assessed on verification phase.

In summary, the Irani 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 Participants i.e. the CDM-PDD, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the DNAs of the participating Parties:

- /1/ Irani Biomass Electricity Generation Project, version June 2004 (based on Simplified Project Design Document for Small Scale Project Activities (SSC-PDD))
- /2/ Irani Biomass Electricity Generation Project, version October 2004 (based on Simplified Project Design Document for Small Scale Project Activities (SSC-PDD))
- /3/ Irani Biomass Electricity Generation Project, version December 2004 (based on Simplified Project Design Document for Small Scale Project Activities (SSC-PDD))
- /4/ Spreadsheet of Calculation of Combined Margin.
- /5/ Spreadsheet of Calculation of Cash flow.

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

- /6/ Simplified modalities and procedures for small-scale CDM project activities
- /7/ Martina Bosi: *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). October 2002. Available at <http://www.oecd.org>
- /8/ International Emissions Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): Validation and Verification Manual. Available at <http://www.vvmanual.info>.

Persons interviewed:

- /9/ Odivan Carlos Cargnin – Celulose Irani – Diretor Financeiro
- /10/ Leandro Lexis Farina – Celulose Irani - Gerente Qualidade
- /11/ Ruy Micheil Filho – Celulose Irani - Gerente Engenharia / Coordenador Planta
- /12/ Pablo Fernandez – Ecosecurities

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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 assistance	Decision 17/CP.7	OK	No public funding is involved.
8. Parties participating in the CDM shall designate a	CDM Modalities and	OK	The Brazilian DNA is the Comissão

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
national authority for the CDM	Procedures § 29		Interministerial de Mudança Global do Clima. The DNA of the UK is the the Department The DNA of Japan is the Liaison Committee for the Utilization of the Kyoto Mechanisms 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 ratified the Kyoto Protocol on 23 August 2002. The UK ratified the Kyoto Protocol on 31 May 2002. Japan accepted the Kyoto Protocol on 4 June 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	OK	The UK's assigned amount is 92% of its 1990 emissions. Japan's assigned amount is 94% of the emission in1990.
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	The UK has in place a national registry and reported on 15 April 2004 its national GHG inventory for the years 1990-2002. Japan has in place a national registry and reported on 24 May 2004 its national GHG inventory for the years 1990-2002.
12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK	Table 2, Section A.1

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
13. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	OK	
14. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK	Table 2, Section A.1.3, B and D
15. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	OK	Table 2, Section G
16. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK	Table 2, Section F
17. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	OK	The PDD was published on www.dnv.com/certification/ClimateChange . Parties, stakeholders and NGOs were through the UNFCCC CDM website invited to provide comments on the validation requirement during a period of 30 days from 19 September to 19 October 2004. One comment was received on 28 September 2004.

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/	DR	Being a renewable energy project activity and avoidance of methane emissions, with an output capacity of less than 15 MW, i.e. 9,43 MW and having project emissions of less than 15 kilotonnes of carbon dioxide equivalent annually, i.e. 7,230 tCO ₂ e per year, the project qualifies as a small-scale CDM project activity according to category (i) and (iii) defined in paragraph 6, subparagraph (c) of decision 17/CP.7 on the modalities and procedures for the CDM, and as defined by category I.D and III.E of Appendix B of the simplified modalities and procedures for small-scale CDM project activities. Category I.D comprises projects that “that supply electricity to an electricity distribution system”. The electric energy generated by the project will be used by the Celulose Irani 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.		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Category I.A, i.e. electricity generation by the user, is not applicable to renewable energy projects supplying electricity to users currently connected to the grid. 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 of project emissions being less than 15 kilo tCO _{2e} . The selected definition of project emissions being the CH ₄ and N ₂ O 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.		
A.1.2. The small scale project activity is not a debundled component of a larger project activity?	/1/	DR	The project is not a debundled component of a larger project activity according to Appendix C of the simplified modalities and procedures for small-scale CDM project activities. No other CDM projects are implemented by Irani.		OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	/1/	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

