VALIDATION REPORT

"NUEVA ALDEA BIOMASS POWER PLANT PHASE 2" PROJECT IN CHILE

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DET NORSKE VERITAS

VALIDATION REPORT

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Nueva Aldea Biomass Power Plant Phase 2" project in Chile 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 Article 12 of the Kyoto Protocol, the CDM modalities and procedures and subsequent decisions by the CDM Executive Board.

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

In summary, it is DNV's opinion that the project, as described in the project design document of 5 January 2006, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0006. Hence, DNV requests the registration of the "Nueva Aldea Biomass Power Plant Phase 2" project in Chile as CDM project activity.

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Abbreviations

BM	Build margin
CAR	Corrective Action Request
CDEC-SIC	Dispatch Centre for the Central Interconnected System of the Republic of Chile
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH_4	Methane
CL	Clarification request
CONAMA	National Commission for the Environment (the DNA of Chile)
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
NPV	Net Present Value
ODA	Official Development Assistance
OM	Operating margin
PDD	Project Design Document
SIC	Central Interconnected System of the Republic of Chile
tCO_2e	Tonne of CO_2 equivalents
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

Celulosa Arauco y Constitución S.A. (Arauco) has commissioned Det Norske Veritas Certification Ltd. (DNV) to perform a validation of the "Nueva Aldea Biomass Power Plant Phase 2" project in Chile (hereafter called "the project"). This report summarises the findings of the validation of the project, performed 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.

The validation team consisted of the following personnel:

Mr Michael Lehmann	DNV Oslo, Norway	Team leader, Energy sector expert, Technical reviewer
Mr Santhosh Jayaram	DNV Colombo, Sri Lanka	CDM auditor
Ms Cintia Dias	DNV Rio de Janeiro, Brazil	CDM auditor
Mr Mario Epstein	DNV Porto Alegre, Brazil	CDM auditor

1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan 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 Kyoto Protocol criteria for the CDM, the CDM rules and modalities as agreed in the Marrakech Accords, the modalities and procedures for small-scale CDM project activities and relevant decisions by the CDM Executive Board, including the approved consolidated baseline and monitoring methodology ACM0006. 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 participant. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Description of Proposed CDM Project

The "Nueva Aldea Biomass Power Plant Phase 2" project activity consists of the installation of a biomass power plant at the the Nueva Aldea industrial complex at Ránquil, Chile. The power plant consist of two 70 MW turbogenerators and is implemented as part of the construction of a pulp mill at the the Nueva Aldea industrial complex. The power plant will use black liquor as primary fuel. Black liquor is an organic by-product of the pulp production Kraft cycle.

While modern pulp mills currently are designed to utilise black liquor for the co-generation of heat and electricity in order to be self-sufficient in terms of steam and electricity needs, the project will install 37 MW surplus capacity for electricity generation which will allow the power plant to deliver electricity to the grid.

Emission reductions are generated by displacing fossil-fuel based grid-electricity. Over a 21 years crediting period, starting on 1 August 2006, the project's expected annual emission reductions will be on average 125 424 tonnes of CO_2 equivalents (tCO_2e). Actual emission reductions will depend on actual amounts of electricity supplied to the grid and the annual updated baseline grid emission factor to be calculated from data provided by CDEC-SIC (Dispatch Centre for the Central Interconnected System of Chile).

2 METHODOLOGY

The validation of the project started in August 2005. The validation consisted of the following three phases:

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

ii) follow-up interviews with project stakeholders

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

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /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 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 "Nueva Aldea Biomass Power Plant Phase 2" project is enclosed in Appendix A to this report.

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

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 participants' 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

2.1 Review of Documents

The PDD /1/ (Version no. 1 of August 2005, version no. 2 of 24 October 2005 and version no. 3 of 05 January 2006) for the "Nueva Aldea Biomass Power Plant Phase 2" project was assessed by DNV. Other documents, such as the spreadsheet containing calculations of the combined margin emission factor /3/, the Environmental Impact Assessment, the Environmental Licences /4/ and licence requirements as well as the report from the consultation process with local stakeholders were also reviewed during the follow up interviews in order to ensure the accuracy of the information provided in the PDD.

2.2 Follow-up Interviews

On 11-12 October 2005 DNV performed interviews with Arauco to confirm selected information and to resolve issues identified during the document review. The main topics of the interviews were:

- Relevant approvals and licences;
- Social benefits of project;
- Verification of applicability of methodology at site;
- Analysis of biomass availability;
- Data provided by SIC/CNE;
- Evidence that CDM benefits were seriously considered in the decision to implement the project;
- Details of the NPV analysis;
- Procedures for training, calibration of monitoring equipments, maintenance of these equipments, record handling, internal audit, performance review, implementing corrective actions etc. ;
- Environmental Impact Assessment;
- Stakeholder comments.

2.3 Resolution of Clarifications and Corrective Action Requests

The objective of this phase of the validation was the resolution of any outstanding issues which needed to be clarified for DNV's positive conclusion on the project design.

The initial validation of the project identified two *Corrective Action Request* and five requests for *Clarification*. These requests were presented to the project participants in DNV's draft validation reports (rev. 0) of 05 December 2005 and 01 March 2006. The project participant addressed these requests to DNV's satisfaction. Since modifications to the project design were necessary to resolve DNV's concerns, Arauco decided to revise the PDD and resubmitted a revised PDD (version no. 3 of 5 January 2006).

To guarantee the transparency of the validation process, the concerns raised and responses given are documented in the validation protocol in Appendix A.

3 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.

The final validation findings in this section relate to the project design as documented and described in the revised PDD of 05 January 2006 /1/.

3.1 Participation Requirements

The only project participant is Celulosa Arauco y Constitución S.A. The host Party Chile meets all relevant participation requirements. No participating Annex I Party is yet identified for the project. The DNA of Chile has provided written approval of voluntary participation /2/ .

3.2 Project Design

The "Nueva Aldea Biomass Power Plant Phase 2" project activity consists of the installation of a biomass power plant. The power plant consist of two 70 MW turbogenerators and is implemented as part of the construction of a pulp mill installed at the Nueva Aldea industrial complex at Ránquil, Chile. The power plant will use black liquor as primary fuel. Black liquor is an organic by-product of the pulp production Kraft cycle. Black liquor falls under the category of biomass residues according to the CDM Executive Board's clarification on definitions of biomass.

Though modern pulp mills are currently designed to utilise black liquor for the co-generation of heat and electricity in order to be self-sufficient in terms of steam and electricity needs, the Nueva Aldea pulp mill was deliberately designed to generate a considerable amount of surplus of electricity (37 MW), so that electricity can be supplied to the grid. The project claims emission reductions associated with the displacement of grid electricity with the surplus electricity generated by the project.

The project involves the installation of a high-pressure boiler and a steam turbine, employing the Steam-Rankine cycle technology for generating electricity. The applied technology essentially comprises direct combustion of biomass in a boiler to generate steam, which is subsequently expanded through a turbine to generate electricity. The technology is being successfully used since many years for steam turbines.

