




**Validation report form for
CDM programme of activities
(Version 03.0)**

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

BASIC INFORMATION

Title of the programme of activities (PoA)	Fuel switching, energy efficiency and renewable energy in ceramic industries
Version number of the validation report	04.2 ¹
Completion date of the validation report	15/06/2021
Version number of PoA-DD to which this validation report applies	07.2 ²
Date when PoA-DD was uploaded for global stakeholder consultation	29/10/2019
Coordinating/managing entity (CME)	Clean Sistemas de Automação Industrial EIRELI.
Host Parties	Brazil
Applied methodologies and standardized baselines	AMS.III.Z – Fuel switching, process improvement and energy efficiency in brick manufacture – Version 06.0
Mandatory sectoral scopes	4 : Manufacturing industries
Conditional sectoral scopes, if applicable	N/A
Name and UNFCCC reference number of the DOE	Earthood Services Private Limited (ESPL) (ref E- 0066)
Name, position and signature of the approver of the validation report	 Dr. Kaviraj Singh Managing Director

¹ This version 4.2 differs from version 4.1 dated on 09/04/2021 due to inclusion of assessment related to incomplete raised by EB. The version 4.1 differed from version 4 (dated on 25/02/2021) only due to the inclusion of information related to the LoA which was issued after the end of validation process and due to FAR 01 inclusion regarding temporary measures for GWP application (as required by 108th EB meeting).

² This version 7.2 differs from version 7.1 dated on 30/03/2021 due to inclusion of corrections after incomplete raised by EB. The version 7.1 differed from version 7 (dated on 14/02/2021) only due to the inclusion of information related to the LoA. No material changes were observed in the PoA-DD when comparing the versions, apart from the changes informed above.

SECTION A. Executive summary

Brief summary of the project activity

The Programme of Activities (PoA) consists in the implementation of small scale fuel switch projects replacing non-renewable biomass (NRB) by renewable biomass in order to generate thermal energy for the ceramic industry in Northern, Central-west and Northeast regions of Brazil. The projects substitute the baseline technology by an improved and cleaner technology along with biomass replacement.

Scope of validation

Clean Sistemas de Automação Industrial EIRELI. has contracted Earthood Services Private Limited to conduct the validation of the PoA “Fuel switching, energy efficiency and renewable energy in ceramic industries”.

The scope of the validation is to establish that:

- the proposed PoA complies with the corresponding PoA-DD form;
- the proposed PoA complies with all eligibility criteria for its registration, in accordance with the applied methodologies and tools; and
- the proposed PoA complies with all relevant CDM rules and requirements.

Validation process

The validation process involved the following:

- contract with Clean Sistemas de Automação Industrial EIRELI. for the scope of validation of PoA;
- desk review;
- physical on-site inspection;
- issuance of validation findings;
- reporting, calculation checks, QA/QC and resolution of findings;
- issuance of draft validation report;
- independent technical review of the project documentation;
- issuance of the final validation report;
- submission of the request for registration, as appropriate.

Conclusion

Earthood Services Private Limited has performed the validation of the PoA “Fuel switching, energy efficiency and renewable energy in ceramic industries”.

The validation team has confirmed that the PoA complies with all eligibility criteria for its registration in accordance with CDM rules and regulations and the application of the baseline methodology (AMS-III.Z. Version 06.0). In addition, it was confirmed that the monitoring system of the generic CPA is feasible.

The validation team concluded that the proposed PoA complies with all relevant CDM procedures/standards/guidance, complies with the corresponding PoA-DD and with all eligibility criteria for the PoA registration. Therefore, the request for the registration of the PoA is being submitted in accordance with the CDM procedures.

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

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	OR	Lopes	Ricardo	Verifit	Y	Y	Y	Y
2.	Local Expert	OR	Sebben	Marcelo	Verifit	Y	Y	Y	Y
3	Methodological Expert	OR	Sebben	Marcelo	Verifit	Y	Y	Y	Y
4	Technical Expert	OR	Sebben	Marcelo	Verifit	Y	Y	Y	Y

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

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 and expert to TR	IR	Kumar	Sanjeev	Central Office
2	Approver	IR	Singh	Kaviraj	Central Office

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

A desk review was conducted by the validation team that included:

- a review of the data and information presented to assess its completeness;
- a review of the submitted programme of activities and corresponding generic CPA, the applied methodology including applicable tool(s) and, where applicable, the applied standardized baseline;
- a review of the eligibility criteria for validation of the CDM PoA.

A complete list of documents/evidences reviewed is included as Appendix 3.

C.2. On-site inspection

Duration of on-site inspection: 27/11/2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	PoA Validation - Approval of PoA from Host Party and approval of CME - Technology, Location and Implementation) - Choice and applicability of baseline methodology(ies) - Project boundary and emission sources. - Additionality	São Paulo Office	27/11/2019	Marcelo Sebben

	<ul style="list-style-type: none"> - Parameter fixed Ex-ante and BE, PE and LE - Monitoring plan for each generic CPA - Environmental impacts - LSC and GSC Processes 			
3	<ul style="list-style-type: none"> - Discussion on any pendency and compilation of findings - Submission of the audit findings to the client and agreement on the issues raised and agreement on timelines. 	São Paulo Office	27/11/2019	Marcelo Sebben

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Haddad	Marcelo	Clean Sistemas de Automação Industrial EIRELI.	27/11/2019	Project participants, technical description of PoA, monitoring plan, Additionality	Ricardo Lopes Marcelo Sebben
2	Prado	Guilherme	Clean Sistemas de Automação Industrial EIRELI.	27/11/2019	Local stakeholder Consultation Description of Generic CPAs,	Ricardo Lopes Marcelo Sebben

C.4. Sampling approach

Not applicable as no sampling has been used during the validation.

