




**Validation report form for renewal of crediting period for
CDM project activities
(Version 03.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Nueva Aldea Biomass Power Plant Phase 1 UNFCCC reference number 0258
Number and duration of the next crediting period	3rd Crediting period: 01/01/2019 – 31/12/2025
Version number of the validation report	1
Completion date of the validation report	17/12/2019
Version number of PDD to which this report applies	5
Project participants	Celulosa Arauco y Constitución S.A.
Host Party	Chile
Applied methodologies and standardized baselines	ACM0006, Version 14 “Consolidated Methodology: Electricity and heat generation from biomass”.
Mandatory sectoral scopes	Scope 1: Energy industries (renewable - / non-renewable sources),
Conditional sectoral scopes, if applicable	NA
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	175,873 CERs
Name and UNFCCC reference number of the DOE	ERM Certification and Verification Services Limited
Name, position and signature of the approver of the validation report	Melanie Eddis, Partner 

SECTION A. Executive summary

>> The project activity consists in the installation of a new biomass cogeneration power plant in the New Alde Complex site, specifically in New Alde Phase 1.

The new cogeneration plant is equipped with a new 250 ton high-pressure steam per hour on combined steaming capacity with auxiliary fossil fuel fluidized bed biomass power boiler, and a 29.94 MW condensing/extracting turbo generator unit. The new cogeneration power plant is integrated with the rest of the mills of Phase 1 and designed so that approximately 60% of the power is destined to serve the internal needs of the Nueva Aldea Complex while the remainder 40% of the power is injected to the grid.

The project activity is designed to use biomass residues from industrial operations (mix of sawdust and bark, mainly from Sawmills and Panel board mills and sludge resulted from pulp mill operations) and biomass residues (mix of sawdust and bark) from forest operations (from harvesting, thinning and pruning operations) for electric power generation. In the absence of the project activity, such biomass would be left in piles to natural decay (aerobically) and in some specific cases would be burned uncontrollably.

SECTION B. Validation team, technical reviewer and approver**B.1. Validation team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader & validator	EI	Labbé	Javiera	ERM CVS, London	x	x	x	x

B.2. Technical reviewer and approver of the validation report for RCP

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Avis	Jonathan	ERM CVS, London
2.	Approver	IR	Eddis	Melanie	ERM CVS, London

SECTION C. Means of validation**C.1. Desk/document review**

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A detailed desk review was undertaken prior to the site visit. The desk review included:

- A review of data and information to verify the correctness, credibility and interpretation of presented information;
- Cross checks between information provided in the PDD and information from other sources, not limited to those provided by the PPs, applying ERM CVS's sectoral or local expertise and, if necessary, with independent background investigations
- Reference to available information relating to projects or technologies similar to the proposed project activity

- Review, based on the approved methodology being applied, of the appropriateness of formulae and accuracy of calculations

Where the review of the PDD at the document review stage raised issues, these were further reviewed and validated through supporting documentation and cross-checking from other sources and interviewing the PPs and relevant personnel involved in the project during the site visit. During the document review the project team also compared the proposed project activity with available information relating to projects or technologies similar to the proposed project activity under validation. Where appropriate, the validation team assessed the appropriateness of formulae and the correctness of calculations presented by the PPs.

Documents reviewed are described in Appendix 3 and correspond to PDD, ERs Calculations, and monitored data from previous monitoring periods, internal records, laboratory reports and other public information.

C.2. On-site inspection

Duration of on-site inspection: 05/11/2019 to 06/11/2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	Visit to recovery boiler and power plant	Nueva Aldea	06/11/2019	Javiera Labbé
2.	Check on site equipment installed for measuring biomass consumption (black liquor and sawdust and bark), and heat and electricity generation.	Nueva Aldea	06/11/2019	Javiera Labbé
3	Interviews personnel on site about frequency and methods for measuring %moisture, NCV, and others.	Nueva Aldea	06/11/2019	Javiera Labbé
4	Interviews about ex-ante ER calculation, assumptions made, data used for calculation and others.	Nueva Aldea	05/11/2019	Javiera Labbé

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Sanguenza	Leonardo	Chief of power plant	06/11/2019	Recovery boiler and power plant operations, and monitoring device.	Javiera Labbé
2	Pereira	Jesus	Quality control engienier	06/11/2019	Recovery boiler and power plant operations, and monitoring device.	Javiera Labbé
3	Andres	Placencia	Wheightbrig e control	06/11/2019	Recovery boiler and power plant operations, and monitoring device.	Javiera Labbé
4	Rodriguez	Christian	Head of Climate Change-Arauco	05/11/2019	ER calculations, EFgrid calculations.	Javiera Labbé
5	Esquerra	Andres	Chief of Residues	06/11/2019	Frequency and methods for measuring %moisture, NCV, and others.	Javiera Labbé

C.4. Sampling approach

>> Not applicable.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	-	-	-
Application and selection of methodologies and standardized baselines	-	-	-
Validity of original baseline or its update	-	-	-
Estimated emission reductions or net anthropogenic removals	-	1	-
Validity of monitoring plan	-	1	-
Crediting period	-	-	-
Project participants	-	-	-
Post-registration changes	-	-	-
Others (please specify): description of parameters and project.	-	-	-
Total	-	2	-

SECTION D. Validation findings**D.1. Compliance with PDD form**

Means of validation	<p>The PDD submitted for revalidation was compared with the latest version of CDM-PDD-FORM (version 11.0). ERM CVS determined whether the updated PDD has been completed using the valid version of the applicable PDD form, following the instructions therein.</p> <p>Since the PPs had to use a later valid version of the PDD form for the updated PDD than the version of the form of the registered PDD, ERM CVS determined whether the information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD.</p> <p>ERM CVS also confirmed that the information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD.</p>
Findings	ERM CVS confirmed that the information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD.
Conclusion	The PDD correctly applies the latest version of the PDD form. The information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD.

D.2. Application and selection of methodologies and standardized baselines

Means of validation	<p>By means of document review of the PDD and applied methodologies and tools, ERM CVS has validated whether the selected methodologies and other applied methodological regulatory documents are applicable to the proposed CDM project activity and that the selected versions are valid at the time of submission of the proposed CDM project activity for renewal of crediting period.</p> <p>The project applies methodology ACM0006: Electricity and heat generation from biomass - Version 14.0. This is the latest available version at the time of revalidation.</p> <p>The project also applies the following tools:</p> <p>“TOOL07: Tool to calculate the emission factor for an electricity system (Version 07.0)”.</p> <p>“TOOL03: Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion (Version 03.0)”.</p> <p>“TOOL09: Determining baseline efficiency of thermal or electric energy generation systems (Version 02.0)”.</p> <p>“TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (Version 03.0)”.</p> <p>“TOOL16: Project and leakage emissions from biomass (Version 04.0)”</p>
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	<p>“TOOL11 Assessment of the validity of the original/current baseline and update the baseline at the renewal of a crediting period (Version 03.0.1)”.</p> <p>“TOOL12: Project and leakage emissions from transportation of freight (Version 01.1.0)”.</p> <p>These are the latest versions of the applicable tools at the time of revalidation.</p> <p>ERM CVS confirmed that the proposed CDM project activity meets all the applicability conditions of the selected methodology and tools. This was done by validating the project description (see above) and by verifying that the methodology and tools are correctly quoted and interpreted in the PDD. Please see Appendix 5 for further details.</p> <p>The methodology was also confirmed to have been correctly applied with respect to the following:</p> <ul style="list-style-type: none"> (a) Project boundary; (b) Baseline identification; (c) Algorithms and/or formulae used to determine emission reductions; (d) Monitoring methodology. <p>Please see below for details.</p> <p>ERM CVS determined that the selected methodology and tools are correctly quoted and applied by comparing them with the actual text of the valid version of these documents, and relevant requirements in the “CDM project standard for project activities”.</p>
Findings	ERM CVS determined that the selected methodology and tools are correctly quoted and applied by comparing them with the actual text of the valid version of these documents, and relevant requirements in the “CDM project standard for project activities”.
Conclusion	The selected methodologies and other applied methodological regulatory documents are applicable to the proposed CDM project activity and the selected versions are valid at the time of submission of the proposed CDM project activity for crediting period renewal. The selected methodology and tools are correctly quoted and applied.

D.3. Validity of original baseline or its update

Means of validation	<p>In accordance with the project standard, ERM CVS evaluated whether the Project Participants have assessed and incorporate the impact of national and/or sectoral policies and circumstances existing at the time of requesting renewal of the crediting period on the current baseline GHG emissions, without reassessing the baseline scenario.</p> <p>Where data and parameters used for determining GHG emission reductions are determined ex ante (and not monitored during the crediting period), ERM CVS assessed the continued validity of the values applied, and whether project participants have appropriately updated such data and parameters where needed. The validity of the baseline and the parameters determined ex-ante has been assessed in accordance with the ‘Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period’. ERM CVS assessed:</p> <ul style="list-style-type: none"> • compliance of the current baseline with relevant mandatory national and/or sectoral policies; • the impact of circumstances; • whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested; • validity of the data and parameters; • whether the baseline has been correctly updated; • whether the data and parameters have been appropriately updated. <p>This included evaluating the conservativeness of the assumptions made, and evidence for the values applied.</p>
Findings	Please refer CAR02. After the correction made to ER calculation.xls, ERM CVS has determined that the baseline and its up-date is correct.

Conclusion	<p>The baseline has been reviewed as required by ACM 0006 v 14 and required tools.</p> <p>The Project Participants have assessed and incorporated the impact of national and/or sectoral policies and circumstances existing at the time of requesting renewal of the crediting period on the current baseline GHG emissions, without reassessing the baseline scenario.</p> <p>Where data and parameters used for determining GHG emission reductions are determined ex ante (and not monitored during the crediting period), ERM CVS that the values have been updated where needed, and confirmed the validity of the updated values.</p> <p>The validity of the baseline and the parameters determined ex-ante has been assessed in accordance with the 'Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period'. ERM CVS confirmed that:</p> <ul style="list-style-type: none"> the baseline conforms with relevant mandatory national and/or sectoral policies; the baseline is not impacted by the impact of changes in circumstances. <p>This included confirming the conservativeness of the assumptions made, and evidence for the values applied.</p>
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D.4. Estimated emission reductions or net anthropogenic removals

Means of validation	<p>By review of the PDD, emission reduction calculation spreadsheet, grid emissions factor calculations and comparison with the applied methodology and tools, ERM CVS determined whether the description of how to undertake the ex-ante and ex-post calculations of baseline, project and leakage GHG emissions as well as GHG emission reductions to be achieved by the proposed CDM project activity is in accordance with the applied methodology and tools.</p> <p>Where the applied methodology or tools allow for selection between options for equations or parameters, ERM CVS has determined whether adequate justification has been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided) and that the correct equations and parameters have been used, in accordance with the applied methodology and tools.</p> <p>Where data and parameters have already been determined and will remain fixed throughout the crediting period, ERM CVS has determined whether all data sources and assumptions are appropriate and calculations are correct as applicable to the proposed CDM project activity, and will result in an accurate or otherwise conservative estimate of the emission reductions. Where parameters are to be monitored, ERM CVS has determined whether the estimates provided in the PDD for these data and parameters are reasonable.</p>
Findings	<p>Refer to CAR 02, which has been closed. ERM CVS has determined that the emission reduction calculations are correct, after closing CAR 02.</p>
Conclusion	<p>ERM CVS has confirmed that:</p> <ul style="list-style-type: none"> (a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources; (b) All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD; (c) All values used in the PDD including GWPs are considered reasonable in the context of the proposed CDM project activity; (d) The methodologies and tools have been applied correctly to calculate baseline, project and leakage GHG emissions, as well as GHG emission reductions; (e) All estimates of the baseline GHG emissions can be replicated using the data and parameter values provided in the PDD; (f) Sampling is not applicable.