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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/	DR	The project is located at Vargem Bonita City in Santa Catarina State and has as boundaries the limits of the biomass power plant and the treatment of biomass according to paragraph 26 and 92 of the simplified baseline and monitoring methodologies for small scale projects.		OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/	DR	The project comprises a new 9.34 MW thermoelectric plant on the premises of the Celulose Irani Plant, using biomass from eucalyptus and pinus waste, which on normal conditions is dumped on a landfill and left to decay. The electric energy will be used by the Celulose Irani Plant and will reduce the imports from grid electricity and thus displace electricity from the grid.		OK
A.2.3. Does the project design engineering reflect current good practices?	/1/	DR	The technology appears best practice in the paper industry.		OK
A.2.4. Will the project result in technology transfer to the host country?	/1/	DR	Not necessarily. Celulose Irani already operates two generation units identical to the project.		OK
A.2.5. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?	/1/	DR	Cululose Irani has previous experience with biomass generation units (see A.2.4).		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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/	DR	The project is likely to mitigate the environmental impacts of the current biomass landfill.		OK
A.3.2. Will the project create any adverse environmental or social effects?	/1/	DR	Not foreseen.		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	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/	DR	The project complies with environmental legislation according to the Preliminary Environmental Licence issued by Environmental Agency (FATMA-SC). However, it could not be verified whether the project has obtained an Operational Environmental License.	CL 1	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	/1/	DR	The project applies two of the simplified baseline methodologies proposed for this project activity:		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
provided for the relevant project category?			1) Category I.D. (Renewable electricity generations for the grid) , i.e. the average of the approximate operating margin and the build margin, and 2) Category III.E (Methane avoidance), i.e. comprises measures that avoid the production of 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/	DR	Yes, both baseline methodology were applicable as defined on Simplified Modalities and Procedures for Small Scale CMD projects Category ID and IIIE.		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?	/1/10 /10	DR/I	Barriers according to Attachment A of the simplified baseline and monitoring methodologies are presented to demonstrate the additionality of the project, including financial, technical and prevailing practice barriers. The financial evaluation considers only the risk of financing, but does not include savings due to reduced need of purchasing electricity from the grid. An IRR analysis or any other financial analysis is requested to evidence the financial barrier. With respect the presented prevailing practice barrier, the existence of two others cogeneration units indicate that there are no prevailing practise barriers. The additionally of the project is not clearly established and further evidence for the existence of barriers is requested.	CAR2	OK
B.2.2. Is the application of the baseline methodology and the discussion and	/1/10 /10	DR/I	The selected baseline for grid electricity displacement is the average of the build margin and the approximate		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
determination of the chosen baseline transparent and conservative?			<p>operating margin. The baseline determination is based on an International Energy Agency (IEA) study for Brazil (Bosi et al, October 2002) in which emission factors for the operation margin and build margin are calculated 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 Irani) were used. In order to adequate the operation margin to the Brazilian grid, with has hydro predominance, a reduction factor was implemented using ANEEL/ONS figures.</p> <p>However this methodology differs from the methodology proposed for category I.D small-scale CDM project activities. It was extracted from the methodology proposed for the Vale do Rosário Project (NM0016-rev). This methodology was eventually approved as AM0015. However, the methodology for calculating the operating and build margin is different from the one originally proposed for the Vale do Rosário Project and hence the one applied by the Irani biomass electricity generation project. The project proponents are thus requested to calculate the operating and build margin according to the methodology given in the simplified baseline and monitoring methodologies for category I.D small-scale CDM project activities.</p> <p>The selected baseline for the methane avoidance component is the CH₄ emissions from disposing the wood waste on a landfill and leaving it to decay. However, the PDD indicates that spontaneous combustion of wood waste on the landfill does currently occur. It needs to be clarified to which extent wood waste or CH₄ generated by the wood waste is currently combusted and transferred into CO₂. If significant, the</p>	<p>CAR3</p> <p>CL2</p>	

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			baseline should be adjusted accordingly.		
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	/1/	DR	For renewable energy the Brazilian policy of energy matrix and tendency to implementation of gas cogenerations systems, as well as PROINFA, the Brazilian government programme to promote renewable energy, were considered. For methane avoidance no policy is established with respect to landfill.		OK
B.2.4. Is the baseline selection compatible with the available data?	/1/	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?	/1/10 /10	DR/I	See B.2.1	CAR-2	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/	DR	The project's starting date is 1 January 2005 and the expected operation lifetime of the project is more than 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/	DR	A crediting time of 7 years starting on 1 January 2005 with two possible renewals is selected.		OK