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

Areas of validation of compliance	No. of CL	No. of CAR	No. of FAR
Programme of activities	-	-	-
Identification of programme type	-	-	-
Description of PoA	CL 01 CL 02	-	-
Management system	-	-	-
Demonstration of additionality of PoA	CL 03	-	-
Start date and duration of PoA	-	-	-
Environmental impacts	-	-	-
Socio-economic impacts	CL 04	-	-
Local stakeholder consultation	-	-	-
Sustainable development co-benefits	-	-	-
Approval	CL 05	-	-
Authorization	-	-	-
Modalities of communication	-	CAR 1	-
Global stakeholder consultation	-	-	-
Generic component project activities	-	-	-
General description of generic CPA	CL 06	CAR 2	-
Selection of methodologies and standardized baselines	-	-	-
<ul style="list-style-type: none"> • Deviation from methodologies and/or methodological tools 	-	-	-

• Clarification on applicability of methodology, tool and/or standardized baseline	-	-	-
Application of methodologies and standardized baselines	-	-	-
• General	CL 07	-	-
• Project boundary, sources and GHGs	-	-	-
• Baseline scenario	CL 08	-	-
• Estimation of emission reductions or net anthropogenic removals	CL 09	-	FAR 01
• Monitoring plan	CL 10	CAR 03	-
Crediting period type and duration	CL 11	-	-
Eligibility criteria for inclusion of CPAs	CL 12	-	-
Others (please specify) – Incomplete raised by UNFCCC	-	CAR 4	-
Total	12	04	01

SECTION D. Validation findings

D.1. Programme of activities

D.1.1. Identification of programme type

Means of validation	The validation team had access to the PoA-DD and as per interviews performed to the CME, it could be verified that the PoA will include only small-scale non-A/R CPAs.
Findings	N/A
Conclusion	Small non-A/R project activities will be included in this PoA

D.1.2. Description of PoA

Means of validation	<p>The Programme of Activities (PoA) consists in the implementation of small scale fuel switch projects replacing non-renewable biomass for renewable biomass in order to generate thermal energy in the ceramic industry in Northern, Central-west and Northeast regions of Brazil.</p> <p>The PoA comprehends the fuel switch from non-renewable biomass to renewable biomass with installation of a new efficient technology in the ceramic industry. The baseline kilns will not operate after the start of operation of the CPA.</p> <p>a) Framework for the implementation of proposed PoA:</p> <p>The main reason for registering this PoA is to disseminate the fuel switch culture into the Ceramic industry in Northern, Central-west and Northeast regions of Brazil, especially in biomes where the use of Native firewood, which is non-Renewable Biomass (NRB) is the common practice (more specifically Cerrado, Amazon and Caatinga biomes). This PoA comprehends projects that substitute the baseline kilns by improved and cleaner kilns which only consume renewable biomass.</p> <p>b) The policy/measure or stated goal that the proposed PoA seeks to promote;</p> <p>According to the CME, this PoA aims to implement fuel switch from Non-renewable biomass to renewable biomass in the ceramic industry in the Northern, Central-west and Northeast regions of Brazil by substituting the baseline kilns to more efficient ones using only renewable biomass residues as fuel. As stated above, the goal of this project is to allow the inclusion of fuel switch systems into different ceramics and provide financial incentives for the installation of these systems.</p> <p>c) Voluntary action</p> <p>According to the CME, the PoA is a voluntary action. This PoA does not seek national or regional incentives and there are no mandatory laws that require investment in fuel switch projects in the Northern, Central-west and Northeast regions of Brazil.</p>
----------------------------	---

	<p>d) The contribution of the PoA to the sustainable development of the host Party</p> <p>The validation team checked the PoA description related to this topic, where the following contributions were referred:</p> <ol style="list-style-type: none"> 1. Using of clean fuel and efficient technologies to generate thermal energy in order to achieve the Country's Sustainable Development Goals 2. Having a pioneer initiative that encourages the development of new technologies throughout the country, which replaces the use of non-renewable fuel (i.e. NRB) with renewable biomass residues and presents an efficient thermal energy generation potential as shown in the project demonstration 3. Using renewable biomass residues, that results in GHG emission reductions 4. Generating new sources of income due to collection, processing and handling of residues. <p>All the information above was observed in the PoA description and corroborate with interviews performed to the CME.</p> <p>The physical/geographical boundary of the PoA are the geographical delimitation of Northern, Central-west and Northeast regions of Brazil. The biomes where the biomass residues will be extracted will be Amazon, Caatinga and Cerrado. No transnational projects will be part of this programme. The National and/or regional legislation will be taken into consideration for all CPAs included in this PoA as applicable.</p> <p>However an inconsistency has been found when determining the baseline fuel eligible for the PoA and also whether all regions of Brazil will be part of the PoA. Thus a CL has been raised.</p> <p>Moreover, information regarding the technology to be applied in the PoA is not consistent.</p>
Findings	<p>CL 01 <i>PoA-DD Section A.1:</i></p> <ul style="list-style-type: none"> - <i>it is mentioned that the project activity will contemplate the switching from non-renewable biomass and fossil fuel to renewable biomass. However, in section I.5, it is stated that no fossil fuel will be considered in the baseline. Thus, information is inconsistent.</i> - <i>It is not clear whether all regions of Brazil will be contemplated in the PoA</i> <p>CL 02 <i>PoA-DD Section A.3:</i></p> <ul style="list-style-type: none"> - <i>the technology to be applied in the POA is not duly explained in this section unlike requested by the instructions for completing the PoA-DD.</i> - <i>it is not described how technology will be transferred to host country.</i> - <i>The POA-DD is making reference to a standard that is not available</i> - <i>It is not clear the description of the eligibility criteria in this section</i>
Conclusion	<p>The information presented in the PoA-DD was all evidenced through interviews, and review of applied legislation. The description in the PoA-DD is in accordance with requirements of the project standard and are in accordance with actual PoA structure.</p> <p>It is confirmed that the PoA will contemplate the geographical delimitation of Northern, Central-west and Northeast regions of Federative Republic of Brazil.</p> <p>The programme of activities will comprehend fuel switch from NRB to renewable biomass residues with kiln replacement. The technologies are now duly explained in the PoA-DD. The applied standards, tools and methodologies are all up to date. The eligibility criteria is being explained in section K of PoA-DD as required by instructions for completing the PoA-DD.</p>