D.5. Validity of monitoring plan

Means of validation	<p>The PPs have included a monitoring plan in the PDD for validation. Based on review of the PDD and comparison with the applied methodology and tools, and a visit to the project site to check meters and records to confirm that the monitoring plan is able to be implemented, ERM CVS has determined whether the description of the monitoring plan included in the PDD complies with the applied methodology and tools and is feasible. Sampling is not applicable for the proposed project.</p> <p>To assess compliance of the monitoring plan with the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents, ERM CVS has:</p> <ul style="list-style-type: none"> (i) Identified the list of parameters required by the applied methodologies and tools, by means of document review; (ii) Confirmed that the description of the monitoring plan contains all necessary parameters, that they are described, and that the means of monitoring described in the monitoring plan comply with the requirements of the applied methodology and tools. <p>To assess the feasibility of the monitoring plan, ERM CVS has, by means of review of the documented procedures, interviews with relevant personnel, project plans and the on-site inspection of the proposed CDM project activity, assessed whether :</p> <ul style="list-style-type: none"> (i) The monitoring arrangements described in the monitoring plan are feasible within the project design; (ii) The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that GHG emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.
Findings	Refer CAR 01. Not all parameters were included in monitoring plan as per ACM0006 v14 and required tools. This was corrected in the final PDD.
Conclusion	<p>All findings were closed. ERM CVS has confirmed that the description of the monitoring plan included in the PDD complies with the applied methodology and tools. Sampling is not applicable for the proposed project.</p> <p>All parameters required by the applied methodologies and tools are included in the monitoring plan. The description of the monitoring plan contains all necessary parameters, they are described, and the means of monitoring described in the monitoring plan comply with the requirements of the applied methodology and tools.</p> <p>ERM CVS confirmed that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that GHG emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified. ERM CVS believes that the PPs can implement the monitoring plan.</p>

D.6. Crediting period

Means of validation	By means of document review, including verifying against the UNFCCC web page, ERM CVS determined whether the type and duration of the crediting period are correctly determined.
Findings	ERM CVS determined that the type and duration of the crediting period are correctly determined.
Conclusion	The type and duration of the crediting period is found correct. The crediting period is 01 Jan 2019 - 31 Dec 2025. The next crediting period of the project activity commences on the day immediately after the expiration of the current crediting period.

D.7. Project participants

Means of validation	ERM CVS checked that the names of the project participants included in the updated PDD are consistent with the names of the project participants in the latest version of the MoC statement, by means of verifying the MoC statement and checking the UNFCCC CDM website.
Findings	The Project Participant is found to be correct: Celulosa Arauco y Constitución S.A. is the only PP listed in the MoC, in the updated PDD and on the CDM website. Project participant: Celulosa Arauco y Constitución S.A
Conclusion	The names of the project participants included in the updated PDD are consistent with the names of the project participants in the latest version of the MoC statement.

D.8. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents ¹	NA		
Corrections	NA		
Change to the start date of the crediting period	NA		
Inclusion of a monitoring plan	NA		
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	NA		
Changes to the project design	NA		
Changes specific to afforestation and reforestation project activities	NA		

SECTION E. Internal quality control

>> The validation activities and content of the report are subject to a review by an independent technical reviewer. The role of the Technical Reviewer is to provide oversight that all procedures have been followed by the verification team and all conclusions justified and supported by evidence. The Technical Reviewer will either accept or reject the recommendations made by the verification team.

SECTION F. Validation opinion

>> Celulosa Arauco y Constitución S.A. has commissioned ERM CVS to validate the crediting period renewal for the CDM project “Nueva Aldea Biomass Power Plant Phase 1”, in line with all relevant UNFCCC requirements including the requirements of the CDM Project Standard for Project Activities, version 02.0. The validation was carried out against the requirements of the Validation and Verification Standard (VVS) for project activities, version 02.0. The review of the updated PDD and additional documents related to the project, the baseline and monitoring methodology, the subsequent background investigation, and follow-up interviews have provided ERM CVS with sufficient evidence to validate the fulfilment of the eligibility of the CDM project for crediting period renewal.

ERM CVS confirmed that the project participants have correctly updated sections of the PDD relating to the baseline, estimated GHG emission reductions or net anthropogenic GHG removals, the monitoring plan and the crediting period using the valid version of the approved methodologies and other methodological regulatory documents that are applicable to the project activity. The

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

updated PDD complies with all the requirements of the selected methodology (additionality demonstration was not reassessed, as per the CDM Project Standard for Project Activities). The methodologies and other methodological regulatory documents were applied in accordance with the applicable requirements in the “CDM project standard for project activities”. The baseline, the estimated GHG emission reductions, and the monitoring plan in the updated PDD comply with the applicable requirements in the “CDM project standard for project activities”, and the valid version of the methodologies and other methodological regulatory documents that are applied in the updated PDD.

As the project participants used a later valid version of the PDD form for the updated PDD than the version of the form of the registered PDD, ERM CVS confirmed that the information transferred to the later valid version of the PDD form is materially the same as that in the registered PDD.

ERM CVS confirmed the validity of the baseline through an assessment of:

- (a) The impact of new relevant national and/or sectoral policies and circumstances on the baseline, taking into account relevant guidance from the Board with regard to renewal of the crediting period of a registered CDM project activity, at the time of requesting renewal of crediting period of the project activity;
- (b) The correctness of the application of the approved methodologies and, where applicable, the approved standardised baselines and the other methodological regulatory documents for the determination of the continued validity of the baseline or its update, and the estimation of GHG emission reductions or net anthropogenic GHG removals for the applicable crediting period of the registered CDM project activity.

ERM CVS confirmed that the baseline is still applicable and that the estimation of emission reductions has been correctly presented.

ERM CVS therefore requests renewal of the crediting period for the project activity.

Appendix 1. Abbreviations

Abbreviations	Full texts
1. DOE	Designated Operational Entities
2. PDD	Project Design Document
3. MP	Monitoring Plan.
4. CP	Crediting Period
5. PP	Project Participant
6. IPCC	Intergovernmental Panel on Climate Change
7. NA	Not applicable
8. MoC	Modalities of Communication

Appendix 2. Competence of team members and technical reviewers

Javiera Labbe is lead validator and verifier of CDM projects. She is a lead assessor for certification of EHS management systems. Javiera has acted as the auditor for more than 20 carbon offset projects in a range of sectors including power (hydro, biomass), waste management, industrial energy recovery, and agricultural projects in developing countries. Javiera also is an experienced assessor of environment (ISO 14001), health and safety (EHS) management systems (ISO 45001) in a range of sectors. Javiera also is a management system assessor and professor (Universidad de Chile). Prior to joining ERM CVS, Javiera worked as a project manager and technical reviewer at the carbon trading firm EcoSecurities Ltd. She is a Biochemical Engineer from the Universidad Catolica de Valparaiso, and she hold an MSc degree in Environmental Management and Engineering from the Ecole des Mines de Paris.

Jonathan Avis is a lead validator and verifier of CDM and Gold Standard projects and programme manager of the CDM and carbon offsetting validation & verification programmes within ERM CVS. He is also a technical reviewer for CDM, Gold Standard and VCS projects, and a lead assessor for certification of EHS and energy management systems. Jonathan has acted as the auditor or technical reviewer for more than 150 carbon offset projects in a range of sectors including power (hydro, wind, solar, geothermal, biomass), waste management, industrial energy recovery, and household energy in developing countries. Jonathan also has substantial experience in the assessment of environmental and social impacts of energy projects, against a variety of criteria including the Gold Standard for carbon offset projects, and the World Commission on Dams for large hydro. In addition to this, Jonathan is an experienced assessor of environment (ISO 14001), health and safety (EHS) management systems (ISO 45001) and energy management systems (ISO 50001) in a range of sectors. Prior to joining ERM CVS, Jonathan worked as a researcher into clean energy in developing countries at the University of Oxford, and as a manager at the carbon trading firm EcoSecurities Ltd. Jonathan has also chaired the international forum of auditing bodies ('DOE Forum') under the UNFCCC's Clean Development Mechanism (CDM). Jonathan holds a BA in Geography (1st Class Hons) from the University of Oxford, and an MSc in Environmental Change and Management, also from the University of Oxford (Distinction).

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Arauco	PDD version 2, 05/01/2006. Nueva Aldea Biomass Power Plant Phase 1". 1st crediting period. PDD version 4, 24/12/2014. Nueva Aldea Biomass Power Plant Phase 1". 2 nd crediting period.	https://cdm.unfccc.int/Projects/DB/DNV-CUK1138279173.34/view	Arauco
2	Arauco	PDD version 1, 01/10/2019. Submitted to DOE for validation of the renewal of the crediting period PDD version 5, 10/11/2019.	3 rd crediting period	Arauco
3	Arauco	ER Calculation Spreadsheet, v1 01/10/2019. ER Calculation Spreadsheet, v2, 10/11/2019.	3 rd crediting period	Arauco
4	UNFCCC	ACM 0006, Consolidated methodology for electricity and heat generation from biomass, Version 14.	Unfccc.int	UNFCCC
5	UNFCCC	TOOL07: Tool to calculate the emission factor for an electricity system (Version 07.0)".	Unfccc.int	UNFCCC
6	UNFCCC	"TOOL09: Determining baseline efficiency of thermal or electric energy generation systems (Version 02.0)".	Unfccc.int	UNFCCC
7	UNFCCC	Tool11"Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" (Version 03.0.1)	Unfccc.int	UNFCCC
8	UNFCCC	"TOOL03: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion (Version 03.0)".	Unfccc.int	UNFCCC
9	UNFCCC	TOOL12: Project and leakage emissions from transportation of freight (Version 01.1.0)".	Unfccc.int	UNFCCC
10	UNFCCC	TOOL16: Project and leakage emissions from biomass (Version 04.0)	Unfccc.int	UNFCCC

11	Meth Panel	AM_CLA_0280. Clarifications on updating DATEBaselineRetrofit of ACM0002 and on changing the grid emission factor calculation approach from ex post to ex ante. 26 Feb -01 Mar 2019/ MP 78	https://cdm.unfccc.int/methodologies/PAmethodologies/clarifications/69901	UNFCCC
12	CNE. Nacional Energy Commission /Comisión Nacional de Energía.	GrossGeneration.xls (Generacionbruta.xls). Data of gross electricity generation of power plant connected to Chilean grids. 1996-2018 Data.	https://www.cne.cl/estadisticas/electricidad/ .	CNE
13	CNE. Nacional Energy Commission /Comisión Nacional de Energía.	InstalledCapacity.xls (Capacidad-Instalada-Generacion.xls). Data of year of commissioning of power plant injecting electricity to Chilean Grids. 1909-2018 Data.	https://www.cne.cl/estadisticas/electricidad/ .	CNE
14	CNE. Nacional Energy Commission /Comisión Nacional de Energía.	Monthlygeneration.xls . Monthly data of gross electricity generation of power plant connected to Chilean grids. 2015-2017 Data.	https://www.cne.cl/estadisticas/electricidad/ .	Arauco
15	CNE. Nacional Energy Commission /Comisión Nacional de Energía.	PotenciaSuficiencia.xls. Data of gross electricity generation of power plant connected to Chilean grids. 2015-2017 Data.	https://www.cne.cl/estadisticas/electricidad/ .	CNE
16	CEN. Coordinador Eléctrico Nacional	RealDia.xls., CEN.. Hourly generation of power plants connected to Chilean grids. 2015-2017 Data.	https://www2.coordinador.cl/sistema-informacion-publica/portal-de-operaciones/operacion-real/generacion-real-de-las-centrales/	CEN
17	IPCC	2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2 Energy. Chapter 1: Introduction	http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf	IPCC
18	Arauco	Grid Emission Factor.xls. Calculation of OM Grid Emission Factor. 2015-2017 Data.		Arauco
19	CNE. Nacional Energy Commission /Comisión Nacional de Energía.	Fossilfuelconsumption.xls . Consumos-de-Combustibles-SEN.xlsx 2008-2018 Data.	https://www.cne.cl/estadisticas/electricidad/ .	CNE