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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/	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/	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/	DR	Yes		OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	/1/	DR	Yes, to determine the amount of electricity displaced by the project the net electricity produced by the Celulose Irani cogeneration plant is monitored. To determine CH ₄ avoidance the total amount of biomass burned is monitored.		OK
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/	DR	The project only results in the emissions of CH ₄ and N ₂ O from incomplete combustion of biomass. CO ₂ emissions associated with the combustion of biomass must not be accounted for since biomass is a climate neutral source of energy.		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			clarified.		
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	/1/	DR	See D.4.1	CL 3/4	OK
D.4.3. Do the measuring technique and frequency comply with good monitoring practices?	/1/	DR	Yes, it appears adequate.		OK
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	/1/	DR	The QMS certified with ISO 9001:2000 is mentioned as tool to comply with this necessity.		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?	/1/10 /10	DR/I	The QMS certified with ISO 9001 is mentioned as tool to comply with this necessity. This needs to be verified during the site visit at Celulose Irani.	CL 6	OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	/1/	DR	Ditto		OK
D.5.3. Are procedures identified for training of monitoring personnel?	/1/	DR	Ditto		OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	Ditto		OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	Ditto		OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	Ditto		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.5.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	Ditto		OK
D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	Ditto		OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	Ditto		OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	/1/	DR	Ditto		OK
D.5.11. Are procedures identified for project performance reviews?	/1/	DR	Ditto		OK
D.5.12. Are procedures identified for corrective actions?	/1/	DR	Ditto		OK
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/	DR	CO ₂ emissions associated with the combustion of biomass are not accounted since biomass generation is a climate neutral source of energy. The project only results		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			in the emissions of CH ₄ and N ₂ O from incomplete combustion of biomass, which is accounted for.		
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	/1/	DR	Yes, see E.1.1		OK
E.1.3. Do the methodologies for calculating project emissions comply with existing good practice?	/1/	DR	Yes, according 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/	DR	Yes		OK
E.1.5. Have conservative assumptions been used?	/1/	DR	Yes. Default IPCC CH ₄ and N ₂ O emission factors for the combustion of wood/wood waste in other sectors were selected to calculate project CH ₄ and N ₂ O emissions from the combustion of biomass.		OK
E.1.6. Are uncertainties in the project emissions estimates properly addressed?	/1/	DR	Yes, according formulae established by the simplified baseline and monitoring methodologies for small scale project type I.D and III.E.		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/	DR	Possible leakage effects related to the use of biomass are not discussed according to paragraph 8 of the simplified baseline and monitoring methodologies for small-scale CDM project activities, which require that leakage shall be considered in the case of project activities using biomass. However, biomass used by the project is currently not used by other users and the renewable energy technology used is not equipment transferred		OK