A renewable crediting period of 7 years is selected (with the potential of being renewed twice), starting on 1 August 2006. The starting date of the project activity (start of construction) was 1 July 2004. The expected operational lifetime of the project is 25 years.

The project is expected to bring social (employment), environmental and economic benefits, thus contributing to the sustainable development objectives of the Chilean Government. The DNA of Chile confirmed that the project assists in achieving sustainable development /2/.

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

3.3 Baseline Determination

The project applies the approved consolidated baseline methodology ACM0006 - *Consolidated baseline methodology for grid-connected electricity generation from biomass residues* /9/. The project fulfils the conditions under which ACM0006 is applicable.

The project is in accordance with scenario 4 of ACM0006, i.e. the project activity involves the installation of a new power plant at a site where currently no power generation occurs[*]. In the absence of the project activity, a new biomass power plant (in the following referred to as "reference plant") would be installed instead of the project activity at the same site and with the same thermal firing capacity but with a lower electric efficiency as the project plant (e.g. by using a low-pressure boiler instead of a high-pressure boiler). The chosen baseline is a combination of the following baseline scenarios given in ACM0006:

For power generation: The proposed project activity (installation of a power plant), fired with the same type of biomass but with a lower electrical energy efficiency (e.g. an efficiency that is common practice in the relevant industry sector) (P2) and the generation of power in existing and/or new grid-connected power plants (P4);

For heat generation: The proposed project activity (installation of a cogeneration power plant), fired with the same type of biomass but with a different thermal energy efficiency (e.g. an efficiency that is common practice in the relevant industry sector) (H2);

For biomass use: The biomass is used for heat and/or electricity generation at the project site (B2).

The selected baseline scenario is the construction of a conventional "business as usual" power plant utilising black liquor which will co-generate heat and electricity to meet the pulp mill's energy demand without surplus electricity generation. This "reference plant", which was characterised based on a design study for an alternative power plant design (power plant without surplus capacity), would employ steam of lower pressure, would have two turbo generators with a capacity of 51 MW each. The "reference plant" would have utilised the same amount of black liquor and would have generated the same amount of heat as the project power plant. However, the "reference plant" would have only generated electricity for internal use. As a simplification, it is thus assumed that the electricity that is supplied to the grid by the project power plant is additional to the amount of electricity generated by the "reference plant".

In accordance with ACM0006, an electricity baseline emission factor is calculated in accordance with ACM0002 as a combined margin emission coefficient, consisting of the combination of a simple adjusted operating margin (OM) emission coefficient and a build margin (BM) emission coefficient (see section 3.6). Both, the OM and BM emission coefficient will be updated based on ex-post monitoring. The electricity system selected to determine the combined margin emission coefficient is the SIC grid system in Chile.

[*] It must be noted that electricity generation occurs at the Nueva Aldea industrial complex where a 30 MW power plant utilises wood chips and wood residues. This power plant, also operated by Arauco, started regular operation on 1 January 2005 and is proposed as CDM project activity, i.e. the "Nueva Aldea Biomass Power Plant Phase 1" project activity. Due to differences in the baseline determination, Arauco decided to present the two project activities at the Nueva Aldea industrial complex as separate CDM project activities.

3.4 Additionality

The project's additionality is demonstrated through a series of steps in line with the *Tool for the demonstration and assessment of Additionality* /13/, which includes the following steps:

STEP 0 – - Preliminary screening based on the starting date of the project activity: The starting date for the first crediting period is 1 August 2006 and hence after the expected registration of the project as CDM project activity. Therefore, step 0 is not applicable. Nonetheless, since construction of the project already started 1 July 2004, the project participant provided evidence that demonstrates that CDM benefits were seriously considered in the decision to proceed with the project activity /5/.

STEP 1 - Identification of alternatives to project activity consistent with current laws and regulation: Alternatives to the project activity consistent with current laws and regulation were identified, i.e. i) a conventional self-sufficient pulp mil without surplus power generation capacity, ii) a conventional self-sufficient pulp mill with a conventional fossil fuel power unit as back-up, iii) a pulp mill designed to generate additional electricity at lower efficiency or at a later stage, not undertaken a CDM project activity, iv) a conventional pulp mill, but surplus power generation capacity based on other type of biomass, v) conventional pulp mill, but with a light deficit in electricity generation.

STEP 2 - Investment Analysis: Not selected.

STEP 3 - Barrier Analysis:

a) *Investment barrier:* DNV confirmed that in Chile there is a higher risk exposure for being a big (visible) player in the electric power generation industry. As a member of the CDEC-SIC dispatch centre, Arauco is exposed to fines applied to power generators by the national authority. According to the law, these fines are applied in proportion to the installed capacity of each electric power company. This higher risk exposure prevent companies whose core business is not power generation from investing in power cogeneration projects.

b) *Technological barrier* – DNV was able to confirm that the Nueva Aldea pulp mill was specially designed to generate additional electric power, which implies some modifications and technology improvements that are not standard in the pulp mill industry. The engineering as well as most of the technology employed in the design of Arauco's pulp mills (and particular the cogeneration plant) is imported from northern European countries, particularly Sweden and Finland.

c) *Barriers due to prevailing practice*: DNV was able to confirm that large scale surplus electric power generation is not a normal practice in the pulp mill industry.

STEP 4 - Common Practice Analysis: DNV was able to confirm that although cogeneration is widely applied in the pulp industry, it is limited to electricity generation for internal use only. Very few pulp mills in the world and no pulp mill in Chile generate surplus of electricity.

STEP 5 – Impact of CDM Registration: It is demonstrated that the incentives from CDM will alleviate the identified barriers.

Given the above and in particular the investment, the technological and common practice barriers that the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario. Moreover, it is demonstrated that the most likely baseline scenario is the

construction of a conventional self-sufficient pulp mil without surplus power generation capacity.

3.5 Monitoring Plan

The project applies approved consolidated monitoring methodology ACM0006 - *Consolidated baseline methodology for grid-connected electricity generation from biomass residues* /10/.

The use of fossil fuels in the biomass power plant will be monitored in order to determine project CO_2 emissions.

In order to determine baseline emissions, the quantity of electricity supplied by the project to the grid and the CO_2 emission factor of the grid (OM and BM emission coefficient) will be monitored.

Detailed responsibilities and authorities for project management, monitoring procedures and QA/QC procedures have been presented and were checked during follow up interviews. The monitoring practices are considered appropriate.

3.6 Calculation of GHG Emissions

In accordance with ACM0006, CO_2 emissions from occasional fossil fuel use are accounted as project emissions. This is conservative, since a fraction of the fossil fuel consumed might actually be required to supply internal power needs of the pulp mill and represents thus no additional fossil fuel use. CO_2 emissions from fossil fuel use is only accounted when the power plant is generating surplus electricity. When no surplus electricity is generated, the project scenario is identical with the baseline scenario and fossil fuel use will occur to the same extent in the project and the baseline scenario.