20	Arauco	Project diagram		Arauco
21	CNE	BNE Energy National Balance 2012		Public information. CNE
22	CNE. Nacional Energy Commission /Comisión Nacional de Energía.	Electricity import from the grid.	https://www.coordinador.cl/informe-documento/mercados/transferencias-de-energia/antecedentes-de-calculo/	CNE
23	El Mercurio	El Mercurio article. Consumo eléctrico de clientes libres tendría su peak en 2021. Electricity consumption of free customers would peak in 2021. This explain the decreasing prices in the new tendering in Chilean energy market.	http://www.elmercurio.cl/inversiones/noticias/acciones/2018/02/26/consumo-electrico-de-clientes-libres-tendria-su-ipeaki-en-2021.aspx	El Mercurio
24	CNE. Nacional Energy Commission /Comisión Nacional de Energía.	CNE article explaining the decreasing prices in the new tendering in Chilean energy market	https://www.cne.cl/prensa/prensa-2017/11-noviembre-2017/valor-de-la-energia-mas-bajo-en-la-historia-de-las-licitaciones-en-chile/	CNE
25	Generadoras de Chile. Chilean Generators	Newsletter article explaining the decreasing prices in the new tendering in Chilean energy market	http://generadoras.cl/documentos/boletines/boletín-mercado-electrico-sector-generacion-julio-2018	Generadoras de Chile.
26	CNE. Nacional Energy Commission /Comisión Nacional de Energía.	Resolución Extenta N°207. 2019. Informe-costos-de-generación-2019. Tables 8, 9 and 11. Figure 1. Average costs of installations and operation of several kind of energy generation plans. Page 32, Figure 1: Distribution of the total investment of projects under construction and study per technology generation.	https://www.cne.cl/wp-content/uploads/2019/03/Res.-Ext.-N%C2%B0-207-Informe-costos-de-generaci%C3%B3n-2019.pdf	CNE
27	Chilean Congress	Ley 20805. 2015. <i>Perfecciona el sistema de licitaciones de suministro eléctrico para clientes sujetos a regulaciones de precios.</i> Law 20805.2015. <i>Improves the system of tendering of electricity supply for customers subject to price regulations.</i>	https://www.leychile.cl/Navegar?idNorma=1074277	Chilean Congress
28	Energy Ministry	Resolución Exenta N°558, 2017. <i>Complementa y modifica Resolución Exenta N°778, que establece plazos, requisitos y condiciones para la fijación de precios de nudo promedio.</i> It complements and modifies Resolution No. 778, which establishes deadlines, requirements and conditions for setting average node prices.	https://www.leychile.cl/Navegar?idNorma=1108966	Energy Ministry
29	Arauco	Methane emission factor of uncontrolled burning of biomass residues from forest		Arauco

		operations.March 2009 using the methodology developed by Hao et al. [1996].		
30	INFOR Forestry National Institute/.Instituto Nacional Forestal	Anuario del aserrio 2018.Sawmill Yearbook 2018. Containing forestry production and residues generation information for 2017 and 2016.	https://wef.infor.cl/publicaciones/publicaciones.php#P1 .	Arauco
31	INFOR Forestry National Institute/.Instituto Nacional Forestal	Estadísticas forestales. Forestry statistics. Residues factors, efficiencies and other factors for different kind of wood industry. Index biomass surplus Valdivia 2017 and 2016.xls. Arauco.		Arauco
32	Arauco	Biomass balance in Bio-Bio Region.		Arauco
33	CNE. Nacional Energy Commission /Comisión Nacional de Energía.	Report: <i>Estudio de capacidad técnica disponible en sistemas de transmisión dedicados. Study of technical capacity available in dedicated transmission systems.</i>		CNE
34	Arauco	Energy and mass balances for Nueva Aldea Phase 1 Project. This balances has remained fixed since the second crediting period.		Arauco
35	Arauco	NCV biomass. Average NCV biomass 2014-2015 verified data.		Arauco
36	Arauco	Moisture content biomass. Average 2014-2015 verified data.		Arauco
37	Arauco	Biomass category. Average 2014-2015 verified data.		Arauco
38	Arauco	<i>LFC. Calculation.</i>		Arauco
39	Arauco	Biomass transportation. Average 2014-2015 verified data.		Arauco
40	Arauco	Diesel due to biomass processing index. Average 2014-2015 verified data.		Arauco
41	Arauco	Heat to process. Average 2014-2015 verified data.		Arauco
42	Arauco	Gross_electricity generation. Average 2014-2015 verified data.		Arauco
43	Arauco	Diesel consumed due to operational reasons. Average 2014-2015 verified data.		Arauco
44	Arauco	On-site fossil fuel consumed. Average 2014-2015 verified data.		Arauco
45	Arauco	<i>Electricity Auxiliary Consumption.</i> Average 2014-2015 verified data.		Arauco
46	Arauco	Supply Biomass 3rd partiesNAP-1. Average 2014-2015 verified data.		Arauco
47	Arauco	Project diagram		Arauco

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CL from this validation

No Clarification request (CL) was raised.

Table 2. CAR from this validation

CAR ID	01	Section no.	B.7.1	Date:	06/11/2019
Description of CAR					
<p><i>The following values need to be corrected or included in B.7.1 according to ACM 0006 or the tools involved:</i></p> <p>1) <i>ACM0006: Parameter 21 "For biomass residues categories for which scenarios B1:, B2: or B3...": According to the monitoring methodology, this information should be available and reported at the validation stage for the biomass residues identifies ex-ante, however, this information is not included. Monitoring frequency: not defined for new biomass residues categories when included during the crediting period.</i></p> <p>2) <i>Tool 03 to calculate project or leakage CO2 emissions from fossil fuel combustion. Parameter 3 Density, is not included in the monitoring plan.</i></p>					
Project participant response					Date: 10/11/2019
<p>1) Responsible to undertake the measurement: The Power Boiler Department will be responsible to undertake continuously measurement. Frequency defined. Results informed leakage emission section in PDD.</p> <p>2) Tool 03 to calculate project or leakage CO2 emissions from fossil fuel combustion: The Parameter 3 density is included as part of the monitoring plan.</p>					
Documentation provided by project participant					
<i>The PP updated the PDD .</i>					
DOE assessment					Date: 12/11/2019
<p>PDD was cheked and monitoring plan has been corrected, including density as a parameter to be monitored, and results for Parameter 21 "For biomass residues categories for which scenarios B1:, B2: or B3...", included in section B.6.1. of PDD.</p> <p>CAR01 Closed.</p>					

CAR ID	02	Section no.	B.6.3	Date:	06/11/2019
Description of CAR					
<p><i>The following errors were found in ERs calculation.xls (3)</i></p> <p>1) <i>EF_{CH4,BR}: this factor was correctly defined in section B.6.1. However, in ERsCalulation.xls 1,02 corrective factor was applied in stead of 1,37 (table 5, ACM0006v14)</i></p> <p>2) <i>EL_{PJ,aux,y}: this factor was correctly defined in section B.6.1. This parameter is obtained from measured data from previous period, and a calculated data from the installed capacity and LOCy. However this calculated data was added twice in ERs calculations.</i></p> <p>3) <i>The fossil fuel component of equation 2 of ACM 0006 v14 (baseline emissions from fossil fuel) is</i></p>					

<i>multiplied in ERs Calculation .xls(3) by efficiency of the boiler (85%) and this is not correct.</i>	
Project participant response	Date: 10/11/2019
1) <i>The PP made the correction to the value informed to this factor. The 1.02 has been changed with 1.37, according to table 5, ACM0006 v14. In the same way, the PP has made correction to the error.</i> 2) <i>EL PJ_{aux,y} corrected.</i> 3) <i>Baseline from fossil fuel is not calculated as $\sum FF_{BL,HG,y,f} \times EF_{FF,y,f}$ as eq 2 of ACM 0006.</i>	
Documentation provided by project participant	
<i>The PP updated the ERs calculations and PDD and the emission reduction calculations.</i>	
DOE assessment	Date: 12/11/2019
1) EF _{CH4,BR} : has been corrected. 2) EL PJ _{aux,y} : has been corrected 3) Baseline emissions from fossil fuel was corrected. PP has corrected ERcalculation.xls (3), PDD results has been corrected accordingly.	
CAR 02 closed.	

Appendix 5. CDM Validation Protocol: Renewal of Crediting Period

Please see following pages.

1 Validation findings –PDD

1.1 Project Design Document (PDD)

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/CL	Final OK/ NOT OK
5.1.1	Has the PP updated the sections of the PDD related to the baseline, estimated GHG emission reductions, and the monitoring plan?	PP has applied the tool11 version 3.0.1 "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period", confirming the baseline, and updated data and parameter of the baseline and the estimated GHG emission reductions. The Monitoring plan is in line with ACM 0006 v14.0.	OK	OK
5.1.2	Is the updated PDD prepared in accordance with the latest forms and guidance required by the CDM EB? http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html	PDD was updated using PDD format version 11.	OK	OK

1.2 Project Description

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.4.6	Is there a clear description of the baseline scenario in the revised PDD?	PDD section B.2 and B.4 explain baseline scenario and updating calculations to last methodology AMC 0006 v14. Description of the baseline scenario concerning is described: <ul style="list-style-type: none"> - Electricity generation in baseline case - Fossil fuel consumption in baseline case - Disposal of biomass residues in baseline case. 	OK	OK

2 Validation findings –Methodology

2.1 Validity of selected methodology and methodological tools

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.1.1	<p>Are the number, title and version of the approved methodology clearly and correctly stated?</p> <p>Is the latest version of the methodology valid at the time of submission of the revised PDD for the renewal of the crediting period used?</p> <p>Is the methodology within its period of validity?</p>	<p>Number, title of the methodology is clearly stated.</p> <p>Methodology ACM0006, Version 14.0.0 is refed. The last version available.</p>	OK	OK
	<p>Are all the required tools applied and fully referenced in the PDD?</p> <p>Are the version numbers applicable at the time of validation?</p>	<p>All required tools are correctly referenced, including the updated version number and name in the PDD.</p> <p>Tool 3 .“Tool to calculate project and leakage CO2 emissions from fossil fuel combustion (Version 03)”.</p> <p>Tool 7: “Tool to calculate the emission factor for an electricity system, version 07.0.0.</p> <p>Tool 9 “Determining the baseline efficiency of thermal or electric energy generation systems”, version 2.</p> <p>Tool 11“Assessment of the validity of the original/current baseline and update the baseline at the renewal of a crediting period”, version 03.0.1.</p> <p>Tool 12 “Project and leakage emissions from transportation of freight”, version 01.1.0.</p> <p>Tool 16: “Project and leakage emissions from biomass”, version 04.0.</p>	OK.	OK

2.2 Applicability of the selected methodology to the project activity

ERM CVS has assured the compliance of the project activity with each of the applicability conditions of the selected methodology and tools:

Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
<p>Applicability Conditions for ACM0006 v14</p> <p>(a) Biomass used by the project facility is limited to biomass residues, biogas, RDF2 and/or biomass from dedicated plantations;</p>	Yes	Yes	<p>Biomass types used are:</p> <ul style="list-style-type: none"> - Sludge: From Nueva Aldea Phase 2 wastewater plant, considered off-site. - Industrial biomass (sawdust and bark) residues from Nueva Aldea phase 1 onsite operation (board production and mill) - Industrial Biomass generated off site 	OK	OK

Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>(mills, board factories, and others). This includes biomass residues from Nueva Aldea Phase 2, supplying biomass through a conveyor belt and biomass supplied by trucks from outside the Nueva Aldea complex.</p> <p>- Forest biomass generated off site.</p> <p>It was validated during the site visit, confirming the internal biomass are residues from the Nueva Aldea 1 process, and the off-site residues were confirmed on the reception weighbridge, where every truck is recorded, including its origin, weight and volume. Transport documentation and internal records were checked confirming only biomass is used, crosschecking also some of the origins points.</p>		
(b) Fossil fuels may be co-fired in the project plant. However, the amount of fossil fuels co-fired does not exceed 80% of the total fuel fired on energy basis	Yes	Yes	Fossil fuel is used in baseline and project scenario only for start-ups, and some occasions during the winter when biomass may be with a higher %moisture. This is confirmed during the site visit through invoices and monitoring reports of the second crediting period, which confirmed that the amount of fossil fuel is rarely used.	OK	OK
(c) For projects that use biomass residues from a production process (e.g. production of sugar or wood panel boards), the implementation of the project does not result in an increase of the processing capacity of raw input (e.g. sugar, rice, logs, etc.) or in other substantial changes (e.g. product change) in this process;	Yes	Yes	The Project does not result in an increase of the processing capacity because it is a greenfield project, and there was not plywood plant before the construction of the project.	OK	OK
(d) The biomass used by the project facility are not stored for more than one year;	Yes	Yes	The total capacity of the biomass storage is 20,000 m3 (confirmed on site) and the consumption is 1,000-6,000m3/day. Then the biomass is not stored for more than a 1 month. Confirmed during the site visit.	OK	OK
(e) The biomass used by the project facility is not processed chemically or biologically (e.g. through esterification, fermentation, hydrolysis, pyrolysis, bio- or chemical degradation, etc.) prior to combustion. Thermal degradation, drying and mechanical processing, such as shredding	Yes	Yes	No chemical process is used to treat any of the biomass residues types used in the project. This was confirmed on site, verifying the reception of external biomass, the transport of internal biomass, the accumulation in a storage yard and the biomass feeding to the conveyor belt that goes directly to the power plant.	OK	OK

Applicability Conditions in methodology and/or tools	Is this condition discussed in the PDD? (yes/no)	Does the project meet this condition? (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
and pelletisation, are allowed					
ACM 0006 v4 includes some applicability requirements for : - fuel switching - biogas generation. -dedicated plantations	Yes	Yes	The project does not involve: - fuel switching - biogas generation. -dedicated plantations.	OK	OK
Finally, the methodology is only applicable if the baseline scenario, as identified per the "Selection of the baseline scenario and demonstration of additionality" section hereunder, is: (a) For power generation: scenarios P2 to P7, or a combination of any of those scenarios; (b) For heat generation: scenarios H2 to H7, or a combination of any of those scenarios; (c) If some of the heat generated by the CDM project activity is converted to mechanical power through steam turbines, for mechanical power generation: scenarios M2 to M5: (i) In the case of M2 and M3, if the steam turbine(s) are used for mechanical power in the project, the turbine(s) used in the baseline shall be at least as efficient as the steam turbine(s) used for mechanical power in the project; (ii) In the case of M4 and M5, steam turbine(s) for mechanical power are not allowed for the same purpose in the project;	Yes	yes	The baseline scenario involves P7 and H5 and no M scenario is included in baseline or project activity.	OK	OK

2.3 Project Boundary

Emission sources

The emissions sources included in or excluded from the project boundary, as set out in the applied methodology are as follows:

	Source	Gas	Is this source included within the project boundary in the PDD?	Is inclusion / exclusion from the project boundary justified in the PDD?	How has this been validated?
Baseline emissions	Electricity and heat	CO ₂	Included	Yes	Main emission source. In line with ACM0006

	Source	Gas	Is this source included within the project boundary in the PDD?	Is inclusion / exclusion from the project boundary justified in the PDD?	How has this been validated?
	generation	CH ₄	Excluded	Yes	Excluded for simplification. In line with ACM0006
		N ₂ O	Excluded	Yes	Excluded for simplification. In line with ACM0006
	Uncontrolled burning or decay of surplus biomass residues	CO ₂	Excluded	Yes	In line with ACM0006
		CH ₄	Included	Yes	In line with ACM0006. Project participants has decided to include this emission source, since case B1, B2, B3 has been identified as the most likely baseline scenario.
		N ₂ O	Excluded	Yes	Excluded for simplification. In line with ACM0006
Project emissions	On-site fossil fuel consumption.	CO ₂	Included	Yes	There is some consumption of fossil fuel for start-up operations. In line with ACM0006
		CH ₄	Excluded	Yes	Excluded for simplification. In line with ACM0006
		N ₂ O	Excluded	Yes	Excluded for simplification. In line with ACM0006
	Off-site transportation of biomass residues	CO ₂	Included	Yes	In line with ACM0006
		CH ₄	Excluded	Yes	Excluded for simplification. In line with ACM0006
		N ₂ O	Excluded	Yes	Excluded for simplification. In line with ACM0006
	Combustion of biomass for electricity and heat generation	CO ₂	Excluded	Yes	Assumed no influence in LULUCF sector. In line with ACM0006
		CH ₄	Included	Yes	In line with ACM0006. This emission source is included since CH ₄ emissions from uncontrolled burning or decay of biomass residues in the baseline scenario are included
		N ₂ O	Excluded	Yes	Excluded for simplification. In line with ACM0006
	Waste water from treatment of biomass residues	CO ₂	Excluded	Yes	Not applicable to the project. In line with ACM0006
		CH ₄	Excluded	Yes	Not applicable to the project. In line with ACM0006
		N ₂ O	Excluded	Yes	Not applicable to the project. In line with ACM0006
	Cultivation of land to produce biomass	CO ₂	Excluded	Yes	Not applicable to the project. In line with ACM0006

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	Source	Gas	Is this source included within the project boundary in the PDD?	Is inclusion / exclusion from the project boundary justified in the PDD?	How has this been validated?
	feedstock.	CH ₄	Excluded	Yes	Not applicable to the project. In line with ACM0006
		N ₂ O	Excluded	Yes	Not applicable to the project. In line with ACM0006

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.1	Has the PDD justified the inclusion/exclusion of all potential sources of GHG emissions as set out in the applied baseline methodology	Yes. PP has included information needed for the inclusion and exclusion of sources in PDD.	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.2	Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary?	<p>Chile, South America. VIII Region of Bío-Bío, Province of Ñuble, community of Ránquil, Nueva Aldea area.</p> <p>The project activity is located in the Nueva Aldea Industrial Complex site. The Nueva Aldea Industrial Project is located near the Nueva Aldea community area, Comuna of Ránquil, in the province of Ñuble. It is 30 km. west of the Chillán city and 28 km, south east of the Coelemu city in the VIII Region (Bío-Bío Region).</p> <p>A map determining the location of the project activity is included in the PDD.</p>	OK	OK
	Were any emission sources identified that will be affected by the project activity and are not addressed by the selected approved methodology? If so, was clarification of, revision to or deviation from the methodology approved in accordance with required procedures.	All sources are identified in the methodology ACM 0006. No emission sources were identified that will be affected by the project activity and are not addressed by the methodology.	OK	OK

3 Validation findings – Baseline and emission reductions

3.1 Baseline identification

The baseline identification has been validated as follows:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.1.1	Does the PDD identify the baseline, a scenario that represents the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed CDM project activity?	Yes, PDD identify baseline scenario, including all anthropogenic sources of GHG that would occur in absence of the project activity: <ul style="list-style-type: none"> - GHG emission from electricity and heat generation - GHG emission from uncontrolled burning or decay of surplus biomass residues. 	OK	OK
	Does the identified baseline conform to an allowed baseline under the applied methodology?	Yes, identified baseline is one of the alternatives given by ACM 0006.	OK	OK

3.2 Assessment of the validity of the original/current baseline

In accordance with the project standard, Project Participants shall assess and incorporate the impact of national and/or sectoral policies and circumstances existing at the time of requesting renewal of the crediting period on the current baseline GHG emissions, without reassessing the baseline scenario. Where data and parameters used for determining GHG emission reductions that are determined ex ante (and not monitored during the crediting period) are no longer valid, project participants shall update such data and parameters. The validity of the baseline and the parameters determined ex-ante shall be assessed in accordance with the 'Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period'. Each step of the tool was validated as follows:

Step 1: Assess the validity of the current baseline for the next crediting period

The Procedures for the renewal of the crediting period of a registered CDM project activity approved by the CDM Executive Board require assessing the impact of new relevant national and/or sectoral policies and circumstances on the baseline. The validity of the current baseline is assessed using the following Sub-steps:

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.1	Have any new national and/or sectoral policies or regulations entered into force since the time of registration of the project activity that could have an impact on the baseline or GHG emission reductions? Please list.	As correctly informed in the submitted PDD for revalidation Arauco Nueva Aldea phase 1, the baseline scenario is in compliance with relevant mandatory national and sectoral policies. Since the first validation until the current scenario at the revalidation stage. Electricity (P7): The sourcing of electric power from the grid (P7). There have been no new regulations or policies that prevent Sawmill and Panel board mills or other forest industrial facilities from obtaining electric power from the grid.	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		<p>Heat (H5): The generation of heat inside forest industrial facilities, using biomass residues (H5). There are no new regulations or policies that prevent Sawmill and Panel board mills or other forest industrial facilities that prevent them from generating heat using biomass residues.</p> <p>Biomass use (B1 B5): The natural decay or uncontrolled burning of unused biomass residues (B1). There have been no new regulations or policies that prevent the dumping or the uncontrolled burning of biomass residues in the open air. Also B5 (occurring in baseline and also project scenario) is in compliance with relevant regulations.</p> <p>New electric policies are in place, affecting the MWh price, not affecting the baseline scenario as explained in Step 1.2.</p>		
	Does the current baseline (used in the registered PDD for the first crediting period) comply with all relevant mandatory national and/or sectoral policies applicable at the time of requesting renewal of the crediting period?	Considering explained previously, it can be concluded that the current baseline (used in the registered PDD) complies with the national mandatory requirements.	OK	OK
	<p>If the current baseline does <i>not</i> comply with relevant mandatory national and/or sectoral policies, have the PPs assessed, based on the examination of current practice in the country or region in which the policies apply, whether those policies are systematically not enforced and that non-compliance with those requirements is widespread in the country or region?</p> <p>How was this validated?</p>	Not applicable, as the current baseline complies the mandatory requirements.	OK	OK
	If the current baseline is not in compliance with the relevant mandatory national and/or sectoral policies or if it cannot be shown that the policies are systematically not enforced and that non-compliance with those policies is widespread in the country or region, has the PP updated the baseline, as required by the tool?	Not applicable, as the current baseline complies the mandatory requirements.	OK	OK