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			from another activity. The project is thus not likely to result in significant leakage. Due to the fact that part of the biomass (woodwaste) is purchased from others suppliers, emissions resulting from the transportation of this biomass by truck to Celulose Irani needs to be assessed.	CL.7	
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/	DR	Yes, the project considers the boundaries established in the simplified baseline and monitoring methodologies for type I.D and III.E. Data obtained for the South-Southeast and Mid-West grid, from which the plant receives its electricity, were used.		OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	/1/	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. The emissions related to the methane avoidance are determined based on the formula established for small scale project type III.E. Indirect baseline emissions are insignificant according guidelines for small scale project type I.D and III.E.		OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	/1/	DR	See E.1.2		OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	/1/	DR	Yes, according simplified baseline and monitoring methodologies for small scale type I.D and III.E.		OK
E.3.5. Are the calculations documented in a complete and transparent manner?	/1/	DR	Yes. The baseline determination is based on an International Energy Agency (IEA) study for Brazil		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			(Bosi et al, October 2002). 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 adequate. However, the project proponents are requested to calculate the operating and build margin according to the methodology given in the simplified baseline and monitoring methodologies for category I.D small-scale CDM project activities (see also B.2.2). The methane avoidance was determined using the IPCC default MCF for unmanaged, shallow (< 5 m waste) landfills, a DOC of 0.3 for wood waste and a the IPCC default DOC _f of 0.77. The selection of these factors is reasonable.		
E.3.6. Have conservative assumptions been used?	/1/	DR	The emission factor for grid electric energy generation considers the operating and build margin of the region S-SW grid, and does not consider the grid of Santa Catarina State where there is a higher amount of coal-based generation units.		OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	/1/	DR	Yes		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/	DR	It is estimated that the project -over a 21 years crediting period - reduces 701,177 tonne of CO _{2e} due to displacing grid electricity and 3,108,052 tonne of CO _{2e} from avoiding methane emissions with the total of 3,809,229 tonnes of CO _{2e} . Given that the project is able to generate the stated amount of electricity by combusting the stated		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			amount of wood waste, the estimated emission reductions are correctly estimated.		
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/	DR	The project has received a Preliminary Environmental Licence by the environmental agency, which was issued after analysing an EIA. However, it could not be verified whether the project has obtained an Operational Environmental License, which is necessary in order to operate.	CL1	OK
F.1.2. Does the project comply with environmental legislation in the host country?	/1/	DR	See F.1.1	CL1	OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	Not foreseen. A dust washer to treat the combusted gases will be installed to mitigate the emissions of particulate matter.		OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	/1/	DR	Yes		OK
G. Comments by Local Stakeholder Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR	According 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/	DR	These letters are not presented in the PDD and should be verified during the site visit.		
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	/1/	DR	Yes, see G.1.1		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
with such regulations/laws?					
G.1.4. Is a summary of the comments received provided?	/1/	DR	No comments were received.		OK
G.1.5. Has due account been taken of any comments received?	/1/	DR	See G.1.4		OK

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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 owner 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.	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.	Approval necessary
CAR 2: The additionally of the project is not clearly established and further evidence for the existence of barriers is requested.	B.2.1 B.2.5	The PDD is being updated to include an investment analysis of the project, so that it can further explain the financial barriers faced. The analysis clearly indicates that without the CERs revenues the project would not take place.	An investment analysis considering all savings and expenses associated to the project, was presented. The analysis shows that the carbon revenues increase the IRR from 9.95% to 15.62%. DNV acknowledges that the project without CER revenues is lower than the levels regarded as acceptable for other investments in Brazil. However, given that Celulose Irani already operates two biomass power plants, it remains to be demonstrated why the existence of these activities does not contradict the claim that the proposed project activity faces an investment barrier. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them.
CAR 2 (continued): Given that Celulose Irani already operates two biomass power plants, it remains to be demonstrated why the existence of these activities does not contradict the claim that the proposed		The PDD was revised to include complementary information.	OK. During the site visit it was verified that the wood waste normally produced by Irani and other suppliers has inappropriate size to combust in boilers. To accept this biomass, the installation of a new shredder and sieves

Draft report clarifications and corrective action requests by validation team	Ref. to Table 2	Summary of project owner response	Validation team conclusion
<p>project activity faces an investment barrier. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them.</p>			<p>is necessary to reduce the size of wood with over size and add an adequate proportion of sawdust.</p> <p>The old boiler use wood chips, not sawmill or over size wood and has low effectiveness on fuel consumption.</p> <p>The PDD of December 04 demonstrates that the installation of the shredder and set of sieves is not prevailing business practise.</p>
<p>CAR 3:</p> <p>The baseline determination is based on an International Energy Agency (IEA) study for Brazil (Bosi et al, October 2002) as applied by the methodology proposed for the Vale do Rosário Project (NM0016-rev). This methodology was eventually approved as AM0015. However, the methodology for calculating the operating and build margin is different from the one originally proposed for the Vale do Rosário Project and hence the one applied by the Irani biomass electricity generation project.</p>	B.2.2	<p>Operating Margin:</p> <p>The methodology for category I.D SSC projects states that "the approximate operating margin is the weighted average emissions (in kg CO₂equ/kWh) of all generating sources serving the system, excluding hydro, geothermal, wind, low-cost biomass, nuclear and solar generation."</p> <p>The calculation of the operating margin used in Irani's PDD is more conservative than the required by the I.D methodology for Small Scale Projects. This is because the methodology allows the exclusion of all hydro and Irani's PDD uses 7.6% at the margin</p> <p>Build Margin</p> <p>The methodology for category I.D SSC projects states that "the build margin is the weighted average emissions (in kg CO₂equ/kWh) of recent capacity additions to the system, which capacity additions are defined as the greater (in MWh) of most recent 20% of existing plants or the 5 most</p>	<p>The operating margin is not calculated according to an approved methodology (Note: The approach for identifying the % of hydro that can be excluded from the operating margin proposed by NM0001-rev was not approved and the approach of the consolidated methodology was included in NM0015). However, the small-scale methodology allows to exclude all hydro and does not require an analysis of hydro that must be considered as being part of the operating margin. Therefore, the calculation of the operating margin for the Irani project is more conservative than if calculated with the category I.D small-scale methodology and thus acceptable.</p> <p>It remains to be demonstrated that the build margin calculated for the Irani project is calculated in accordance with the methodology for calculating the build margin given for category I.D small-scale CDM project activities. If the calculation is different, this must be discussed and justified and it must demonstrated that the build margin calculated for the Irani project</p>