The assumption made by the project participant not to consider emissions due to fossil fuel consumption in the recovery boiler during start-up operations is conservative. With the implementation of the project activity, the biomass concentration is higher, 80%, demanding less fossil fuel for start-up operations than in the baseline scenario, where a biomass concentration of 72% demands more fossil fuel for start-up operations.

Since the same amount of black liquor will be combusted in an almost identical manner in the project and the baseline scenario, CH_4 emissions from the combustion of black liquor are the same in the baseline and the project scenario and CH_4 emissions are thus not quantified.

For the displacement of grid electricity, the combined margin emission coefficient for the SIC Chilean grid will be determined *ex-post* in accordance with the "simple- adjusted OM" approach and BM approach described in ACM0002.

For the *ex-ante* estimation of the project's emission reductions, the OM and BM emission factors were calculated based on forecasted power generation in the SIC grid (based on the latest expansion plan and average hydropower generation). For 2006, the simple-adjusted OM emission coefficient was calculated to be 0.689 tCO_2e/MWh (applying a λ of 0.001) and the BM emission coefficient 0.249 tCO_2e/MWh, resulting in a combined margin emission coefficient of 0.469 tCO_2e/MWh (weighted average of the build and operating margin). The OM and BM emission coefficients are calculated in accordance with ACM0002 and were transparently presented in spreadsheets /3/. Since the OM and BM emission coefficients will be updated *ex-post* on an annual basis with date provided by CDEC-SIC for each year in which the project

generates electricity, DNV has not in detail verified the input data used to calculate the OM and BM emission coefficients used for the *ex-ante* estimation of the project's emission reductions.

3.7 Environmental Impacts

The environmental impacts of the project that were identified in the Environmental Impact Statement (EIS) are mitigated. Liquid wastes will be treated in a sewage treatment plant. Solid residues, such as ash, plastics and industrial wastes, will be sent to a landfill site. Atmospheric emissions, such as particulate matter, will be treated as per Chilean regulations. The EIS was submitted on 30 August 2004 and was approved on 10 March 2005 by Resolution N° 76/2005 /4/. The project has received an environmental license.

3.8 Comments by Local Stakeholders

As part of the requirements imposed by the Environmental Impact System procedure, the project participant conducted a stakeholder consultation process through publications in local newspapers and community meetings. All technical and environmental concern raised by local stakeholders were resolved and approved by the environmental authorities.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD of 24 October 2005 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 26 October 2005 to 24 November 2005.

One comment was received on 24 November 2005. The comment received (in unedited form) is given in the below text box.

Comment by: Kurt, ORGONG
Inserted on: 2005-11-24
Subject: Arauco projects are not additional!

Comment:

Please consider this comment for your validation:

The use of black liquor in pulp mills is a common practice in most of the world. It is an evident use of energy efficiency to take an advantage from black liquor and most of the biomass residues in big forest industry installations, that have big energetic needs that coincide with big volumes of waste. The installation of a power boiler is justified by the need to supply power for the start up of the recovery boiler in pulp mills, so it is indeed convenient to install a power boiler in a huge forestry complex that includes so different products (sawmill, pulp mill, MDF, etc)

Also the ACM0006 methodology is not completely applied, because the reasons for non existence of leakage are not quantified and explicited. The balances for each biomass category must be presented, or show that there are no markets related. Also Arauco has developed even before the CDM other cogeneration projects such as Constitucion, for there is no reason to prove that they "where thinking on the CDM" when installing this cogeneration systems.

Also the Trupan cogeneration plant is a project largely old enough that hardly would have any kind of justification for proving that was though originally thought as CDM. I wish this comment would justify a profound examination of every Arauco project activity, in order to make CDM a transparent and rigorous mechanism for climate change mitigation. Thanks!

***How DNV has considered the comment received in its validation**:*

Arauco's response to the above comment was that the "Nueva Aldea Biomass Power Plant Phase 2" project activity does not intend to claim emission reductions from the use of black liquor to generate steam and electricity supplied to the Nueva Aldea pulp mill. The project consists of the implementation of a more efficient biomass power plant capable of generating more electricity than what a modern pulp mill of similar capacity would generate. Therefore, the project activity only claims emission reductions for the additional electricity generated and which is supplied to the grid. The "reference plant" would utilise the same amount of black liquor as the more efficient project plant, but would only be capable to meet its own electricity demand (baseline scenario). The chosen baseline scenario is reasonable and conservative, since there are pulp mills in Chile that still must rely on the grid to source their electric power needs. Other mills that are self-sufficient in electric power generation have fossil fuel capacity to generate additional power to the grid. Recent pulp mill projects under construction in Chile reinforce this argument even further. From the two pulp mill projects (similar in size and technology) currently under construction in Chile, only the Nueva Aldea pulp mill is capable to generate all its electricity needs and to generate significant surplus electricity to the grid.

In DNV's opinion, ACM0006 was applied clearly, transparently and thoroughly in the "Nueva Aldea Biomass Power Plant Phase 2" project activity. The black liquor is an organic by-product of the pulping process that must be processed (burned) in order to generate energy and recycle the chemical compounds used in the cooking process of the wood chips (Kraft cycle). Without burning and recovering the inorganic compounds, the process would be highly uneconomic and therefore not viable. For these reasons, there is no market for black liquor in Chile and therefore no possible leakage effects. The amount of black liquor that is combusted is exactly the same with and without the implementation of the project activity.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Nueva Aldea Biomass Power Plant Phase 2" project in Chile. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism (CDM) as well as criteria given to provide for consistent project operations, monitoring and reporting. The review of the project design document and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

While modern pulp mills are currently designed to utilise black liquor for the co-generation of heat and electricity in order to be self-sufficient, the project will install 37 MW surplus capacity for electricity generation at a new pulp mill installed at the Nueva Aldea industrial complex at Ránquil, Chile. This will allow the power plant to deliver electricity to the grid.

The only project participant is Celulosa Arauco y Constitución S.A. of Chile. The host Party Chile meets all relevant participation requirements. No participating Annex I Party has yet been identified. The DNA of Chile has provided written approval of voluntary participation.

By promoting renewable energy, the project is in line with the current sustainable development priorities of Chile. The DNA of Chile confirmed that the project assists in achieving sustainable development.

The project applies the approved consolidated baseline methodology ACM0006 "Consolidated baseline methodology for grid-connected electricity generation from biomass residues". The baseline methodology has been correctly applied and the assumptions made for the selected baseline scenario are sound. The selected baseline scenario is the construction of a conventional "business as usual" power plant utilising black liquor which will co-generate heat and electricity to meet the pulp mill's energy demand without surplus electricity generation. It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are thus additional.

The monitoring methodology ACM0006 has been correctly applied. The monitoring plan provides for monitoring of the indicators necessary for the ex-post determination of project and baseline emissions. The combined margin emission coefficient will be updated on an annual basis.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project will result in emission reductions that are real, measurable and will give long-term benefits to the mitigation of climate change. The emission reductions forecast stated in the PDD is a likely estimate.

Local stakeholders' comments were consulted and comments received were taken into account in the project design. Comments by Parties, stakeholders and NGOs were also invited via the UNFCCC web-site and the comments received were taken into account in the validation.