D.1.3. Management system

Means of validation	<p>The management system was assessed in accordance with the applicable requirements in the VVS and the PoA Project Standard.</p> <p>The Validation team could observe that the management system is defined in PoA-DD where it includes:</p> <ol style="list-style-type: none"> 1. a clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies 2. Records of arrangements for training and capacity development for personnel 3. A procedure for technical review of inclusion of CPAs 4. Procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or as a CPA of another PoA) 5. Records and documentation control process for each CPA under the PoA. 6. Measures for continuous improvements of the PoA management system 7. Provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA <p>It is valid to point out that, in order to avoid double counting, the CME will be checking if each CPA to be included is already registered in CDM and other main voluntary market emission reduction scheme or is part of any other programme of activities.</p> <p>The detailed description of the management system is defined in the PoA.</p>
Findings	N/A.
Conclusion	<p>A feasible management system was set in order to enabling the CME to have full access to the monitoring of each specific CPA and provide traceable data to DOE and to ensure proper reporting and verification of emission reductions.</p> <p>Specific training will be provided by the CME to each specific CPA.</p>

D.1.4. Demonstration of additionality of PoA

Means of validation	<p>The validation team has compared the PoA-DD with the applied CDM methodologies, "TOOL21 – Demonstration of additionality of small-scale project activities" – version 13.1. The additionality of the PoA was assessed in accordance with applicable related validation requirements in the VVS and PoA project standard. However, not all input parameters needed for performing an investment analysis were included in the PoA-DD, unlike requirements of PS for PoA, para 124)g.iv.a). Moreover, not the correct timing for the parameters usage was referred to in the document.</p>
Findings	<p>CL 03</p> <p><i>PoA-DD Section C:</i></p> <ul style="list-style-type: none"> - <i>Not all input parameters needed for performing an investment analysis were described in the PoA-DD.</i> - <i>In the last paragraph it is mentioned that the investment analysis should reflect the economic decision-making context at the point of decision to start the project. However, the project standard for PoA, paragraph 124) g) iv) a) states that "The additionality of each CPA shall then be assessed by using the actual values, applicable to that CPA at the time of inclusion, in the investment analysis conducted for the purpose of demonstrating the additionality of the CPA"</i>
Conclusion	<p>In this PoA, in order to verify the additionality of each CPA, the TOOL21 will be used. The CME will provide an explanation to show that each CPA would not have occurred anyway due to at least one of the following barriers:</p> <ul style="list-style-type: none"> - Investment barrier - Technological barrier - Barrier due to prevailing practice - Other barriers (such as financial resources) <p>In case of investment barrier is demonstrated, the CME included in the PoA-DD the input parameters for the financial analysis in order to compare the project and baseline scenario as required by PS. In this case, the CME will use actual values for the financial analysis as required by PS for PoA para 124.g)iv)a).</p>

	<p>In case any other barrier is demonstrated, supporting evidences will be provided.</p> <p>The PoA-DD follows the requirements of the PoA Project Standard in order to demonstrate that none of the CPAs to be implemented would occur in the case of the absence of the CDM PoA.</p> <p>The additionality will be demonstrated at the CPA level as per requirements defined in the PoA-DD.</p> <p>The information is duly mentioned in the PoA-DD.</p>
--	--

D.1.5. Start date and duration of PoA

Means of validation	<p>As per glossary of terms, “for a CDM PoA, the date on which the CME officially notifies the secretariat and the DNA(s) of the host Party(ies) of its intention to seek the CDM status, or the date of publication of the PoA-DD for global stakeholder consultation, whichever is earlier”.</p> <p>The duration was determined as per PS requirements.</p>
Findings	N/A
Conclusion	<p>According to the UNFCCC website, the intentions to seek CDM status was notified to the secretariat on 08/03/2019^{10/}, which was considered the start date of the PoA.</p> <p>The PoA-DD correctly describes its start date.</p> <p>The PoA will have duration of 28 years and zero months.</p>

D.1.6. Environmental impacts

Means of validation	<p>As per description in the PoA-DD, the Analysis of Environmental Impacts was conducted at PoA level. The reason is that there is no requirement for conducting an EIA (Environment impact Assessment) for implementing the proposed CPAs according to the Brazilian Legislation^{17/}. The requirement for implementing them are the obtention of the environmental licenses for operation of ceramic factory and clay extraction, among others (e.g. water grant, if applicable). These licenses are obtained in State level or City level, depending on the location of the Entrepreneurship, within the Brazilian Territory.</p> <p>The main impacts were described in the PoA-DD and comprehend the following:</p> <ul style="list-style-type: none"> - Impacts on air, soil, climate, water/hydric resources, energy and biodiversity. <p>All impacts mentioned above were considered positive as detailed in the PoA-DD. Thus, the environmental impact assessment being carried out at PoA level is in accordance with CDM rules and requirements.</p>
Findings	N/A
Conclusion	<p>A complete analysis of the environmental impacts was done at PoA level as there is no requirement of the host country to carry out an EIA for the implementation of the proposed CPAs. This measure is in accordance with PS for PoA para 47.</p> <p>The requirement for the CPA factories to provide the Operational/Environmental licenses in accordance with local Environmental legislation, is an eligibility criteria included in section K of Generic CPA-DD for inclusion of any CPA..</p>

D.1.7. Socio-economic impacts

Means of validation	Not applicable as it is not A/R CDM PoA.
Findings	N/A
Conclusion	Not applicable as it is not A/R CDM PoA.