Draft report clarifications and corrective action requests by validation team	Ref. to Table 2	Summary of project owner response	Validation team conclusion
		<p>recent plants.”</p> <p>The Built Margin calculated at Irani’s PDD uses the 20% most recent existing plants (116 out of 582 plants) since, in the case of, the Brazilian grid, the amount of MWh of 116 plants (20% most recent existing plants) will definitely be higher than the amount MWh of any 5 most recent plants.</p>	is more conservative.
<p>CAR 3 (continued):</p> <p>The project proponents are requested to calculate the operating and build margin according to the methodology given in the simplified baseline and monitoring methodologies for category I.D small-scale CDM project activities. If the calculation is different, this must be discussed and justified and it must demonstrated that the combined margin calculated for the Irani project is more conservative.</p>		<p>We had to use the IEA report because there have been many barriers to getting data from the Brazilian grid. Since we did not have access to their database we had to rely on their calculation method and had very little flexibility to adapt it in order to be 100% in accordance with the small scale methodology.</p> <p>To solve this problem we got in contact with IEA and managed to obtain the database they used to do their calculation. So, instead of using the IEA results, we recalculated the Build margin, the Operating margin, and the Combined margin again but, using their data and assumptions but applying the Small Scale methodology.</p> <p>We noticed that the EIA report calculated the operating margin (OM) using not only the operating plants but also the plants that would start operation in the following years (2003, 2004, 2005, and 2006). We decided to exclude the 2005 and 2006 plants from the OM calculation but to keep the 2003 and 2004 ones. Doing so we ended up with 435 plants (representing 62,860 MW of</p>	<p>OK. 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.</p> <p>The operating margin (the weighted average emissions of all generating sources serving the system excluding hydro, geotermal, 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.</p>

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		<p>installed capacity) for the calculation of the OM for the S-SE grid (instead of the 582 used by EIA).</p> <p>The build margin (BM) was also recalculated using the most recent plants to a total of 12,856 MW (83 plants representing 20% of the installed capacity).</p>	
<p>CL 1:</p> <p>It could not be verified whether the project has obtained an Operational Environmental Licence.</p>	<p>A.3.4 F.1.1 F.1.2</p>	<p>According to the Brazilian procedures, an Operational Environmental Licence can only be obtained after all the project construction is completed. The project is under construction at the moment and the only environmental licence available at this moment is the Preliminary Environmental Licence (the only one that can be issued to the project at this stage).</p>	<p>OK. At the first verification of emission reductions, the verifier will need to verify that the Operational Environmental Licence has been obtained.</p>
<p>CL 2:</p> <p>The PDD indicates that spontaneous combustion of wood waste on the landfill does currently occur. It needs to be clarified to which extent wood waste or CH₄ generated by the wood waste is currently combusted and transferred into CO₂. If significant, the baseline should be adjusted accordingly.</p>	<p>B.2.2</p>	<p>The occurrence of landfill fires is very low, with low extent of damage, and the impact on methane flows negligible. Furthermore, as a common practice in order to protect the region forestry activity, companies have fire brigades to suppress any fire occurrence, including the ones at the landfills.</p>	<p>OK. The clarifications provided by the project participants demonstrate that spontaneous combustion of wood waste on the landfill only seldom occur and the baseline does not have to be adjusted.</p>
<p>CL 3:</p> <p>It is not clear if the electric energy generation includes the electric energy generation of the new cogeneration unit only or if it also includes electric energy generation by the existing biomass and hydroelectric plants.</p>	<p>D.4.1 D.4.2</p>	<p>The project consists of the construction and operation of the new 9.43 MW biomass plant and the PDD takes into account only the electricity generation of the new cogeneration unit.</p> <p>Existing biomass and hydroelectric plants are the same in baseline and project scenarios and are part of the project.</p> <p>The PDD text will be revised to clarify that</p>	<p>OK. The revised PDD of October 2004 and December 2004 provides the requested clarification.</p>