In summary, it is DNV's opinion that the project, as described in the project design document of 5 January 2006, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0006. Hence, DNV requests the registration of the "Nueva Aldea Biomass Power Plant Phase 2" project in Chile as CDM project activity.

REFERENCES

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

/1/ Celulosa Arauco y Constitución S.A.: *CDM-PDD for the "Nueva Aldea Biomass Power Plant Phase 2 (Nueva Aldea Power Plant Phase 2)" project*, Version Nº1 of August 2005, Version Nº2 of 24 October 2005 and Version Nº3 of 05 January 2006.

/2/ CONAMA (DNA of Chile): *Letter of Approval*, 12 October 2005.

/3/ Nueva Aldea, *Combined Margin Calculation for Nueva Aldea* (*Excel spreadsheet*), 11 October 2005.

/4/ CONAMA, Regional Commission of Bio-Bio: *Environmental licenses number 76/2005*.

/5/ CO2e.com: *Proposal to Mr. Alejandro Perez, CEO of Arauco*, 10 September 2003.

/6/ OECD, UM/ECLAC: *Evaluation of the Environmental Performance*, 2005.

/7/ National Energy Commission of Chile: *Node Price Report*, September 2005.

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

/8/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*, http://www.vvmanual.info

/9/ Approved Baseline Methodology ACM0006: *"Consolidated baseline methodology for grid-connected electricity generation from biomass residues"*, Version 1 of 30 September 2005 and version 02 of 3 March 2006.

/10/ Approved Monitoring Methodology ACM0006: *"Consolidated monitoring methodology for grid-connected electricity generation from biomass residues",* Version 01 of 30 September 2005 and version 02 of 3 March 2006.

/11/ Approved Baseline Methodology ACM0002: *"Consolidated baseline methodology for grid-connected electricity generation from renewable sources",* Version 05 of 3 March 2005.

/12/ IPCC: *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, http://www.ipcc.ch/

/13/ CDM Executive Board: *Tool for the demonstration and assessment of additionality,* Version 02 of 28 November 2005.

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

/14/ Gerardo Soto Hidalgo – Arauco supervisor responsible for buying fuels

/15/ Fernando Alvarez – Forestal Arauco Research and Development Analyst

/16/ Sergio Vives – Lawyer, Urquidi, Riesco & Compañía (CDM Consultant)

/17/ Cristian Vásquez – Arauco supervisor for power plant maintenance

/18/ Cristian Patrickson – Development Manager of Arauco Generación S.A.

/19/ Germán Vargas Torres – Aruaco risk manager

/20/ Claudia Flores – Consultant for Applus Programme

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APPENDIX A

CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	OK	Table 2, Section E.4.1 Annex I Party is not yet identified.
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	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, CDM Modalities and Procedures §40a	OK	Table 2, Section A.3.2
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK	Table 2, Section B.2
7. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK	There is no public funding involved in the project. The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Chile.

Requirement	Reference	Conclusion	Cross Reference / Comment
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK	Chile: Comisión Nacional del Medio Ambiente (CONAMA)
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	OK	Chile: Ratification on 26 August 2002 Annex I Party is not yet identified.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	N/A	Annex I Party is not yet identified.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	N/A	Annex I Party is not yet identified.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	OK	Table 2, Section G
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK	Table 2, Section F
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board	CDM Modalities and Procedures §37e	OK	Table 2, Section B.1.1 and D.1.1
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	CDM Modalities and Procedures §40	OK	DNV published the PDD of 24 October 2005 on the DNV Climate Change web site (http://www.dnv.com/certification/ClimateChange) and stakeholders were through the UNFCCC CDM

Requirement	Reference	Conclusion	Cross Reference / Comment
			web site invited to provide comments within a 30 days period from 26 October 2005 to 24 November 2005. One comment was received and made publicly available.
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	CDM Modalities and Procedures §45c,d	OK	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	OK	