D.1.8. Local stakeholder consultation

Means of validation	<p>The local stakeholder consultation was conducted for the whole PoA. It was made as per Brazilian DNA rules^{11/}. It was done in PoA level as the fuel switch in ceramics or the installation of new kiln in ceramics are similar and have equally similar impacts on the stakeholders.</p> <p>However, not details were given regarding the information provided to stakeholders, nor details on the comments raised were included in the PoA-DD. Thus findings were raised.</p>
Findings	CL 04

	<p><i>PoA-DD Section F.3</i></p> <ul style="list-style-type: none"> - <i>The comments received in the Local Stakeholder consultation were not mentioned in the PoA-DD unlike required by the PoA requirements.</i> - <i>It is not clear in the PoA-DD which information was made available to the stakeholders in accordance with paragraph 58 of the PS for PoA.</i>
Conclusion	<p>The LSC was conducted as following: The scope of the LSC was defined as:</p> <ul style="list-style-type: none"> a. Introduction of the PoA to the stakeholders b. Elaboration of a document containing: <ul style="list-style-type: none"> i. Contribution of PoA to local environmental sustainability ii. Contribution for the development of work conditions and net job generation iii. Contribution to income distribution iv. Contribution to workforce training and technological development v. Contribution to regional integration and articulation with other sectors. c. Information on potential direct positive and negative impacts the proposed PoA might have <p>The group of stakeholders was defined and invited. The following participated:</p> <ul style="list-style-type: none"> d. States' Government and Distrito Federal Government; e. Legislative Assemblies and Legislative Chamber; f. Federal Environmental Agency (IBAMA); g. Environment Defense Institute h. States' Environmental Agencies i. Brazilian NGO Forum and Social Movements for the Environment and Development (Fórum Brasileiro de ONGs e Movimentos Sociais para o Meio Ambiente e Desenvolvimento – FBOMS); j. Environment Foundation (FATMA) k. Environment Administration Superintendence (SUDEMA) l. Environment State Superintendence (SEMACE). m. National association of Ceramic Industries (Associação Nacional de Indústria Cerâmica – ANICER n. State Prosecutors' offices; o. Federal Prosecutor's office. <p>The invitation for comments were carried out through postal mail with reception proof, in accordance with Brazilian DNA requirements..</p> <p>The information was made available by the stakeholder by means of a presentation during the LSC.</p> <p>The consultation was held in 01/08/2019 in the Clean website ^{/11-7/} and the comments received were accepted until 31/08/2019 (the documents of LSC remain available for consultation)</p> <p>It was observed that comments were received and their details were duly included in the PoA-DD. In this comment, the Environmental Company of the State of São Paulo (CETESB) requested that the documents (PoA-DD, introduction of PoA) might be sent through internal system. The documents were sent as required and no further comment was received.</p> <p>The LSC was made in accordance with Brazilian DNA Rules^{/11/}</p> <p>All evidences related to this LSC^{/11/}, such as invitation letters, presentation, DNA requirements and outcome of the LSC were made available to the Validation team.</p> <p>The validation team attests that LSC was conducted in accordance with requirements of the Project Standard and DNA of host country.</p> <p>The consideration of all comments was made during the LSC. The CME included in the PoA –DD, apart from the summary of comment, the answer to this comments (Appendix 6).</p> <p>No significant changes in the PoA DD were performed due to the LSC.</p> <p>Nevertheless, after the end of LSC, due to request of Brazilian DNA, some changes in the PoA-DD were carried out. These changes were related to the specification of exact geographical location where the PoA will be implemented within the Brazilian territory and to the calculation of the parameter f_{NRB} (Fraction of woody</p>

	<p>biomass that will be utilized in the absence of the project activity in year y that can be established as non-renewable biomass). The changes are as follows:</p> <ul style="list-style-type: none"> - The geographical area where the PoA will be implemented has changed from the whole Brazilian Territory to Northern, Central-west and Northeast regions of Brazil only, comprehending the Cerrado, Amazon and Caatinga biomes only. - As a consequence, the parameter f_{NRB}, which was fixed ex-ante based on data from whole Brazilian territory, will be monitored for each CPA based on the data from specific Biome and region where the CPA is located. <p>It is important to point out that the scenario considered prior to these changes was completely in accordance with CDM rules and regulations, applied methodology and National Legislation. The choices taken initially were made due to the availability of information used for determining the parameter f_{NRB} for the whole territory, which is allowed by the applied methodology.</p> <p>The main reason for these changes were that Southern and Southeastern regions of Brazil, where the Atlantic and the Pampa Biomes are located, have their consumption of non-renewable biomass already very low^{/15-9/}. Therefore, DNA requested that these regions and biomes to be excluded from PoA resulting in a more accurate calculation of parameter f_{NRB} for the remaining regions and biomes stated above.</p> <p>The exclusion of those mentioned regions did not change the applicability of this PoA. The Southern and Southeastern regions of Brazil would not be considered eligible when a specific CPA would be included as the consumption of non-renewable biomass in the baseline^{/15-9/} in those regions is much lower, consequently, not complying with eligibility criteria #5 of the applied methodology where it is said that <i>"Historical data will be used to demonstrate that for at least three years prior the start date of the CPA, only NRB (...) were used in the brick production system"</i></p> <p>The validation team agreed with the changes applied to the PoA and considers them in accordance with National Legislation, CDM rules and regulations and applied methodology.</p> <p>Taking this information into account, the validation team concludes that the comments received through the local stakeholder consultation are still valid and the scope of the LSC engaged is also still valid.</p> <p>No new LSC needs to be conducted. The reasons for that is that stakeholders from all regions which are still part of this Programme were duly invited for comments and therefore, the LSC fulfilled with DNA regulations on LSC. Moreover, the changes does not affect the design of the implemented CPAs. The only influence in an specific case CPA will be the fact that the parameter f_{NRB} will be monitored ex-post.</p> <p>Therefore the LSC remains adequated for the proposed Programme.</p>
--	---