Step 1.2: Assess the impact of circumstances

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.2	<p>Have the PPs:</p> <ul style="list-style-type: none"> assessed the impact of circumstances existing at the time of requesting renewal of the crediting period on the current baseline emissions (without reassessing the baseline scenario); 	<p>As mentioned in paragraph 112 of the methodology ACM0006 v14: for the second and third crediting period for a project activity, the continued validity of the baseline scenario (determined during the first crediting period) shall be assessed by applying the latest version of the tool 11 "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period". The PP has re-assessed the baseline according to ACM 0006 version 14.0.0 (section B.5 of PDD).</p> <p>The PDD submitted for revalidation describes the circumstances</p>	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	<ul style="list-style-type: none"> evaluated whether the conditions used to determine the baseline emissions in the previous crediting period are still valid assessed the availability of new fuels or raw materials and the impact of electricity or fuel prices in the identification of the current practice for the baseline emissions 	<p>existing at the time of requesting renewal of the crediting period. New Chilean policies are in place, and the PP has evaluated possible impacts on the baseline.</p> <p>Step 1.2 of the tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" is now properly explained in PDD section B.5.</p> <p>During 2003-2015 several laws and new energy policies have entered into force in Chile:</p> <ul style="list-style-type: none"> - Law 20805. Improves the system of tendering of electricity supply for customers subject to price regulations (27). - Resolución Exenta N°558, 2017. It complements and modifies Resolution No. 778, which establishes deadlines, requirements and conditions for setting average node prices (28) <p>This new policies were implemented in order to encourage the installation of new power plants of "non-conventional renewable energy" (ERNC in Spanish), mainly solar and wind energy, reducing the initial obstacles that this kind of energy had to face in order to compete in the Chilean markets.</p> <p>These new polices, and the decreasing construction costs of these kind of power plants (26), have had clear effects since 2014-2015, increasing the wind and solar participation in the Chilean electricity matrix (grossgeneration.xls, www.cne.cl) (12). This has meant that energy prices in new generation contracts have decreased from 110-150 USD/MWh in 2005 to 35 USD/MWh in 2017 (23) (24) (25).</p> <p>Even if biomass is also considered "non-conventional renewable energy", it can be confirmed that no new biomass plant (except for biogas) has been commissioned since 2015 (installedcapacity.xls from www.cne.cl) (13), and solar and wind power has doubled since 2016 (grossgeneration.xls, www.cne.cl) (12).</p> <p>It should be noted that, in November 2017, the two most important grids in Chile were connected. Initially the project was connected to SIC (central grid), where hydroelectric plants were an important source of energy. From November 2017 on, SIC were connected to SING (north grid), its energy mainly comes from fossil fuel sources. This means that EFcm from 2018 on is expected to increase for the effect of the SING in the project connected grid. Generating a drastic increment of the estimated emission reduction, followed for a gradual decreasing of the emission reduction due to new renewable energy plant connecting the grid (if ex-post calculation EFcm option were chosen). However, PP has chosen to keep EFbm and EFom fixed, therefore EFcm for the project will not increase by the effect of the two grids being connected. This is conservative.</p> <p>In conclusion:</p> <ul style="list-style-type: none"> - Even though the general situation in Chile has changed this does not impact the conditions used to determine the baseline emissions in the previous crediting period. PP has correctly evaluated this impact in the PDD section B.5. - Baseline scenario (determined during the first and second crediting period) is still valid. Only data and parameters applicable have been correctly up-dated as per new monitoring methodology of the 		

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		ACM0006 (Version 14.0). - PP has evaluated the availability of new technologies (solar and wind power) and the decreasing installation prices. These are the technologies with better expectations in the Chilean market.		
	If the baseline scenario identified in the registered PDD was the continuation of the current practice without any investment, have the PPs undertaken an assessment of the changes in market characteristics on the baseline?	Not Applicable, as the baseline scenario identified in the registered PDD is the construction of a conventional pulp mill without surplus electric power generation capacity (not the continuation of previous practices with no investment).	OK	OK
	If the new circumstances make a continued validity of the current baseline not plausible, then has the PP updated the baseline for the subsequent crediting period? How has this updated baseline been validated?	Not Applicable. Since new circumstances do not alter the validity of the current baseline.	OK	OK

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested

This sub-step should only be applied if the baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment(s) without any investment, and the project proponents or third party (or parties) would undertake an investment later due, for example, to the end of the technical lifetime of the equipment(s) before the end of the crediting period or the availability of a new technology.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.3	Is the baseline scenario in the registered PDD: <ul style="list-style-type: none"> the continuation of use of the current equipment(s) without any investment; <u>and</u> the project proponents or third party (or parties) would undertake an investment later due, for example, to the end of the technical lifetime of the equipment(s) before the end of the crediting period, or the availability of a new technology? <p>If not, then the rest of this step is not applicable.</p>	The baseline scenario identified in the registered PDD is the construction of a conventional pulp mill without surplus electric power generation capacity (not the continuation of current equipment with no investment).	OK	OK
	Have the PPs assessed whether the remaining technical lifetime of the equipment that would have continued to be used in the absence of the project activity exceeds the crediting period for which renewal is requested? How was this validated?	Not applicable as noted above. According to C.1.2 of the registered PDD, the lifetime of the equipment is minimum of 30 years, considered from 29/09/2003 (start date of the project activity).	NA	NA

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>If the baseline scenario of the project activity is the continuation of use of the current equipment(s) without any investment and the projects proponents or third party(ies) will undertake an investment later, but before the end of a crediting period, then the current baseline needs to be updated for that crediting period or the crediting of emission reductions should be limited to the period before the baseline equipment would cease its operation.</p> <p>Has this been done in the case of the project?</p>	Not applicable	NA	NA
	<p>Have the PPs taken into consideration the market penetration of different technologies. Have the PPs evaluated the penetration rate of different technologies that are available in the market and evaluate how they could affect the baseline?</p> <p>How was this validated?</p>	PDD includes an analysis of the penetration of the new technologies, and this would not affect the baseline of the project. Mainly solar and wind energy have an important penetration at revalidation, energy from coal is expected to decrease, (grossgeneration.xls, www.cne.cl) (12).	OK	OK

Step 1.4: Assessment of the validity of the data and parameters

PPs are required to assess whether data and parameters that were only determined at the start of the crediting period and not monitored during the crediting period are still valid or whether they should be updated. Updates should be undertaken in the following cases:

- Where IPCC default values are used, the values should be updated if any new default values have been adopted and published by the IPCC, for example, in guidelines for national GHG inventories, IPCC assessment report or special reports by the IPCC;
- Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and can not be updated because the historical situation does not exist anymore as a result of the CDM project activity.

The validity of the data and parameters is validated in section 7.4 below.

Step 2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline and Step 2.2: Update the data and parameters

The PP has updated the current baseline emissions for the subsequent crediting period, based on the latest approved version of the methodology. ERM CVS confirmed that the baseline emissions were updated in line with the context of the sectoral policies and circumstances that are applicable at the time of request for renewal of the crediting period.

If the application of Step 1.4 showed that the data and/or parameter(s) that were only determined at the start of the crediting period and not monitored during the crediting period are not valid anymore, project participants should update all applicable data and parameters, following the guidance in Step 1.4. Please see below for validation of the parameters set ex-ante which are used to calculate baseline emissions.

3.3 Data and Parameters set Ex-ante

Each parameter required by the methodology and tools for this project is listed and validated in detail as follows:

Parameter required as per meth / tools	Description of parameter (as per meth/ tools)	Included in revised PDD?	Title & description in revised PDD in line with meth/ tools?	Data unit correctly expressed in revised PDD?	Value needs to be reassessed?	Value in revised PDD correct & provides for conservative estimate of Emission Reductions? How was this validated?	Measurement method correctly described in revised PDD (if applicable)
CAP _{HG,h}	Baseline capacity of heat generator h (GJ/h)	yes	yes	yes	no	<p>This parameter reflects the design maximum heat generation capacity (in GJ/h) of the baseline heat generator h. In the case of this project activity, the applied value is based on plant design data for the baseline scenario:</p> <p>CAP_{HG,h} = 420.47 (GJ/h) = 150 (t/h) * 2.80317 (GJ/ton)</p> <p>Where: 150ton/h would be the steam flow (low pressure) that would be generated in baseline scenario according original PPD (validated first crediting period) (1), Page 8.</p> <p>The applied value for the enthalpy is determined based on thermodynamic conditions of saturated steam at operational set points: pressure at 30 bar, according the original PDD (1st crediting period) page 8, and keep during the second crediting period (2CP PDD page 6).</p> <p>This parameter is fixed ex-ante and it is only used in eq 30 ACM 0006 v14 as constrain.</p>	yes
LFC _{HG,h}	Baseline load factor of heat generator h (ratio)	yes	yes	yes	no	<p>The value 0.82 applied for LFC_{HG,h} results of the following formula:</p> <p>LFC_{HG,h} = 123,5 t/h / 150 t/h = 0.82</p> <p>The 123.5 t/h corresponds to the average heat generation of the heat generator (See energy and mass balance informed in the 2CP validated PDD, figure 4) and the 150 t/h corresponds to the design maximum heat generation (PDD, page 8 first crediting period). Information is correctly explained in the PDD.</p>	Yes
GWP _{CH4}	Global Warming Potential for CH ₄ .	yes	yes	yes	No	25 tCO ₂ e/tCH ₄ is the GWP according the last COP/MOP decision	Yes
EF _{BR,n,y}	CH ₄ emission factor for uncontrolled burning of the biomass residues	yes	yes	yes	No	<p>According to monitoring methodology of ACM0006 v14 measured or default values may be used.</p> <p>PP performed a measurement and kept it fixed for the entire 2nd and 3rd</p>	Yes

Parameter required as per meth / tools	Description of parameter (as per meth/ tools)	Include d in revised PDD?	Title & description in revised PDD in line with meth/ tools?	Data unit correctly expressed in revised PDD?	Value needs to be reassessed?	Value in revised PDD correct & provides for conservative estimate of Emission Reductions? How was this validated?	Measurement method correctly described in revised PDD (if applicable)
	category n during the year y.					crediting period. Measurements were performed in March 2009 using the methodology developed by Hao et al. [1996] (29), as described in appendix 5 of PDD currently being validated (3). Information results and uncertainty were verified and found correct. Table 3 of ACM 0006 v14 is correctly applied. Industrial biomass 930 +/- 167 (KgCH ₄ /TJ) (according to measurement-refer 29) x 0.94 (table3 ACM 0006)= 874.2 (KgCH ₄ /TJ) For forestry residues: 114 +/- 114 (KgCH ₄ /TJ) (according to measurement-refer 29) x 0.82 (table3 ACM 0006)= 93.48(KgCH ₄ /TJ)	
EF _{CH₄,BR}	CH ₄ emission factor for the combustion of biomass residues in the project plant (tCH ₄ /GJ)	yes	yes	yes	No	According to the monitoring methodology of ACM0006 v14, default values may be used. Table 4 and Table 5 of the methodology are correctly applied. EF _{CH₄,BR} = 30 KgCH ₄ /TJ * 1,37=41,1 KgCH ₄ /TJ.	OK
Non- monitored parameters from Tool 7 "Tool to calculate the emission factor for an electricity system (Version 07.0)"							
EF _{grid,BM,y}	CO ₂ Build Margin emission factor of the grid. Not included in meth/tool	yes	yes	yes	No	This parameter remains fixed second and third crediting period, as per Step 5 of Tool 7. 0.695(tCO ₂ /MWh) Found correct.	Yes
EF _{grid,OM,y}	Simple adjusted operating margin CO ₂ emission factor in year y. Not included in meth/tool	yes	Yes	Yes	Yes	PP has chosen option (a) paragraph 42. Ex-ante EFom, using 3-year generation-weighted average, based on the most recent data available at the time of re- validation. In the previous crediting period PP had chosen the ex-post option. This change of option is allowed by AM_CLA_280 (11). Considering that : - the North and Central grid were connected in November 2017, in a new grid (SEN grid) - North grid was mainly based on fossil fuel, Then, the EFom of the grid connected to the project (Central Grid) will increase from 2018 on. The ex-ante option (2015-2017) is a conservative option. Calculation are in EF Emission Factor 2015, 2016, 2017 xls (18) were verified. PP has chosen the Simple adjusted operating margin since the first crediting period. The results of this calculation is the same as the Simple operating margin	OK