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	The project is located in the Nueva Aldea Industrial Complex, Comuna of Ránquil, in the province of Ñuble, Bío-Bío Region, Chile.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR	The project's system boundary mainly includes the biomass boiler, generation of electricity, generation of steam for process, and limited usage of fossil fuel. The system boundary also includes the electricity supplied to grid and to Aldea pulp mill, the electricity system (In reference to OM and BM) and the steam supplied to the complex.		OK
A.2. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.2.1. Does the project design engineering reflect current good practices?	/1/	DR	The project design engineering reflects current good practices.		OK
A.2.2. Does the project use state of the art technology or would the technology result in a	/1/	DR	The project will be employing Steam-Rankine cycle technology for generating electricity		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
significantly better performance than any commonly used technologies in the host country?			from biomass. This essentially comprises direct combustion of biomass in a boiler to generate steam, which is subsequently expanded through a turbine. The recovery boiler is designed for 80% liquor concentration.		
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	The technology is being successfully used since many years for steam turbines and so it is unlikely to be substituted by other better technologies at least during the project lifetime. The technology outlined in terms of recovery boiler also compares with best available technologies.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR I	Since this is a green field project, the training and meeting maintenance requirements will depend on the competence of the people inducted to the project. The Nueva Aldea Phase 2 will follow the steps of Nueva Aldea Phase 1, already operating, where management has training procedures in place and periodically conducts training sessions to the power plant operators. Also internal audits have been carried out.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	Yes.		OK
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/	DR	Yes. Nueva Aldea received the environmental license on 10 March 2005		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			(Resolution Nº 76/2005).		
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/ /2/	DR	The written confirmation by the DNA of Chile that the project assists in achieving sustainable development has been received.		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/ /2/ /6/	DR	Biomass power cogeneration constitutes a sustainable source of power generation that brings advantages for mitigating global warming. Using the available natural resources in a more rational way, the project may help to enhance the development of renewable energy sources, in particular the use of biomass generated as a by-product of the industrial process, which has a significant potential in Chile.		OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/ /4/	DR I	Social benefits are mentioned in the EIS of the Nueva Aldea industrial project. The construction of the expansion of the Nueva Aldea complex (not only the CDM project) will create employment of 1 200 to 2 600 persons. During the operation phase it will create 1 200 new jobs. In addition, agricultural development plan, cultural / recreational plan and education and training plan will be implemented.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
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 baseline methodology previously approved by the CDM Executive Board?	/1/ /9/	DR	The project applies the approved baseline methodology for grid-connected electricity generation from biomass residues, ACM0006.		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/ /9/	DR	The methodology is deemed applicable for some of following reasons but one: It is a CO_2-generation project activity that displaces electricity generation in the electricity grid. It is a new power generation plant at a site where currently no power generation occurs ("Power" Greenfield Projects). It must be noted that electricity generation occurs at the Nueva Aldea industrial complex where a 30 MW power plant utilises wood chips and wood residues. This power plant, also operated by Arauco, started regular operation on 1 January 2005 and is proposed as CDM project activity, i.e. the "Nueva Aldea Biomass Power Plant Phase 1" project activity. Due to differences in the baseline determination, Arauco decided to present the	~~CAR 1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			two project activities at the Nueva Aldea industrial complex as separate CDM project activities. No other biomass type than black liquor will be used in the project plant. The implementation of the project will not increase the biomass production in the facility. The biomass stored at the project facility will not be stored for more than one year. As a matter of fact, since black liquor is part of the process, there will not be biomass storage. Nonetheless, as the project has a steam turbine with heat extraction points, the project does not meet the applicability conditions for Scenario 4 of ACM0006.		
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/ /9/	DR	Yes. Although the PDD takes the option P4, the final scenario is the same. The chosen scenario 4 of ACM0006 is the most plausible baseline scenario among alternatives: For power generation: The proposed project activity (installation of a power plant), fired with the same type of biomass but with a lower electrical energy efficiency (e.g. an	~~CL 1~~ ~~CL 2~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			efficiency that is common practice in the relevant industry sector) (P2), and the proposed project activity, fired with the same type of biomass, but with a lower electrical energy efficiency (P2); For heat generation: The proposed project activity (installation of a cogeneration power plant), fired with the same type of biomass but with a different thermal energy efficiency (e.g. an efficiency that is common practice in the relevant industry sector) (H2); For biomass use: The biomass is used for heat and/or electricity generation at the project site (B2). The selected baseline scenario is the construction of a conventional "business as usual" power plant utilising black liquor which will co-generate heat and electricity to meet the pulp mill's energy demand without surplus electricity generation. This "reference plant" would employ steam of lower pressure, would have two turbo generators with a capacity of 51 MW each and was determined based on a design study for an alternative power plant design (power plant without surplus capacity). The "reference plant" would have utilised the same amount of black liquor and would have generated the same amount of heat as the project power plant. However, the "reference plant" would have only generated electricity for internal use. As a simplification, it is thus assumed that the electricity that is supplied to the grid by the project power plant is		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			additional to the amount of electricity generated by the "reference plant". However, this simplification needs further justification: According to ACM0006, the net quantity of increased electricity generation as a result of the project activity shall be determined as follows: $EG_y = EG_{project\ plant,y} - \varepsilon_{el,other\ plant(s)} \cdot \sum_i BF_{i,y} \cdot NCV_i$ where $EG_{project\ plant,y}$ is the net quantity of electricity generated in the project plant during the year y in MWh, $\varepsilon_{el,other\ plant(s)}$ is the average net energy efficiency of electricity generation in (the) other power plant(s) that would use the biomass fired in the project plant in the absence of the project activity $BF_{i,y}$ is the quantity of biomass type i used as fuel in the project plant during the year y in a volume or mass unit, and NCV_i is the net calorific value of the biomass type i in terajoules (TJ) per mass or volume of biomass. The project participant is requested to clarify to which extend the use of the net electricity supplied to the grid is an appropriate measure for the net quantity of increased electricity generation as a result of the project activity. 2) It remains to be demonstrated that the efficiency of heat generation, i.e. the heat		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			generated per quantity of biomass fired, is the same in the project plant and the plant in the baseline scenario (the "reference plant"). If heat generation is smaller in the project plant than in the baseline scenario, the quantity of heat generated in the project plant is smaller than the quantity of heat that would be generated in the absence of the project activity. This implies that the project implementation involves additional heat generation from other sources or a longer operation of the project plant. This may result in an increase in GHG emissions.		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	Yes		OK
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	Yes		OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes, the baseline scenario takes into account national policies, in terms of policies for electricity generation. Most recent modification of the Chilean electric legislation (Short Law I, approved in January 20th, 2004 and Short Law II, approved in May 2005) have tried to spur investment in the electric power sector, and is intended to contribute to reverse the low trend of investment in the industry.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	Compatible as per available data and based on IPCC guidelines.		OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	Yes		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/ /13/	DR I	The project's additionality is demonstrated through a series of steps in line with the Tool for the demonstration and assessment of Additionality. STEP 0 - Preliminary screening based on the starting date of the project activity: The starting date for the first crediting period is 1 August 2006 and hence after the expected registration of the project as CDM project activity. Therefore, step 0 is not applicable. Nonetheless, since construction of the project already started 1 July 2004, the project participant provided evidence that demonstrates that CDM benefits were seriously considered in the decision to proceed with the project activity. STEP 1 - Alternatives to the project activity consistent with current laws and regulation were identified, i.e. i) a conventional self-sufficient pulp mil without surplus power generation capacity, ii) a conventional self-sufficient pulp mill with a conventional fossil fuel power unit as back-up, iii) a pulp mill designed to generate additional electricity at lower efficiency or at a later stage, not undertaken a CDM project activity, iv) a conventional pulp mill, but surplus power generation capacity based on other type of biomass, v) conventional pulp mill, but with a light deficit in electricity generation. STEP 2 - Investment Analysis: Not selected. STEP 3 - Barrier Analysis:	~~CL 3~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			Investment barrier – The arguments in PDD does not clearly bring out investment barriers other than economic/financial barriers like availability of debt funding or perceived risks associated with investment. The PDD indicates risks related to contingencies (black outs), but no risks linked to funding or investment. Technological barrier – The PDD is not clear as to whether the project will result in technology transfer, and whether there is a lack of infrastructure for implementation of the technology. Barriers due to prevailing practice: DNV was able to confirm that big scale surplus electric power generation is not a normal practice in the pulp mill industry. STEP 4 - Common Practice Analysis: DNV was able to confirm that although cogeneration is widely applied in the pulp industry, it is limited to electricity generation for internal use only. Very few pulp mills in the world and no pulp mill in Chile generate surplus of energy. STEP 5 – Impact of CDM Registration: It is demonstrated that the incentives from CDM will alleviate the identified barriers. Given the above and in particular the investment, the technological and common practice barriers that the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario.		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			DNV requests more information on the investment and technological barriers.		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	The only risk to the baseline seems to be the possibility of other renewable energy sources (like Hydroelectricity) taking up a major share of the generation capacity in Chile.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	Yes.		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 and reasonable?	/1/	DR	Yes. The project starting date is 1 July 2004. The project will have a life time of minimum 25 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	Yes, the project applies for a renewable crediting period of 7 years starting on 1 August 2006 (planned first day of operation).		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 ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/ /10/	DR	The project applies approved consolidated monitoring methodology for grid-connected electricity generation from biomass residues ACM0006.		OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/	DR	Yes. The methodology is applicable for the following reasons: It is a new power generation plant at a site where currently no power generation occurs ("Power" Greenfield Projects). No other biomass types than biomass residues (black liquor) will be used in the project plant and these biomass residues are the predominant fuel used in the project plant. The implementation of the project will not increase the biomass production in the facility. The biomass stored at the project facility will		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			not be stored for more than one year. In this project it will not be stored more than a week. No significant energy quantities, except for transportation for the biomass, are required to prepare the biomass residues for fuel combustion.		
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	Yes, the data is directly monitored wherever possible which should ensure more accurate estimation of GHG emission reductions.		OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes. The data will be archived in electronic form and be kept for two years after the end of the last crediting period.		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. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	Yes. Most of the data will be directly monitored at regular intervals. The use of fossil fuels in the biomass power plant will be monitored in order to determine project CO_2 emissions. However, the PDD needs to be revised to explicitly describe how the fossil fuel consumption will be monitored.	~~CL 5~~	OK
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	Yes. The project emissions are estimated in terms of emissions from fossil fuel consumption in the recovery boiler.		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	Yes, the fossil fuel used in the recovery boiler will be monitored. This calculation will only consider the additional fossil fuel of each type used in the recovery boiler due to the implementation of the project activity. The		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			additional fossil fuel will be determined in the following way: All fossil fuel burned in the recovery boiler, whenever the pulp mill is generating surplus electric power. This is conservative, since in some cases, a fraction of the fossil fuel consumed might be required to supply internal power needs of the pulp mill. If the pulp mill is not generating surplus electric power to the grid, the emission will be considered as zero.		
D.2.4. Will the indicators give opportunity for real measurements of project emissions?	/1/	DR	Yes		Ok
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/	DR	Yes		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. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	The project does not envisage any potential leakages, since the project contemplates the use of the same amount of biomass (black liquor) that would have been used in the baseline scenario.		OK
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. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions	/1/	DR	In order to determine the baseline emissions, the quantity of electricity supplied by the project to the grid and the CO_2 emission		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
during the crediting period?			factor of the grid (OM and BM emission coefficient) will be monitored.		
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes, The baseline emissions are estimated in terms of emissions from grid electricity displacement.		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/	DR	The following are monitored: • Net quantity of electricity supplied by the project activity to the grid; • CO_2 emission factor of the grid (OM and BM monitored separately); • Amount of each fossil fuel consumed by each power source / plant; • Amount of each fossil fuel consumed by the Arauco plant. • CO_2 emission coefficient of each fuel type i consumed by the electric power generators in the grid; • Electricity generation of each power source / plant; • Fraction of time during which low-cost / must-run sources are on the margin.		OK
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?	/1/		Yes		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data	/1/	DR	No, Neither the baseline and monitoring methodology applied by the project nor the		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
concerning environmental, social and economic impacts?			DNA of Chile requires monitoring of sustainable development indicators.		
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/1/	DR	See D.5.1.		OK
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/1/	DR	See D.5.1.		OK
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	See D.5.1.		OK
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/	DR I	Yes, Arauco is responsible for project management.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR I	Yes. These have been described in section D.4 of the PDD		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR I	The Nueva Aldea Phase 2 will adopt the same procedures for training, calibration of monitoring equipments, maintenance of these equipments, record handling, internal audit, performance review, implementing corrective actions management as those in Nueva Aldea Phase 1 project, which periodically conducts training sessions to the power plant operators. Internal audits have been carried out. This was checked by the validator during the visit ay Nueva Aldea 1.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR I	Emergency situation that can result into unintended emissions is only related to fire. Emergency procedures for this contingency were dealt with by the validator at the Nueva Aldea plant site.		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR I	See D.6.3		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR I	See D.6.3		OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR I	Yes. These have been described in section D.4 of the PDD		OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR I	See D.6.3		OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR I	Considering the nature of the project, uncertainties are expected to be minimum. Consequently, such procedures are not imperative to the project.		OK
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR I	Yes. These have been described in section D.4 of the PDD		Ok
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR I	See D.6.3.		OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR I	See D.6.3		OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR I	See D.6.3		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
E. Calculation of GHG Emissions by Source *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. Predicted 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 GHG emissions captured in the project design?	/1/	DR	There are only the direct GHG emissions, related to use of fossil fuels. The fossil fuel will be used in terms of start-up operations and rarely in the recovery boiler. However, no fossil fuel consumption was estimated ex-ante.	~~CAR 2~~	OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	Yes		OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/	DR	Yes.		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR	Yes.		OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/	DR	CO_2 is the only GHG evaluated.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
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 potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	There will be no leakage (refer to D.3).		OK