D.1.9. Sustainable development co-benefits

Means of validation	Not applicable
Findings	N/A
Conclusion	Not applicable

D.1.10. Approval

Means of validation	<p>At the moment of the validation site visit, the Project participants had not provided the Letter of Approval of the DNA. Prior to the submission of the Programme Design Document and the Validation Report to the CDM Executive Board, the Programme has received the written approval of voluntary participation in the CDM from the DNA of Brazil, including the confirmation that the Programme assists the country in achieving sustainable development.</p> <p>Moreover, the name of the DNA was not correct in PoA-DD. Refer to CL below.</p>
Findings	CL 05

	<i>PoA-DD Section A.2: the DNA mentioned in the footnote #2 is not the correct Brazilian DNA.</i>
Conclusion	<p>The correct DNA of Host country has been referred in the PoA-DD The process of LoA obtention followed the Host country and CDM requirements.</p> <p>The LoA from Brazil was received on 18/03/2021^{/17-1/} issued by Brazilian DNA. There is no doubt regarding the authenticity of the LoA. The email which DNA has provided the LoA^{/17-2/} has been forwarded to DOE. The LoA confirms that:</p> <ol style="list-style-type: none"> 1. The Party is a party to the Kyoto Protocol. 2. The participation in the CDM PoA is voluntary 3. Refers to the precise title of the proposed CDM PoA 4. The proposed CDM PoA assists the host Party in achieving sustainable development <p>The Validation team confirms that the LoA is unconditional with respect to the requirements stated in the VVS for PoA, paragraph 69, as stated above. The validation team confirms that the LoA has been issued by the respective Party's DNA^{/19/}. The signature has been duly checked through website conference^{/17-3/} and is valid for the proposed CDM PoA under validation in accordance with UNFCCC website^{/21/}. There is no doubt regarding the authenticity of the LoA.</p>

D.1.11. Authorization

Means of validation	The authorization was provided together with the letter of approval mentioned in item just above.
Findings	N/A
Conclusion	<p>Clean Sistemas de Automação Industrial EIRELI has been authorized by Brazilian DNA to act as CME and Project participant of the PoA.</p> <p>Concluding, the CME to whom the DOE has contract agreement, is authorized to act as CME of this PoA by provided LoA^{/17-1/}. And Moreover, the host Party (Brazil) has authorized the project participant (Clean Sistemas de Automação Industrial EIRELI) to participate of the PoA.</p> <p>The validation team confirm that the CME was authorized by the Host Country and the PP is authorized by at least one Party as required by Project Standard.</p> <p>The letter was issued in accordance with Project Standard for PoA paragraph 70 and 71.</p>

D.1.12. Modalities of communication

Means of validation	At the moment of site visit no Modalities of Communication form (MoC) has been provided to the validation team. Thus a CAR has been raised.
Findings	<p>CAR 1</p> <p><i>A valid Modalities of Communication Form (MoC) has not been provided to the validation team during the site visit.</i></p>
Conclusion	<p>The CME provided to the validation team a MoC statement^{/16/} with the following information.</p> <ul style="list-style-type: none"> - The title of the proposed CDM PoA (and UNFCCC reference number if available); - (b) The date of submission of the MoC statement (to a DOE for inclusion in the request for registration or to the secretariat for changes after registration); - (c) The designation of a focal point for each scope of authority, contact details and specimen signatures of the authorized signatories of each focal point entity; - (d) A list of all project participants, contact details and specimen signatures of their authorized signatories; - (e) The signature of an authorized signatory of the coordinating/managing entity confirming its agreement with the MoC statement. <p>The MoC statement was provided to the validation team and it is in accordance with the Project Standard requirements.</p>

	<p>The corporate identity of the project participant and CME as well as the personal identities of their authorized signatories (specimen signatures and employment status) were validated through written confirmation from the coordinating/managing entity that submits the MoC statement, mentioning that all corporate and personal details, including specimen signatures, are valid and accurate.</p> <p>The MoC has been received from CME. The responsible person from CME who provided the information is duly authorized to sign the written confirmation on behalf of the CME.</p> <p>The DOE could validate the requirements of the VVS para 82. The DOE has performed due diligence on the MoC statement in accordance with the requirements in VVS for PoA section 7.12.</p>
--	---

D.1.13. Global stakeholder consultation

Means of validation	The DOE made the PoA-DD public available for Global Stakeholder consultation on 29/10/2019 and the period for comments was until 28/11/2019 in accordance to PCP for PoA para 10.
Findings	N/A
Conclusion	By means of UNFCCC's website check, it could be observed that no comments were received.