Parameter required as per meth / tools	Description of parameter (as per meth/ tools)	Include d in revised PDD?	Title & description in revised PDD in line with meth/ tools?	Data unit correctly expressed in revised PDD?	Value needs to be reassessed?	Value in revised PDD correct & provides for conservative estimate of Emission Reductions? How was this validated?	Measurement method correctly described in revised PDD (if applicable)
						<p>because λ (lambda) = 0</p> <p>The grid emissions factor has been calculated ex-ante with information available at the time of PDD submission for renewal of crediting period (2015-2017). This is in line with step 5 of the tool to calculate the EF, paragraph 72 (a).</p> <p><i>2015 Emission Factor.xls (18), Emission factors of each power plant are calculated using the gross electricity generation and not using the net electricity injected to the grid. PP decided to keep it as it is, because using gross electricity generation is conservative (versus using net electricity generation)</i></p> <p>The rest of the calculation was checked and found correct.</p> <p>Gross Electricity generation: this has been validated against the CNE records of Energy Supply (grossgeneration.xls https://www.cne.cl/estadisticas/electricidad/) (12)</p> <p>2015-2016-2017. The gross electricity generation figures were compared to the raw data. No differences were found.</p> <p>Internal electricity consumption of each plant connected to the grid is obtained as a % of auxiliary consumption: Potencia suficiencia.xls. (15). Data were obtained from https://www2.coordinador.cl/informe-documento/mercados/potencia-de-suficiencia-2/</p> <p>Several factors of internal consumption were compared to raw data for 2015, 2016 and 2017 and no differences were found.</p> <p>Lambda calculations: Data and calculation of lambda were checked. Hourly power generation data were compared to raw data (real dia.xls) (16) https://www2.coordinador.cl/sistema-informacion-publica/portal-de-operaciones/operacion-real/generacion-real-de-las-centrales/ (Cordinador Electrico Nacional , CEN) and no differences were found.</p> <p>EFco2, fossil fuel (tCO2/GJ). It is used the lower limit EF: IPCC default</p>	

Parameter required as per meth / tools	Description of parameter (as per meth/ tools)	Include d in revised PDD?	Title & description in revised PDD in line with meth/ tools?	Data unit correctly expressed in revised PDD?	Value needs to be reassessed?	Value in revised PDD correct & provides for conservative estimate of Emission Reductions? How was this validated?	Measurement method correctly described in revised PDD (if applicable)
						<p>values at the lower limit of the uncertainty at a 95 per cent confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories (17). This is in line with tool 7, v7, since values provided by the fuel supplier of the power plants and regional or national average default values are not available. Values used for natural gas, diesel, fuel oil, and coal were compared to IPCC data and found correct.</p> <p>Weighted average of EF_{CM} 2015-2016-2017 was performed: 0.7666 (tCO₂/MWh). This is found correct. (18)</p>	
EF _{grid,CM,y}	CO ₂ emission factor for grid electricity during year y Not included in meth/tool	Yes	Yes	yes	Yes	<p>Calculation of EF_{CM} was calculated using Wom=0,25 and Wbm=0,75 as per Tool 7 v7 paragraph 86 (b).</p> <p>0.25*0.7666 (tCO₂/MWh)+ 0,75* 0.6953 (tCO₂/MWh) = 0.7131 (tCO₂/MWh). This is found correct.</p>	OK
FC _{i,m,y} FC _{i,k,y}	Amount of fuel type i consumed by power plant/unit m and k in year y.	Yes	Yes	Yes	Yes	<p>Fossil fuel consumption of power plants connected to the grid Source: FFconsumption.xls (Consumos-de-Combustibles-SEN.xls) (19) public information from Comisión Nacional de Energía https://www.cne.cl/estadisticas/electricidad/. Fossil fuel consumption figures were compared to raw data, sampling 20 annual consumptions (2015-2017) and no differences were found.</p>	Yes
NCV _{i,y}	Net calorific value (energy content) of fuel type i in year y.	Yes	Yes	Yes	Yes	<p>NCV_{i,j} fossil fuel: IPCC default values are used; lower limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories (17). This is in line with tool 7 v7 (EFgrid tool), since values provided by the fuel supplier not available, and national energy balance are not available since 2013. Values used for natural gas, diesel, fuel oil, and coal were compared to IPCC and found correct.</p>	yes
Data and parameters not monitored for the Tool "Project and leakage emissions from transportation of freight (Version 01.1.0)".							
EF _{CO2,f}	Default CO ₂ emission factor for freight	Yes	Yes	Yes	yes	<p>PP has chosen option B of the Tool 12: Using conservative default values.</p> <p>Light vehicles 245(g CO₂/t km) Heavy vehicles 129(g CO₂/t km)</p>	Yes

Parameter required as per meth / tools	Description of parameter (as per meth/ tools)	Include d in revised PDD?	Title & descripti on in revised PDD in line with meth/ tools?	Data unit correctly expressed in revised PDD?	Value needs to be re-assesse d?	Value in revised PDD correct & provides for conservative estimate of Emission Reductions? How was this validated?	Measureme nt method correctly described in revised PDD (if applicable)
	transportati on activity f						

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.4.1	<p>Have the parameters required by the methodology / tools been correctly described in the PDD?</p> <p>Have the values been reassessed, where appropriate, and are the reassessed values valid and applicable?</p>	<p>Yes, all parameters required by the methodology/tools have been correctly described in the PDD section B.6.2.</p> <p>Values have been reassessed, where appropriate.</p> <p>ERM CVS confirmed that the parameters required by the methodology / tools have been correctly described in the PDD. The values have been reassessed, where appropriate, and the reassessed values are valid and applicable</p>	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.5.2	<p>Has the PP correctly applied all relevant calculations as required by the methodology and associated tools?</p> <p>Does the PDD transparently explain how the procedures provided in the Methodology and applicable Tools are applied by the proposed project activity? (i.e. are the required steps clearly followed?)</p>	<p>Calculation has been verified. Refer CAR 2 closed.</p> <p>Yes, PP has applied correctly applied relevant calculations and has explained transparently in PDD, according to ACM 0006 v14 and required tools. All steps involved in methodology and tools are clearly explained in PDD (2) and ER calculations (3).</p> <p>ERM CVS confirmed that the PP correctly applied all relevant calculations as required by the methodology and associated tools. The PDD transparently explains how the procedures provided in the Methodology and applicable Tools are applied by the proposed project activity.</p>	CAR 02 closed.	OK
	Where the methodology provides for selection between different options for equations; is every choice of options for calculating project emissions, baseline emissions and leakage offered by the methodology correctly justified in the context of the project activity and baseline scenario?	<p>Methodological choices from ACM0006 “Consolidated methodology for electricity and heat generation from biomass” have been further validated as follows:</p> <p>Step 1.5: Determine the efficiencies of heat generators, and efficiencies and heat-to-power ratio of heat engines.</p> <p>Option 1 is taken: Option F in the latest approved version of the “Tool to determine the baseline efficiency of thermal or electric energy generation systems”.</p> <p>¹(BL,HG,BR,low pressure boiler) Low pressure power boiler 85%</p>	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		<p>Option 2 and 3 are not applicable because they are only applicable to heat engines and heat generators that were operated at the project site prior to the implementation of the CDM project.</p> <p>This has been explained in PDD section B.6.1. Explanation of methodological choices.</p> <p>Step 1.6: Determine the emission factor of on-site electricity generation with fossil fuels. This assessment is not applicable. There is no fossil fuel based power generation identified as part of the baseline scenario.</p> <p>Step 5: Determine the baseline emissions due to uncontrolled burning or decay of biomass residues.</p> <p>$EF_{BR,n,y}$: PP may undertake measurements or used reference default values. PP is using a measured value obtained at the beginning of the 2st crediting period and use during second and third crediting period. Methodology does not state a monitoring frequency for this parameter. A conservative factor given in table 3 of the methodology is used as well.</p> <p>This has been explained in PDD section B.6.1. Explanation of methodological choices.</p> <p>Point 5.6.5: determination of $PE_{BR,y}$</p> <p>This parameter is included only if baseline emissions due uncontrolled burning (previous parameter) are also included.</p> <p>$EF_{CH_4,BR}$: PP may conduct measurement or used default values. PP has chosen default values as per Table 4 and 5 of the methodology.</p> <p>$EF_{CH_4,BR} : 30 \times 1,37 \text{ (kg CH}_4\text{/TJ)} = 41.1 \text{ (kg CH}_4\text{/TJ)}$</p> <p>This has been explained in PDD section B.6.1. Explanation of methodological choices.</p> <p>Tool to calculate the emission factor for an electricity system</p> <p>Step 3: Select a method to determine the operating margin (OM).</p> <p>PP have chosen an option from paragraph 38 b Simple adjusted OM. This is the option taken since the first crediting period. As $\lambda=0$, for the third crediting period, this values results equal to Simple OM (Option paragraph 38 a).</p> <p>According to paragraph 42 of the tool, the simple adjusted OM has the (a)ex-ante or (b)ex-post calculation. PP has chosen (a) ex-ante calculation of EF om and hence it remains fixed for the rest of the crediting period. This is a different option than taken during first and second crediting periods. This change of option is allowed by AM_CLA_280 (11). Considering that :</p> <ul style="list-style-type: none"> - the North and Central grid were connected in November 2017, in a new grid (SEN grid) 	OK	

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		<p>- North grid was mainly based on fossil fuel, Then, the EF_{OM} of the grid connected to the project (Central Grid) will increase from 2018 on. The ex-ante option (2015-2017) of EF_{OM} is therefore a conservative option.</p> <p>Step 4: Calculate the operating margin emission factor according to the selected method.</p> <p>PP used:</p> <p>EF_{grid,OM-adj,y}: Option A . Use information based on the net electricity generation and a CO₂ emission factor for each power unit.</p> <p>EF_{EL,m,y}: Option A1. Use information based on fuel consumption and electricity generation for each power unit m.</p> <p>Step 5: Calculate the build margin (BM) emission factor</p> <p>Option 2 is used. EF_{grid,BM,y} is calculated ex-ante and remains fixed for the second and third crediting period. For the first crediting period, PP calculated the build margin emission factor ex post (up-dated annually). For the second crediting period, the build margin emission factor was duly updated based on the most recent information available at the time, and remains fixed for the third crediting period.</p> <p>Step 6. Calculate the combined margin emission factor. For calculation of EF_{grid,CM,y} - PP uses Option (a), weighted average CM method, in line with the options taken during previous crediting periods.</p> <p>Methodological tool “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” (Version 03)</p> <p>Option B: The CO₂ emission coefficient COEF_{i,y} is calculated based on net calorific value and CO₂ emission factor of the fuel type i, as follows:</p> $COEF_{i,y} = NCV_{i,y} \times EF_{CO2,i,y}$ <p>Methodological tool: Project and leakage emissions from transportation of freight, Version 01.1.0</p> <p>Option B: Using conservative default values for EF Emission factor (g CO₂/t km)</p> <p>All options are duly explained and justified in section B.6.1 of the PDD.</p>		
	Are the formulae required for the determination of project emissions, baseline emissions and leakage correctly presented in a complete and transparent manner, enabling a complete identification of parameters to be used and / or monitored?	Yes, all equations for determination of emissions reduction, including baseline and project emission are included in Section B.6.1. Leakage emissions are not applicable for this project.	OK	OK

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	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>Are detailed calculations provided in a traceable spreadsheet showing relevant information?</p> <p>Is the table of emission reductions in the PDD (section B.6.4) consistent with the calculations?</p>	Table of emission reduction is consistent with the calculation spreadsheet given. (3).	OK	OK
	Can the calculation of emission reductions be replicated using the data and parameters supplied in the PDD?	Yes. ERs calculation.xls (3) has been checked and found correct.	OK	OK

4 Validation Findings - Monitoring Plan

4.1 Compliance of the monitoring plan with the approved methodology

Completeness of monitoring parameters

The monitoring parameter(s) required by the methodology and applicable tools for this type of project is/are:

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence and explanation if any are excluded from the monitoring plan)				
ACM 0006 v14. "Consolidated methodology: electricity and heat generation from biomass"						
20 Biomass categories and quantities used in the project activity.	Biomass categories and quantities used in the CDM project activity.	1 Sludge offsite . Fate B5 in baseline. Verified on site: it is transported from the Nueva Aldea phase 2 in containers and it is measured in a weighbridge where weight is duly recorded in the information system (called RMadera).				
		12041 (BDt /y) is informed. Data obtained from previous monitoring period 2014-2015				
		<table><tr><td>Mix of sawdust and bark from off-site industrial operations, electricity generation.</td><td>242.234</td></tr><tr><td>Mix of sawdust and bark from forestry operations, electricity generation.</td><td>7.235</td></tr></table>	Mix of sawdust and bark from off-site industrial operations, electricity generation.	242.234	Mix of sawdust and bark from forestry operations, electricity generation.	7.235
		Mix of sawdust and bark from off-site industrial operations, electricity generation.	242.234			
		Mix of sawdust and bark from forestry operations, electricity generation.	7.235			
		2 Mix of sawdust and bark from on-site industrial operations. Fate B5 in baseline.				
		According to MP, part of the biomass: mix of sawdust and bark from internal industrial operation will be measured in weighbridge. This was confirmed during the site visit.				
		Other part of the internal biomass: sander dust from pine only will be transported directly to the power boiler using a closed pipeline due to safety reasons, and it is measured by a proper and calibrated weight meter at the entrance of the power boiler. This was confirmed during the site visit.				
		98,813 (BDt /y) is informed. Data obtained from previous monitoring period 2014-2015				
		3 Mix of sawdust and bark from on-site industrial operations. Fate B1 in baseline scenario.				
The biomass corresponding to category 3 will be given by the total measurement of biomass residues (category 2 and category 3) minus the amount of biomass residues of category 2 which will be calculated from the heat demanded by the facility processes using equation 14 of the ACM0006 (Version 14.0).						
18,859 (BDt /y) is informed. Data obtained form previous monitoring period 2014-2015						
4 Mix of sawdust and bark from off-site industrial operations. Fate B1 in baseline scenario.						
The flow of the mix of sawdust and bark from off-site industrial sites transported by trucks towards the plant will be measured at the entrance of the plant by a weighbridge. This was confirmed on site, also the record system that includes: weight, volume, origin and type of biomass was confirmed on site. MP duly included accuracy, frequency and responsible.						
242,234 (BDt /y) is informed. Data obtained from previous monitoring period 2014-2015						
5 Mix of sawdust and bark from forest operations. Fate B1-B3 in baseline scenario.						

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence and explanation if any are excluded from the monitoring plan)
		<p>The same measurement method that 4. Previously described.</p> <p>7,235 (BDt /y) is informed. Data obtained from previous monitoring period 2014-2015</p> <p>Accuracy, frequency and responsible defined.</p>
21 For biomass residues categories for which scenarios B1, B2: or B3: is deemed a plausible baseline alternative, project participants shall demonstrate that this is a realistic and credible alternative scenario	<p>- Quantity of available biomass residues of type n in the region</p> <p>- Quantity of biomass residues of type n that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region</p> <p>- Availability of a surplus of biomass residues type n (which cannot be sold or utilized) at the ultimate supplier to the project and a representative sample of other suppliers in the defined geographical region</p>	<p>Included in Monitoring Plan.</p> <p>CAR 1. Biomass analysis in the region is not available in PDD submitted for revalidation CAR 1 is raised.</p> <p>According to the monitoring methodology, parameter 21, project participants shall demonstrate, at the time of validation, that biomass residues categories for which scenarios B1, B2 or B3 is deemed a plausible baseline alternatives, is a realistic and credible alternative scenario. This is performed as per Tool 16 Methodological tool: Project and leakage emissions from biomass, v4. Paragraph 42 (e) (i) demonstrate that the total quantity of that type of biomass residues annually available in the project region is at least 25 per cent larger than the quantity of biomass residues which is utilized annually in the project region (e.g. for energy generation or as feedstock), including the project facility.</p> <p>PP includes this information in PDD v5 (2), in section B.6.3. The PP performed a summary of the quantity of biomass residues available and the quantity of biomass residues utilized in the region VIII (for industrial biomass residues and forestry biomass residues).</p> <p>For forest biomass consumptions:</p> <p>PP has submitted the document: Analysis of the current and future consumption situation of forest biomass for generation in Chile (32, 0.50).</p> <p>Data used are obtained from page 20 (for Region VIII). $620.119 \text{ BDt/yr} / 0,43 \text{ (BDT/ m3st)} = 1.442.137 \text{ m3st/yr}$ As more recent data concerning forest consumption in the region was not available, this 2014 value was applied for 2017.</p> <p>Considering that the most available biomass residues in the region is the industrial biomass (sawdust and bark), and the forest biomass residues is more costly and operationally more difficult to extract, this balance is considered suitable.</p> <p>-For industrial residues generation, some Arauco internal data were used and referred and public statistical information from INFOR is used (Instituto Nacional Forestal, Forestry National Institute). Some sampling was performed and no errors were found.</p> <p>-Anuario del aserrio 2018 (Sawmill Yearbook 2018) (30): https://wef.infor.cl/publicaciones/publicaciones.php#P1 containing forestry production and residues generation information for 2017 and 2016. Some sampling was performed and no errors were found.</p> <p>- Estadísticas forestales 2006 (Forestry statistics 2006) (31): residues factors, efficiencies and other factors for different kind of wood industry. More recent data is not available as public information. Some sampling was performed and no errors were found.</p> <p>For forest residues is was more difficult to find yearly information, therefore data from 2014-2016 was used for the 2017 calculation. Calculations were performed in 'Index biomass surplus Nueva Aldea 1 2017 .xls' (32). The calculations were checked and demonstrated that the total quantity of that type of biomass residues annually available in the project region is at least 25 per cent larger than the quantity of biomass residues which is utilized annually in the project region.</p> <p>CAR 1 was closed.</p>

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence and explanation if any are excluded from the monitoring plan)
22 BR _{PJ,n,y}	Quantity of biomass of category n used in the CDM project activity in year y (tonnes on dry-basis).	Same as described in parameter 20 "Biomass categories and quantities used in the project activity"
23 BR _{B1/B3,n,y}	Quantity of biomass residues of category n used in the CDM project activity in year y for which the baseline scenario is B1 or B3 (tonnes on dry-basis).	Same as described in parameter 20 "Biomass categories and quantities used in the project activity"
24 BR _{B4,n,y}	Quantity of biomass residues of category n used in the CDM project activity in year y for which the baseline scenario is B4 (tonnes on dry-basis)	0 tonnes It is not foreseen that these biomass residues types will be used in the project activity in the future. However, the Project Participant will include this parameter in the monitoring plan, in case the situation changes in the future.
25 BR _{B5,n,y}	Quantity of biomass residues of category n used in the CDM project activity in year y for which the baseline scenario is B5 (tonne on dry-basis)	Same as described in parameter 20 "Biomass categories and quantities used in the project activity"
26 EF _{BR,n,y}	CH ₄ emission factor for uncontrolled burning of the biomass residues category n during the year y (tCH ₄ /GJ)	Required by the monitoring methodology, not included in B.7.1 however included in B.6.2. PP has conducted measurement prior to 2nd crediting period and the value remains fixed for the crediting period.
27 EF _{FF,y,f}	CO ₂ emission factor for fossil fuel type f in year y (t CO ₂ /GJ)	Not included in the MP as stated in ACM0006. It is included in the MP as stated in: <ul style="list-style-type: none"> Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion. Upper limit of the IPCC is used.

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence and explanation if any are excluded from the monitoring plan)
28 $EF_{CH_4, BR}$	CH ₄ emission factor for the combustion of biomass residues in the project plant (tCH ₄ /GJ)	Monitoring methodology allows the default values or measured data using. PP is using default values, and includes this parameter in B.6.2., not in B.7.1.
29 $EF_{CO_2, LE}$	CO ₂ emission factor of the most carbon intensive fossil fuel used in the country (t CO ₂ /GJ)	Not applicable, as LE = 0
30 $HC_{BL, y}$	Baseline process heat generation in year y (GJ)	<p>Correctly included in the MP. Responsible, accuracy and frequency is well described in line with ACM 0006.</p> <p>This parameter is obtained as the difference of the enthalpy of the process heat supplied to process heat loads in the project activity minus the enthalpy of the feed-water, the boiler blow-down and any condensate return to the heat generator.</p> <p>Enthalpies were confirmed through steam tables using temperature and pressure and found correct. 1,704,698(GJ/y). Based in monitored and verified data 2014 and 2015.</p>
31 $EL_{PJ, gross, y}$	Gross quantity of electricity generated in all power plants which are located at the project site and included in the project boundary in year y (MWh)	<p>Correctly included in the MP. Responsible, accuracy and frequency is well described in line with ACM 0006.</p> <p>$EL_{PJ, gross, y} = 200,001$ (MWh) is used. Based in monitored and verified data for 2014 and 2015. Also confirmed using public information of imported energy (22)</p> <p>This parameter will be measured using proper and dedicated electric meters</p>
32 $EL_{PJ, imp, y}$	Project electricity imports from the grid in year y (MWh)	<p>Correctly included in the MP. Responsible, accuracy and frequency is well described in line to ACM 0006.</p> <p>For this parameter the energy import from the grid to the power plant and for Nueva Aldea 1 process is used.</p> <p>Note that this parameter is used for Baseline emissions according equation 3 of the Methodology 0006 and for Project emissions as equation 34, therefore this value cancels itself out when calculating emission reductions. $ER = BE - PE$.</p> <p>5,429 (MWh) data monitored and verified 2014-2015 verified on site. This parameter will be continuously measured using proper electric meters.</p>
33 $EL_{PJ, aux, y}$	Total auxiliary electricity consumption required for the operation of the power plants at the project site in year y (MWh)	<p>Correctly included in the MP. Responsible, accuracy and frequency is well described in line to ACM 0006.</p> <p>Data used 56,403 (MWh/yr) was obtained from previous verified monitoring reports 2014-2015: 2013: 56.018(MWh) 2014: 56.788(MWh).</p> <p>This parameter will be continuously measured by an electricity meter for most of auxiliary equipment. Only the biomass transport belt cannot be directly measured, because this equipment is connected to the mill electricity system. The installed capacity times 8760 hours of operation per year (24 hours/day) will be used to calculate conservatively the auxiliary electricity import as per Box 2, paragraph 45 of ACM 0006 v14. This method was also used</p>