E.3. Baseline Emissions *The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/ /3/	DR	Baseline emissions are from displacement of grid electricity. For the displacement of grid electricity, the electricity baseline emission coefficient of the SIC Chilean grid is estimated by determining an OM and BM emission coefficient in accordance with ACM0002 as required by ACM0006. The calculations of the OM and BM emission coefficient used to estimate emissions reductions were transparently presented in Excel spreadsheets. Since low-cost/must run resources constitute more than 50% of total grid generation in the SIC Chilean grid, the simple adjusted OM is applied. According to ACM0002, the preferred option for determining the OM, the dispatch data analysis OM, However, the choice of the simple adjusted OM is justified		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			given that the dispatch data analysis OM requires easy access to dispatch data and processing of a lot of data which would involve unreasonable costs for a company like Arauco whose core business is not the generation of energy. The simple adjusted OM emission coefficient will be calculated ex-post in the year in which the project generation occurs. During the first crediting period, the BM emission coefficient will be calculated ex post in the year in which the project generation occurs. In subsequent crediting periods, the BM emission coefficient is calculated ex-ante. For the ex-ante estimation of the project's emission reductions for displacing grid electricity, the OM and BM emission factors were calculated based on forecasted power generation in the SIC grid (based on the latest expansion plan and average hydropower generation). For 2006, the simple-adjusted OM emission coefficient was calculated to be 0.689 tCO2e/MWh (applying a λ of 0.001) and the BM emission coefficient 0.249 tCO2e/MWh, resulting in a combined margin emission coefficient of 0.469 tCO2e/MWh (weighted average of the build and operating margin). The OM and BM emission coefficients are calculated in accordance with ACM0002 and were transparently presented in spreadsheets /3/. Since the OM and BM emission coefficients will be updated ex-post on an annual basis		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			with date provided by CDEC-SIC for each year in which the projects generated electricity, DNV has not in detail verified the input data used to calculate the OM and BM emission coefficients used for the ex-ante estimation of the project's emission reductions. The key information and parameters to determine the baseline scenario and the calculation of additional biomass and fossil fuel consumption was included in the PDD as Annex 3.		
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	The system boundary includes the electricity supplied to grid, the electricity system of grid (In reference to OM and BM). There are no imports from neighbouring grids.		OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/ /3/	DR	Yes.		OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/ /3/	DR	Yes. The assumption made by the project proponent to consider no emissions due to fossil fuel consumption in the recovery boiler during start-up operations is conservative. With the implementation of the project activity, the biomass concentration is higher, 80%, demanding less fossil fuel for start-up operations than in the baseline situation, where a biomass concentration of 72% demands more fossil fuel for start up operations.		OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the	/1/	DR	Yes.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
documentation?					
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/ /9/ /10/	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 scenario?	/1/	DR	Yes. The project is expected to, on the average, reduce the GHG emissions by nearly 125 424 tCO_2e per year over a 3 times seven year crediting period. But the emissions from the fossil fuel consumption in the Plant's recovery boiler were not estimated.	~~CAR 2~~	OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /4/	DR I	The environmental impacts of the project that were identified in the Environmental Impact Statement (EIS) are mitigated as follows: Liquid wastes will be treated in a sewage treatment plant; solid residues, such as ash, plastics and industrial wastes, will be sent to a landfill site; atmospheric emissions, such as particulate matter, will be treated as per Chilean regulations. The EIS was submitted		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			on 30 August, 2004 and was approved on 10 March, 2005 by Resolution N° 76/2005. Arauco received an environmental license accomplishing all of these aspects.		
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/ /4/	DR I	Yes. The EIA was submitted on 30 August 2004 and approved in March 10, 2005 by Resolution N° 76/2005.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/ /4/	DR	Not likely, all the major environmental impacts identified in the EIS will be taken care of through proper waste treatment and disposal methods as per the Chilean regulations.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/ /4/	DR	No transboundary environmental impacts are likely to occur		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/ /4/	DR	Yes		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/ /4/	DR	Yes.		OK
G. Stakeholder Comments *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*					
G.1.1. Have relevant stakeholders been consulted?	/1/ /4/	DR I	Yes, the local community and authorities were consulted.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR I	The following media were used for inviting comments: • Publications in local newspapers. • Meeting of technical staff of the Company and local community and authorities.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			(Community of Coelemu and Ranquil). • Meetings with the communities of Ranquil, Coelemu, Trehuaco and Quillon and the management of the Company.		
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/ /4/	DR I	Yes, as part of the requirements for an Environmental Impact Assessment, Arauco carried out a local consultation process with the stakeholders through publications in local newspapers and community meetings.		OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	Yes. In the EIS .		OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	Yes. All technical and environmental aspects were resolved and approved by the environmental authorities.		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 1 As the project has a steam turbine with heat extraction points, the project does not meet the applicability conditions for scenario 4 of the methodology ACM0006.	B.1.2	Arauco requested a revision of ACM0006, asking to remove the footnote in ACM0006 which applies to scenarios no. 4, 11 and 13 and which states that "Backpressure type cogeneration plants are defined as cogeneration plants where the relation between electricity and heat generation is fairly constant and cannot be influenced significantly by the operators of the plant. This applies, for example, to backpressure steam turbines. For other plant configurations (e.g. steam turbines with heat extraction points), this methodology is not applicable. Project participants would need to apply or propose a different methodology."	OK. At its 23rd meeting, the CDM Executive Board agreed to delete this footnote in ACM0006 and the project now meets all applicability criteria of ACM0006 (version 02 of 3 March 2006).
CAR 2 The emissions from the fossil fuel consumption in the Plant's recovery boiler were not estimated.	E.1.1 E.4.1	If project emissions occur (i.e. fossil fuel is co-fired with biomass to generate surplus power), the methodology to calculate them will be exactly as the one specified in the consolidated baseline methodology for grid-connected electricity generation from biomass residues. This calculation will only consider the additional fossil fuel of each type used in the recovery boiler due to the implementation of the project activity.	OK. The fossil fuel consumption will be determined *ex-post*. Nueva Aldea provided the methodology to calculate the fossil fuel consumption in the Plant's recovery boiler. The fossil fuel used in the recovery boiler will be monitored continuously. The provided clarifications sufficiently address DNV's request for correction.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CL 1 As a simplification, it is assumed that the electricity that is supplied to the grid by the project power plant is additional to the amount of electricity generated by the "reference plant". However, this simplification needs further justification: According to ACM0006, the net quantity of increased electricity generation as a result of the project activity shall be determined as follows: $EG_y = EG_{project\ plant,y} - \varepsilon_{el,other\ plant(s)} \cdot \sum_i BF_{i,y} \cdot NCV_i$ where $EG_{project\ plant,y}$ is the net quantity of electricity generated in the project plant during the year y in MWh, $\varepsilon_{el,other\ plant(s)}$ is the average net energy efficiency of electricity generation in (the) other power plant(s) that would use the biomass fired in the project plant in the absence of the project activity $BF_{i,y}$ is the quantity of biomass type i used as fuel in the project plant during the year y in a volume or mass unit, and NCV_i is the net calorific value of the biomass type i. The project participant is requested to clarify to which extend the use of the net electricity supplied to the grid is an appropriate measure for the net quantity of increased	B.2.1	The baseline methodology requires to calculate the average net efficiency of electricity generation in (the) other power plant(s) that would use the biomass fired in the project plant in the absence of the project activity. The point here is that if the CDM pulp mill had not been built, another less efficient pulp mill would have been built, which would have generated the same amount of pulp per year as the CDM pulp mill, but would have not generated additional power to the grid. Why does Arauco not consider the efficiency of "other (biomass) power plants" to determine "e"? Well, because in this case, the biomass that is being fired is black liquor, which is only generated in the pulping process, so the alternative power plants in this case could have only been the BAU pulp mill that would have been built instead of the project mill. Since we are conservatively assuming that this alternative BAU pulp mill would have been self-sufficient in electric power generation, it means that the additional net electric power generated to the grid by the project mill is equal to the net quantity of increased power generated by the project plant. In other words, by setting the net quantity of electricity injected to the grid equal to the increased quantity of	OK. The project determines the net quantity of increased electricity generation by measuring the amount of electricity that is supplied to the grid. This is deemed appropriate even if ACM0006 requires to determine net quantity of increased electricity generation by measuring the total net electricity generation by the project plant, the actual biomass consumption and biomass NCV and using an average efficiency of the reference plant (baseline plant). This approach requires that an average efficiency of the baseline plant can be determined. In the "Nueva Aldea Biomass Power Plant Phase 2" project the reference plant is a self-sufficient pulp mill that will generate electricity for self-consumption only. An average plant efficiency could be determined for this reference plant. However, this average efficiency would not allow for varying efficiencies at varying load factors. Given that the baseline scenario assumes that the reference plant would always produce the required electricity by the pulp mill and that no surplus electricity would be generated, it is thus fair to assume that the net quantity of increased electricity generation is the amount of electricity that is supplied to the grid. Given the uncertainties in determining the