D.2. Generic component project activities

D.2.1. General description of generic CPA –Generic CPA 01

Means of validation	<p>The reference number of this CPA is “CPA 01” and its title is “Fuel switching from non-renewable biomass to renewable biomass in ceramic brick industries through the implementation of renewable biomass technologies.”</p> <p>This generic CPA covers a fuel switch project replacing non-renewable biomass (NRB) by renewable biomass in order to generate thermal energy the ceramic industry in Brazil. Moreover, it comprehends the installation of a new and more efficient kiln. This generic CPA is included in the small-scale project Type III. However, as the CME did not considered provisions of PS for PoA, para 77, for the determination of generic CPAs, a CAR has been raised. Moreover, the project type has not being informed in the POA-DD. Refer to CL below</p>
Findings	<p>CAR 2</p> <p><i>According to PS for POA para 77, “For a proposed CDM PoA applying more than one technology/measure or more than one methodology, the coordinating/managing entity shall prepare a generic CPA-DD for each technology/measure, each methodology and each combination thereof”. Thus the CME is required to evaluate the applicability of this statement in the proposed PoA.</i></p> <p>CL 06</p> <p><i>PoA Section H.3: The small-scale project type (Type I, Type II and/or Type III) applicable to the generic CPA in accordance with the project standard is not being informed.</i></p>
Conclusion	<p>The PP has now followed the provisions stated in the PS for PoA, para 77 defining the technologies to be applied in the generic CPA in this PoA. The generic CPA refers to fuel switch from non-renewable biomass to renewable biomass including the substitution/addition of new more efficient kiln. The technology of the applied kiln is duly explained in the PoA. The CPA shall comply with all national legislation applicable.</p> <p>The general description of the generic CPA is now clear and in accordance with Project Standard for PoA. The project corresponds to Project Type III in accordance to PS for PoA.</p> <p>The coordinating /managing entity for the PoA is Clean Sistemas de Automação Industrial EIRELI. The CME will conduct the inclusion of the CPAs in the PoA, provide proper CDM training to the CPA personnel and coordinate the CPAs monitoring.</p>

	Furthermore, the PoA is voluntary action by the CME, who has taken into consideration all applicable national and/or sectoral policies and regulations within the chosen boundary ^{/12/, /14/}
--	---

D.2.2. Selection of methodologies and standardized baselines

D.2.2.1. Deviation from methodologies and/or methodological tools

Means of validation	Not applied
Findings	N/A
Conclusion	Not applied as no deviation from methodology is expected.

D.2.2.2. Clarification on applicability of methodology, tool and/or standardized baseline

Means of validation	Not applied
Findings	N/A
Conclusion	Not applied as no clarification regarding the application of methodology was seek.

D.2.3. Application of methodologies and standardized baselines

D.2.3.1. General

Means of validation	According to the description stated in the generic CPA, it will the following methodology: AMS.III-Z – Fuel switching, process improvement and energy efficiency in brick manufacture – Version 06.0 The applicability conditions are as follows:	
	1	The measures may replace, modify, retrofit or add capacity to systems in existing facilities or be installed in a new facility
	2	The proposed Generic CPA replace the fuel from non-renewable biomass to renewable biomass with the replacement of the baseline kilns with or without capacity addition.
	3	Bricks will be the same in the project and baseline scenarios. The change will be in the fuel consumed for firing that will switch from non-renewable biomass to renewable biomass residues
	The methodology is applicable for the production of: (a) Bricks that are the same in the project and baseline cases; or (b) Bricks that are different in the project case versus the baseline case due to a change(s) in raw materials, use of different additives, and/or production process changes resulting in reduced use or avoidance of fossil fuels for forming, sintering (firing) or drying or other applications in the facility as long as it can be demonstrated that the service level of the project brick is comparable to that of the baseline brick	
	New facilities (Greenfield projects) and project activities involving capacity additions are only eligible if they comply with the requirements for Greenfield projects and capacity	
	It corresponds in a fuel switch measure from non-renewable biomass to renewable biomass residues with the installation of new	

		increase projects specified in the "General guidelines for SSC CDM methodologies".	kiln. The project may or may not apply capacity additions. In case they apply capacity additions, "General guidelines for SSC CDM methodologies" will be taken into account.
	4	The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the "General guidelines for SSC CDM methodologies". If the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the absence of the project activity.	The remaining lifetime will be attested by technical or expert reports. In case the lifetime increases, the crediting period will be limited to the estimated remaining lifetime of the baseline equipment.
	5	For existing facilities, it shall be demonstrated, with historical data, that for at least three years immediately prior to the start date of the project implementation, only fossil fuels or NRB (non-renewable biomass) were used in the brick production systems that are being modified or retrofitted. In cases where small quantities of renewable biomass were used for experimental purposes this can be excluded.	Hystorical data will be used to demonstrate that for at least three years prior the start date of the CPA, only NRB, as defined by CDM EB 23, Annex 18 – Definition of Renewable Biomass ^{18/} , were used in the brick production system.
	6	The renewable biomass utilized by the project activity shall not be chemically processed (e.g. esterification to produce biodiesel, degumming and/or neutralization by chemical reagents) prior to the combustion but it may be processed mechanically (e.g. pressing, filtering) and/or thermally (e.g. gasification to produce syngas).	No chemically processed renewable biomass will be applied in this CPA.
	7	In cases where the component project activity utilizes charcoal produced from renewable biomass as fuel, the methodology is applicable provided that: (a) Charcoal is produced in kilns equipped with a methane recovery and destruction facility; or (b) If charcoal is produced in kilns not equipped with a methane recovery and destruction facility, methane emissions from the	No charcoal will be used in this CPA