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence and explanation if any are excluded from the monitoring plan)										
		during paste crediting period.										
34 $NCV_{BR,n,y}$	Net calorific value of biomass residue of category n in year y (GJ/tonne on dry-basis)	<p>The methodology ACM 0006 includes this as a parameter not monitored (parameter 17) and also as a parameter monitored (parameter 34), indicating this parameter may be measured or based on default values in a conservative manner.</p> <p>The MP defines six monthly monitoring, taking at least three samples for each measurement in reputed laboratory. The monitoring methodology proposed by the PP, is therefore considered to be suitable.</p> <p>$NCV_{BR,n,y}$ (GJ/tonne of dry matter)</p> <p>Ex-ante values are based in monitored and verified data 2014 2015. (Note: final monitoring report consider this data adjusted. Because frequency requirements were not met. However for determination of ex-ante ERs for 3CP monitored data without correction were used.</p> <table><tr><th>Biomass residues type</th><th>Net calorific value (GJ/tonne of dry matter)</th></tr><tr><td>Sludge from industrial operations.</td><td>13.96</td></tr><tr><td>Mix of sawdust and bark from industrial operations. On site</td><td>18.60</td></tr><tr><td>Mix of sawdust and bark from industrial operations. Off site.</td><td>14.69</td></tr><tr><td>Mix of sawdust and bark from forest operations. Off site</td><td>18.92</td></tr></table>	Biomass residues type	Net calorific value (GJ/tonne of dry matter)	Sludge from industrial operations.	13.96	Mix of sawdust and bark from industrial operations. On site	18.60	Mix of sawdust and bark from industrial operations. Off site.	14.69	Mix of sawdust and bark from forest operations. Off site	18.92
Biomass residues type	Net calorific value (GJ/tonne of dry matter)											
Sludge from industrial operations.	13.96											
Mix of sawdust and bark from industrial operations. On site	18.60											
Mix of sawdust and bark from industrial operations. Off site.	14.69											
Mix of sawdust and bark from forest operations. Off site	18.92											
Tool 12. Methodological tool: Project and leakage emissions from transportation of freight. Version 01.1.0												
Df,m	Return trip distance between the origin and destination of freight transportation activity f in monitoring period m (Kilometre)	<p>PP will monitor this through road maps. Methodological tool: Project and leakage emissions from transportation of freight, states once for each freight transportation activity f for a reference trip using the vehicle odometer or any other appropriate sources (e.g. on-line sources) (to be updated whenever the distance changes). Road maps are considered suitable for monitoring round trip distances. MP is stated as per tool 12.</p> <p>It was confirmed on site, PP records every truck in an information system (called RMadera), detailing mass of freight transported, and location of the origin of the freight.</p> <p>Data used for ex-ante calculation is based on monitored and verified data 2014-2015.</p> <p>122 Kms (39).</p>										
FRf,m	Total mass of freight transported in freight transportation activity f in monitoring period m.	<p>Data will be measured using a weighbridge at each entrance, by the PP. Accuracy, frequency and responsibilities are defined in the monitoring plan, also in line with parameter 20. It may be noticed that the measurement method is similar to that of parameter 20 (biomass from offsite). However parameter 20 uses dry matter, and $FR_{f,m}$ uses wet matter. As part of the external industrial biomass is supplied to the power plant through a conveyor belt, this external biomass is not considered for the tool 12 calculation.</p> <p>This is estimated as a wet tonne, using monitored data 2014-2015. (39)</p> <table><tr><th>Biomass residues type</th><th>Biomass residues Quantity (tonnes/y)</th></tr><tr><td>Sludge</td><td>51,568</td></tr><tr><td>Mix of sawdust and bark from industrial operations.</td><td>206,106</td></tr><tr><td>Mix of sawdust and bark from forest operations.</td><td>15,212</td></tr></table>	Biomass residues type	Biomass residues Quantity (tonnes/y)	Sludge	51,568	Mix of sawdust and bark from industrial operations.	206,106	Mix of sawdust and bark from forest operations.	15,212		
Biomass residues type	Biomass residues Quantity (tonnes/y)											
Sludge	51,568											
Mix of sawdust and bark from industrial operations.	206,106											
Mix of sawdust and bark from forest operations.	15,212											
"Tool to calculate project or leakage CO2 emissions from fossil fuel combustion", Version 03.												

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence and explanation if any are excluded from the monitoring plan)
$FC_{i,j,y}$ $FC_{i,project\ plant,y}$ Project plant	Quantity of fuel type i combusted in process j during the year y J= project plant	<p>This parameter is divided in 3 parameters: where process j are:</p> <ul style="list-style-type: none"> - Project plant: fossil fuel consumed by the power plant. - Project site: <ul style="list-style-type: none"> o Forestry operation: subcontractors that process the biomass residues from forest operations consumed in the project activity o On-site transportation of the biomass : Fossil fuel used in loaders and trucks or from subcontractor's transportation of biomass at the project site. - Biomass processing <p>For the first parameter, project plant: fossil fuel consumed by the power plant. Monitoring procedures and frequency (continuously monitored) meets "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" requirements.</p> <ul style="list-style-type: none"> • 579,794 (l/y) equivalent to 487 (ton/y) of diesel is used. Using data 2014-2015 (verified data) (43) • 240(l/y) equivalents to 0.13 (ton/y) of LPG is used. Using data 2015 (verified data) (43). This is used for starting the initial flame of the power boiler (confirmed on site).
$FC_{i,j,y}$ $FC_{i,project\ site,y}$ Project site	Quantity of fuel type i combusted in process j during the year y J=project site	<p>For the second parameter, project site: on-site transportation of biomass. Fossil fuel used in loaders and trucks or from subcontractors transportation of biomass at the project site</p> <p>Monitoring procedures and frequency (continuously monitored) meets "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" requirements. This will be in charge of subcontractors.</p> <p>120,689 (l/y) equivalent to 101.38 (ton/y), of diesel according to 2014-2015 verified data. (44)</p>
$FC_{i,j,y}$ $FC_{i,Biomass\ processing,y}$ Biomass processing	Quantity of fuel type i combusted in process j during the year y J= Biomass processing	<p>Biomass processing: Using diesel consumed for processing biomass (from forestry operation), and biomass. This value applied for ex-ante ERs estimation is obtained through a multiplication of an index (Litres of diesel/BDt forestry residues) by the forestry operation for parameter 20. Obtaining the estimated Diesel coming for biomass processing.</p> <p>Considering monitored and verified data 2014-2015. An index (l/BDt) for 2014 and 2015 is obtained (40). Then this factor is multiply by the forestry biomass (BDt), obtaining the diesel consumed. This method was only used for ex-ante estimation. For ex-post calculation monitored data will be used. Mass or volume meters will be operated by a subcontractor.</p> <p>143,976(l/y) equivalents to 120.94(ton/y) of diesel.</p>
$\rho_{i,y}$	Weighted average of density of fuel type i in year y.	<p>CAR 1 is raised. Density is not included in the MP as required by "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion".</p> <p>CAR 1 is closed. Revised PDD, correctly includes this parameter in section B.7:1.</p> <p>In this case, a) Values provided by the fuel supplier in invoices is not available. The selected source is the one provided in Option c) Regional or national default values. The Project Participant has selected default values from the reliable and documented National Energy Statistic (National Energy Commission, energy balance 2012) (21)</p>

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence and explanation if any are excluded from the monitoring plan)
		0.84(kg/lt) for Diesel. 0.95(kg/lt) for Fuel Oil 550 (kg/m3) for Natural Gas. 0.65(kg/lt) for LPG
NCV _{i,y}	Weight average net calorific value of fuel type i in year y.	Included: Option d) IPCC default values at the upper limit will be used. (Option a) is not available). IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories (17). 43.3 (GJ/ton) for diesel. 41.7 (GJ/ton) for fuel oil. 52.2 (GJ/ton) for LPG.
EF _{CO2,i,y}	Weighted average CO2 emission factor of fuel type i in year y.	Option a) is not available; supplier does not provide the EF of the fuel. PP is taking option d). IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories (17), and it will be up-dated in case of changes. This is defined according options given in tool 3. 0.0748 (tCO2/GJ) for Diesel. =74 800 (kg/TJ) 0.0788 (tCO2/GJ) for Fuel Oil.= 78 800 (kg/TJ) 0.0656 (tCO2/GJ) for LPG = 65 600 (kg/TJ) This is found correct.
Tool 16. Project and leakage emissions from biomass. Version 04.0.		
Moisture content of the biomass residues	Moisture content of each biomass residues type n. (% Water content in mass basis in wet biomass residues)	Monitoring procedures and frequency meets "Project and leakage emissions from Biomass". Responsible, frequency and accuracy defined. Data used (36) for ex-ante estimation of ERs are obtained from verified data 2014-2015.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.1.1	Are all required parameters (according to the methodology and tools) included in the monitoring plan?	No. Refer CAR 1 Closed. All required parameters are included.	CAR01 Closed.	OK

Compliance of monitoring

Monitored Parameters	Parameter Names						
	Biomass categories and quantities used in the CDM project activity.	For biomass residues categories for which scenarios B1, B2 or B3 is deemed a plausible baseline alternative, project participants shall demonstrate that this is a realistic and credible alternative scenario.	BR _{PJ,n,y}	BR _{B1/B3,n,y}	BR _{B4,n,y}	BR _{B5,n,y}	EF _{CO2,LE}
Parameter Title correct?	Yes	Yes.	Yes	Yes	Yes	Yes	Yes
Description in line with methodology/tool?	Yes	Yes.	Yes	Yes	Yes	Yes	Yes
Data unit correctly expressed?	Yes	Yes.	Yes	Yes	Yes	Yes	Yes
Source clearly referenced?	Yes	Yes.	Yes	Yes	Yes	Yes	Yes
Correct value provided for ex ante estimation?	Yes	Yes.	Yes	Yes	Yes	Yes	Yes
How has this value been verified?	Comparing data used with verified data 2014-2015.	CAR 1 Closed. Excel of calculation of biomass balance (32) was verified.	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	Yes. it is 0tCO _{2eq}
Measurement method correctly described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Measurement and recording frequency correctly described?	Yes	CAR 1 closed. Yes	Yes	Yes	Yes	Yes	Yes
Correct reference to standards?	Yes	NA	Yes	Yes	Yes	Yes	Yes
Indication of accuracy provided?	Yes	NA	Yes	Yes	Yes	Yes	Yes
QA/QC procedures described?	Yes	NA	Yes	Yes	Yes	Yes	Yes
QA/QC procedures appropriate/in line with methodology/tool?	Yes	NA	Yes	Yes	Yes	Yes	Yes

Monitored Parameters	Parameter Names						
	HC _{BL,y}	EL _{PJ,gross,y}	EL _{PJ,imp,y}	EL _{PJ,aux,y}	NCV _{BR,n,y}	FR _{t,m}	D _{t,m}
Parameter Title correct?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Description in line with methodology/tool?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data unit correctly expressed?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source clearly referenced?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Correct value provided for ex ante estimation?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
How has this value been verified?	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.
Measurement method correctly described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Measurement and recording frequency correctly described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Correct reference to standards?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Indication of accuracy provided?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QA/QC procedures described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QA/QC procedures appropriate/in line with methodology/tool?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Monitored Parameters	Parameter Names						
	FC _{i,Forest,y}	FC _{i,project site,y}	FC _{i,project plant,y}	p _{i,y}	NCV _{i,y}	EF _{CO2,i,y}	Moisture content of the biomass residues
Parameter Title correct?	Yes	Yes	Yes	CAR 01 closed.	Yes	Yes	Yes

Monitored Parameters	Parameter Names						
	$FC_{i,Forest,y}$	$FC_{i,project\ site,y}$	$FC_{i,project\ plant,y}$	$\rho_{i,y}$	$NCV_{i,y}$	$EF_{CO2,i,y}$	Moisture content of the biomass residues
Description in line with methodology/tool?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data unit correctly expressed?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source clearly referenced?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Correct value provided for ex ante estimation?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
How has this value been verified?	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	Comparing data used with verified data 2014-2015.	National official data used (21)	Data used is from IPCC (17)	Data used is from IPCC (17)	Comparing data used with verified data 2014-2015.
Measurement method correctly described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Measurement and recording frequency correctly described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Correct reference to standards?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Indication of accuracy provided?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QA/QC procedures described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QA/QC procedures appropriate/in line with methodology/tool?	Yes	Yes	Yes	Yes	Yes	Yes	Yes

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.1.2	Are all required parameters appropriately monitored in accordance with the methodology/tools?	No. Refer CAR 1 closed in previous section. All parameters required by ACM 0006 v14 and required tools are duly included in the monitoring plan.	CARs raised in previous section. CARs closed.	OK

4.2 Implementation of the monitoring plan

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.2.1	<p>Are the arrangements described in the plan feasible and practical within the project design? Please consider:</p> <p>(a) operational and management structure, including responsibilities</p> <p>(b) Plans for maintenance and calibration of equipment</p> <p>(c) Plans for QA/QC of equipment and data</p> <p>(d) Installation of monitoring equipment (whether in place, or planned)</p>	<p>a) Operational and management structure is in place and in line with description made in the PDD and as seen on site.</p> <p>b) Plans for maintenance and calibration of equipment is part of the current practice of the project operator.</p> <p>c) Plans for QA/QC are consistent with applicable methodology and tools.</p> <p>d) All monitoring equipment are currently in place or planned. Also there are some measurements that are implemented off site.</p> <p>This was confirmed during the site visit and the document review.</p>	OK	OK

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Document information

Version	Date	Description
03.0	31 May 2019	<p>Revision to:</p> <ul style="list-style-type: none"> Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN) and version 02.0 of the “CDM project cycle procedure for project activities” (CDM-EB93-A06-PROC); Make editorial improvements.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
<p>Decision Class: Regulatory</p> <p>Document Type: Form</p> <p>Business Function: Renewal of crediting period</p> <p>Keywords: crediting period, project activities, validation report</p>		