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
electricity generation as a result of the project activity.		electricity generation in equation Nº13, we are applying the baseline methodology and being consistent with the chosen baseline scenario. Arauco could simulate the energy production of the reference plant for different levels of production and could determine the net quantity of increased electricity generation as required by equation Nº13. However, this would be much more complicated, since the efficiencies (both, for the project and reference plant) are a function of the load factor of the plant. In order to be fair, we would need to know the behavior of the efficiencies as a function of the load factors for both plants in order to calculate the net increase of electricity production in a fair way. This would complicate the monitoring a great deal. Since we do not manage this information (not even for the project plant), it is more appropriate to adopt a conservative approach and simply assume a flat and higher efficiency for the reference plant (i.e. a plant that would always be self-sufficient in electric power generation) and do the calculations accordingly. In other words, this is an appropriate approach because we do not manage all the information (i.e. there is uncertainty) and thus, we are being	efficiency of the reference plant, this simplification is deemed justified.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		conservative with the proposed simplification. The other approach would probably be more appropriate if we had claimed the emissions derived from internal power generation that would make the pulp mill self-sufficient in power generation. Since we did not claim them, we are "on the safe side" of the emission reduction calculation. This simplification is appropriate -then- on conservative grounds.	
CL 2 It remains to be demonstrated that the efficiency of heat generation, i.e. the heat generated per quantity of biomass fired, is the same in the project plant and the plant in the baseline scenario (the "reference plant"). If heat generation is smaller in the project plant than in the baseline scenario, the quantity of heat generated in the project plant is smaller than the quantity of heat that would be generated in the absence of the project activity. This implies that the project implementation involves additional heat generation from other sources or a longer operation of the project plant. This may result in an increase in GHG emissions.	B.2.1	From the energy / mass balances in pages 10 and 11 of the Nueva Aldea Phase 2 PDD, it can be easily seen that the middle and low pressure steam generation capacity of the real (CDM) plant and the reference baseline plant are very similar: 30 kg/sec of middle pressure and 130 kg/sec of low pressure steam. Since this steam is used in the pulping process, this clearly demonstrates that the steam generation efficiency of both plants are similar and that no additional steam is required for the pulping process. The major difference between the two scenarios is the generation capacity of the high-pressure steam: 192.7 kg/sec @ 85 bar in the real case versus 172.9 kg/sec @ 61 bar in the baseline case, which is exclusively explained by the higher electric power generation capacity of the real mill.	OK. It is demonstrated that the efficiency of heat generation, i.e. the heat generated per quantity of biomass fired, is the same in the project plant and the plant in the baseline scenario (the "reference plant") and that no additional steam is required for the pulping process.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		However, even in the case there were differences in the steam generation capacity for the pulping process between the two scenarios, all the fuel that the Nueva Aldea pulp mill would use to supplement the heat generation would be renewable biomass (black liquor) and therefore any emissions related to additional fuel consumption or a higher uptime of the plant would be zero (cases a) and b) presented in page 31 of the consolidated baseline methodology, version 02). The project implementation did not imply the installation of any additional boiler due to a lower heat generation efficiency of the real mill, a lower uptime of the real mill or any other operational reason.	
CL 3 Investment barrier – the arguments in PDD does not clearly bring out investment barriers other than economic/financial barriers like availability of debt funding or perceived risks associated with investment. The PDD indicates risks related to contingencies (black outs), but no risks linked to funding or investment. Technological barrier – The PDD is not clear as to whether the project will result in technology transfer, and whether there is a lack of infrastructure for implementation of the technology.	B.2.7	In Chile there is a higher risk exposure for being a big (visible) player in the electric power generation industry. As a member of the CDEC-SIC dispatch center, Arauco is exposed to fines applied to power generators applied by the national authority. According to the law, these fines are applied in proportion to the installed capacity of each electric power company. This higher risk exposure prevent companies whose core business is not power generation from investing in power cogeneration projects. In case of Arauco, the company has never been	OK. The provided clarifications sufficiently address DNV's request for clarification and justify the barrier the pulp mill faces with regard to investing into surplus electricity generation capacity.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		responsible for a system failure, nevertheless it had been finned by the national authority almost every time a system failure had occurred. The engineering as well as most of the technology employed in the design of Arauco's pulp mills (and particular the cogeneration part) is imported from northern European countries, particularly Sweden and Finland. These countries are highly experienced in pulp mill and cogeneration technology and are considered world leaders in these areas. The more efficient pulp mill design and the equipments of these plants belong in part to consultants and suppliers in these countries. In terms of the implementation of the technology, Chile counts with good quality contractors, however for mounting and giving maintenance of the plants, specialists must be brought from abroad.	
CL 4 The PDD indicates that the project emissions will be established if they do occur (which is perceived rare). If this occurs, the project emission calculation will use the emission factor for the relevant fuel. The source of data used in this case is not clear. In case of co-firing, what will be the methodology of calculation is not clear (since only a small %	E.1.2	If project emissions occur (i.e. fossil fuel is co-fired with biomass to generate surplus power), the methodology to calculate them will be exactly as the one specified in the consolidated baseline methodology for grid-connected electricity generation from biomass residues. This calculation will only consider the additional fossil fuel of each type used	OK. The answer provided sufficiently address DNV's request for clarification and justify the calculation *ex-post* of the fossil fuel combustion in the recovery boiler.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
will be fossil fuel).		in the recovery boiler due to the implementation of the project activity. The fossil fuel used in the recovery boiler will be monitored continuously.	
CL 5 The emissions of co-firing need to be accounted as it will be difficult to match the usage of the fossil fuel and establish whether the electricity generated by the same is being exported. Fossil fuel usage during start up operations need to be accounted and estimate to be established.	E.1.3	Pulp mill recovery boilers are not designed to operate with fossil fuels efficiently. In steady-state operation, fossil fuel co-firing results in a lower recovery boiler efficiency and in a loss of the inorganic compounds that need to be recycled for the pulping process (Kraft cycle). For these reasons, this alternative is uneconomical and not justifiable on surplus power generation basis alone. Considering that the plant is not tied with any rigid power supply contract, the usage of fossil fuels due to the project activity is not likely to happen. Nevertheless, all the fossil fuel co-fired in the recovery boiler in steady-state operation will be monitored and its emissions, deducted. Though fossil fuel consumption in pulp mill recovery boilers is not common, the amount of fossil fuel used in the Recovery Boiler of the Nueva Aldea Pulp Mill will be monitored and the CO_2 emissions from fossil fuel usage will be discounted whenever the mill is generating surplus power to the grid. Otherwise, the consumption of fossil fuel is considered part of the baseline scenario, since it would have been	OK. It is sufficiently demonstrated that the fossil fuel consumption will be calculated *ex-post* based on the used amount of this fuel, monitored continuously. Nonetheless, DNV asks more information about how this usage will be exactly monitored.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		used with or without the implementation of the project activity to back the power generation of the mill. The assumption made by the project proponent to consider no emissions due to fossil fuel consumption in the recovery boiler start-ups is actually conservative. With the implementation of the project activity, the biomass concentration is higher, 80%, demanding less fossil fuel for start ups than in the baseline situation, where a biomass concentration of 72% demands more fossil fuel for start ups. This happens because more fossil fuel would have to be co-fired with a more diluted black liquor than with a concentrated black liquor.	
CL 5 (Continuation): The PDD needs to be revised in order to explicitly describe how the fossil fuel consumption will be monitored.	D.2.1	There will be "on-line" fossil fuel flow meters that will measure the exact consumption of fossil fuel(s) at the recovery boiler. These flow meters will be connected to the mills' DCS (Distributed Control System) for remote control, operation and reporting. The project will count with dispatch personnel who will supervise the power generation at the mill and will control the amount of fossil fuel consumption in the recovery boiler. They will also be able to realize (and register) the circumstances under which the fossil	OK. The monitoring plan is according to ACM0006 and thus deemed appropriate.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		fuel is being used, since they will have to justify the usage to the Plant top management (the fossil fuel is expensive). The fossil fuel consumption will be continuously monitored and reported by the dispatch personnel, and will be registered (stored) in the mill's DCS databases.	

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