		production of charcoal shall be considered. A default value of 0.030 t CH ₄ /t charcoal may be used in accordance with “AMS-III.BG.: Emission reduction through sustainable charcoal production and consumption”;	
		(c) If charcoal is produced from other CDM project activities, it shall be ensured that no double counting of the emission reductions occurs.	
	8	In the case of project activities involving changes in raw materials (including additives), it shall be demonstrated that additive materials are abundant in the country/region	The proposed CPA does not involve changes in raw materials.
	9	<p>This methodology is applicable under the following conditions:</p> <p>(a) The service level of project brick shall be comparable to or better than the baseline brick, i.e. the bricks produced in the brick production facility during the crediting period shall meet or exceed the performance level of the baseline bricks (in terms of, for example dry compressive strength, wet compressive strength, density). An appropriate national standard shall be used to identify the strength class of the bricks; bricks that have compressive strengths lower than the lowest class bricks in the standard are not eligible under this methodology. Project bricks are tested in nationally approved laboratories at six-month intervals (at a minimum) and test certificates on compressive strength are made available for verification;</p> <p>(b) The existing facilities involving modification and/or replacement shall not influence the production capacity beyond ± 10 per cent of the baseline capacity unless it is demonstrated that the baseline for the added capacity is the same as that for the existing capacity in accordance with paragraph 5 above;</p> <p>(c) Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO₂ equivalent annually</p>	<p>The service level of project brick will be comparable or better than baseline brick as the production process (with exception of the firing process) and the raw materials will remain unaltered.</p> <p>The proposed CPA may or may not consists in capacity increase. In case it does, provisions from paragraph 5 of the applied methodology will be considered.</p> <p>The proposed CPA will result in ERs below the 60 ktCO₂e per year.</p>
	10	This methodology is not applicable if local regulations require the use of the proposed technologies or raw materials for the manufacturing of	The national/local legislation does not require the application of proposed technology or applied raw

		bricks unless widespread noncompliance (i.e. less than 50 per cent of brick production activities in the country comply) of the local regulation evidenced.	materials. The CPA shall be in compliance with all applicable national legislation.
	11	In cases where the component project activity utilizes biomass sourced from dedicated plantations, applicability conditions prescribed in the tool "Project emissions from cultivation of biomass" shall apply. If the component project activity involves reducing the NRB consumption, project participants shall demonstrate that NRB has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	Biomass from dedicated plantations will not be used in the proposed CPA. Moreover, as the project consists in replacing NRB by renewable biomass residues, it is confirmed that the CPA will reduce the NRB consumption. The demonstration that NRB has been used in the project region since 31/12/1989 will be carried out for each CPA in their inclusion process, based on surveys, published literature, official reports or statistics.
	12	<p>The following cases are exempted from 'determining the occurrence of debundling' as per the "Guidelines on assessment of debundling for SSC project activities":</p> <p>(a) Project activities that aggregate brick units with holistic production cycles i.e. from raw material procurement to finished product, where each unit is not larger than 5 per cent of the Type III small-scale CDM component project activity thresholds i.e. 3,000 t CO₂e; or</p> <p>(b) Project activities that aggregate brick units, where each unit qualifies as Type III microscale CDM component project activity and the geographic location of the component project activity is a least developed countries/small island developing states (LDC)/(SIDS) or special underdeveloped zone (SUZ) of the host country as identified by the government in accordance with the guideline on "Demonstrating additionality of microscale project activities".</p>	The proposed CPA will not involve debundling.
However not all guidelines and tools applied in the PoA-DD are the latest available. Thus a CL has been raised.			
Findings	<p>CL 07</p> <p><i>Section B: reference to a standard that is not available is being made</i></p> <p><i>Section I.1: the applied version of tool 07 is not the latest available. Moreover, the application of the mentioned tools is not in accordance with actual programme design</i></p>		

Conclusion	<p>The application of the methodology AMS.III-Z in the PoA is allowed by the CDM guidelines, thus, this generic CPA is in accordance with CDM regulations. The CME has applied the latest version of the methodologies, tools and guidelines as informed above.</p> <p>The applied methodologies and tools to this PoA are the following:</p> <ul style="list-style-type: none"> - AMS-III.Z Small-scale Methodology: Fuel Switch, process improvement and energy efficiency in brick manufacture, Version 06.0 - AMS-II.G. Small-scale Methodology: Energy efficiency measures in thermal applications of non-renewable biomass, Version 11.0, in grace period until 10/08/2021 (as required by AMS-III.Z), - TOOL03 Methodological tool: Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion - version 03.0. - TOOL05 Methodological tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation - version 03.0. - TOOL07 Methodological tool: Tool to calculate the emission factor for an electricity system - version 07.0. - TOOL15 Methodological tool: Upstream leakage emissions associated with fossil fuel use - version 02.0. - TOOL16 Methodological tool: Project and leakage emissions from biomass - version 04.0. - TOOL21 Methodological tool: Demonstration of additionality of small-scale project activities - version 13.1. - TOOL22 Methodological tool: Leakage in biomass small-scale project activities – version 04.0. - TOOL30 Methodological tool: Calculation of the fraction of non-renewable biomass - version 02.0 (in grace period until 10/08/2021).
-------------------	--

D.2.3.2. Project boundary, sources and GHGs

Means of validation	<p>The project boundary has been determined in accordance with applied methodology and tools.</p> <p>As per applied methodology, the project boundary involves the physical, geographical site where the brick production takes place during both the baseline and crediting periods, i.e. the brick manufacturing plant. It also includes all installations, processes or equipment affected by the CPA.</p> <p>Moreover, when it comes to determination of parameter f_{NRB} (fraction of non-renewable biomass), it has been clarified in the PoA-DD that the project boundary comprehends the Northern, Central-west and Northeast regions of the Brazilian Territory. The CPAs will be implemented in regions where the Amazon, Cerrado or Caatinga are the natural biomes. Therefore, the parameter f_{NRB} will be determined based on data from the biome where the component project activity is being installed.</p> <p>The determination of project boundary was assessed by means of interviews performed to the CME. Moreover, description of the project provided to the stakeholders during the LSC was used as evidence. The CPAs' eligibility criteria list include this boundary as one of the eligibility criteria.</p> <p>The project consists in a fuel switch project replacing non-renewable biomass (NRB) by renewable biomass residues in order to generate thermal energy the ceramic industry in Brazil with the implementation of a new more efficient kiln.</p> <p>Project emissions would be accounted in case of electricity or fossil fuel consumption in the biomass treatment and processing. Fossil fuel consumption will</p>
----------------------------	--

	also be accounted in case of it is associated to the operation of the manufacturing process. Leakage will be assessed in accordance with applied methodology and referred tools.
Findings	N/A
Conclusion	The boundary, sources and GHG emissions are well defined in the Generic CPA, according to the applied methodologies and tools in accordance with requirements of VVS-PoA version 2.0, paragraphs 97 to 104. The information provided correctly quotes the methodology and methodological documents and it is considered accurate by validation team. The assessment is in accordance with requirements of VVS-PoA version 2.0, paragraphs 105 to 110.