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		issue.	
<p>CL 4: The monitoring of methane avoidance is simple calculated based on amount biomass used as combustible. However, the share of biomass waste of Celulose Irani and the share of biomass purchased from third parties needs to be clarified.</p>	<p>D.4.1 D.4.2</p>	<p>In the baseline, the PDD refers to both the biomass purchased from third parties and that generated by Irani. The PDD and monitoring plan will be amended in order to differentiate them as:</p> <ul style="list-style-type: none"> - Biomass generated by Irani. - Biomass purchased from third party 	<p>OK. The revised PDD of December 2004 provides the requested clarification. It was included on monitoring plan the verification of biomass (wood waste) suppliers. The avoidance of methane emissions by suppliers of biomass will be verified considering current consumption (2003 average purchase of 10.000 ton/month) and new quantity purchase to supply new boiler.</p>
<p>CL 5: The baseline with reference supply of wood waste is not clearly evidenced the availability of fuel</p>	<p>B.1.2</p>	<p>Brasil has a huge wood industry, with more than 1200 sawmills. Most of industries (87%) are located in south region. As an example, Parana and Santa Catarina states represent almost 80% of all Pinus spp. consumption (Sant'anna et.al, 2004). The Brazilian technologies in sawmills are very poor, and less than 50% of wood is transformed in products. The other 50% are wood residues. Given the large number of sawmills in south region the biomass residue generation is concentrated in south region, creating an excess of biomass residues that the market cannot absorb. According to Brand et.al., more than 20% of residues are not used or sold. Thus, there are many large biomass piles that a left for decay, generating methane during this process. References: Sant'Anna, Mário; Teddy A. Rayzel; Mário C. M Wanzuita, 2004. Indústria</p>	<p>OK. Verification on site and on the site of some suppliers during the site visit and further clarifications provided by the project proponents sufficiently address the request for clarification. The suppliers SINCOL, DAGOSTINI and LAVRAMA were visited. At IRANI it could be verified that the current practice is dumping the wood waste, especially sawmill and bark.</p>

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		consumidora de Pinus no Brasil. Rev. da Madeira. Nº 83 – ano 14 – Agosto de 2004. Brand, Martha A; Flávio J. Simioni; Débora N. H. Rotta; Luiz Gonzaga Padilha Arruda. Relatório Final do Projeto “ Caracterização da produção e uso dos resíduos madeiráveis gerados na indústria de base florestal da região serrana catarinense.”.	
CL 6: The quality control system of IRANI is certified according ISO 9001:2000, however the procedures related operation of new boilers are not concluded yet.	D.5.1	The QMS will include the new boiler when it started. Including new procedures.	OK. At the first verification of emission reductions, the verifier will need to verify that the Procedures for Quality Management System have been implemented for new boiler.
CL 7: The condition of use part of biomass (woodwaste) purchased from others suppliers, with transportation by truck to Celulose Irani, request more clarification to evidence the significance of this emission	E.2.1	The emission of biomass transportation is around 1.1 tonCO ₂ /y what represent less 0,001% of total emission reduction and less than 0,013 of project emission, and thus are not required to be included.	OK. The clarifications provided by the project participants demonstrate that biomass transportation is not significant to the project.

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