D.2.3.3. Baseline scenario

Means of validation	It has been observed that there is unclear information described in the POA-DD. Thus a CL has been raised.
Findings	CL 08 <i>PoA-DD section section 1.5,</i> <ul style="list-style-type: none"> - <i>It is not clear which is the baseline scenario defined for the proposed generic CPA</i> - <i>information regarding how national and or sectoral policies, regulations and circumstances are taken into account as per PS paragraph 105 is missing.</i>
Conclusion	Information is duly included in section 1.5 of Generic CPA. The baseline scenario identified for the project activity would be the use of Non-renewable biomass for meeting the energy demand for brick production. Even though the consumption of native wood for generating thermal energy is allowed in Brasil, its use is not sustainable and this native wood is not comprehended within the definition of renewable biomass ^{/18/} . However, it still corresponds to a common practice in some regions of the country as per evidences provided. ^{/15/} It was verified that there are no national/sectoral policies in the Host Country that give advantages to more or less carbon intensive technologies or fuels in accordance to PS for PoA para 105. Information is now in accordance with PS for PoA and applied methodologies.

D.2.3.4. Estimation of emission reductions or net anthropogenic removals

Means of validation	<p>The calculation of the emission reductions is made in accordance with applied methodology AMS III.Z.</p> <p>Baseline emissions</p> <p>The baseline emissions are calculated as follows:</p> $BE_y = SEC_{BL,y} \times EF_{BL} \times P_{PJ}$ <p>Where</p> <p>BE_y = baseline emissions SEC_{BL} = Specific energy consumption of brick production in the baseline, TJ per volume unit or mass unit (m³ or kg) EF_{BL} = The emission factor of baseline fuel(s), in t CO₂/TJ P_{PJ,y} = The annual net production of the facility in year y, in kg or m³</p> <p>The following equations are utilized to calculate EF_{BL} and SEC_{BL}:</p> $EF_{BL} = \frac{\sum_{j,i} (FC_{BL,i,j} \times NCV_j \times EF_{CO_2,j})}{\sum_{j,i} (FC_{BL,i,j} \times NCV_j)}$ $SEC_{BL} = \frac{\sum_{j,i} (FC_{BL,i,j} \times NCV_j)}{P_{Hy}}$
----------------------------	--

Where:

$FC_{BL,i,j}$ = Average annual baseline fossil fuel or NRB consumption value for fuel type j combusted in process i using volume or mass units (kg or m³). In the case of NRB, it is determined by the total woody biomass consumption multiplied with the fraction of the NRB (f_{NRB})

NCV_j = Average net calorific value of fuel combusted, TJ per unit volume or mass unit (kg or m³). In the case of NRB, the IPCC default for wood fuel, 1.5x10⁻⁵ TJ/kg shall be used

$EF_{CO_2,j}$ = CO₂ emission factor of fuel type j combusted in the process i in t CO₂/TJ. In the case of NRB, a default value of 81.6 t CO₂/TJ is used.

P_{Hy} = Average annual historical baseline brick production rate, in units of weight or volume, kg or m³

In order to determine the $FC_{BL,i,j}$ for NRB, the total amount of woody biomass consumed in the baseline (latest three years available, which will remain fixed along the CP) will be multiplied by the fraction of non-renewable biomass (f_{NRB}), which will be updated annually, i.e:

$$FC_{BL,i,j} \text{ for NRB} = FC_{BL,i,j}(exante) \times f_{NRB}(expost)$$

The above equation is included the in order to facilitate the understanding of the application of parameter f_{NRB}. The information is described in the PoA-DD in accordance with information provided in the valid version of TOOL30 and therefore is considered accurate by the DOE.

Values of NCV_j and EF_{CO₂,j} related to baseline emission calculations will remain fixed and were defined by applied methodology as specified above.

The parameter f_{NRB} will be calculated ex-post as per applicable version of TOOL30 as follows:

$$f_{NRB} = \frac{NRB}{NRB + RB}$$

Where

f_{NRB} = Fraction of non-renewable biomass in the country/region or project area (fraction or %)

NRB = Quantity of non-renewable biomass (t/yr) in the country/region or project area, determined as per equations below

RB = Quantity of renewable biomass in the country/region or project area, determined as per equation below (t/yr).

As per TOOL30, the quantity of NRB will be determined by calculating the total consumption of wood (H) in the biome/region to which the CPA is included and then deducting the quantity of renewable biomass (RB) from it, as described below.

$$NRB = H - RB$$

Where

H = Total annual consumption of wood in the absence of the project activity in the country/region/project area, (t/yr)

The CME has chosen to determine the parameter H as per paragraph 11)a) of the applicable version of TOOL30 (version 2.0) which states that the parameter will be determined as per "Official statistics or reports or peer-reviewed literature".

Therefore, the CME is choosing not to calculate the parameter H .

For determining the parameter RB , the following equation is being applied:

$$RB = \sum (MAI_{forest,i} \chi (F_{forest,i} - P_{forest})) + \sum (MAI_{other,i} \chi (F_{other,i} - P_{other}))$$

Where

$MAI_{forest,i}$ = Mean Annual Increment of woody biomass growth per hectare in subcategory i of forest areas (t/ha/yr)

$MAI_{other,i}$ = Mean Annual Increment of woody biomass growth per hectare in subcategory i of other wooded land areas (t/ha/yr)

$F_{forest,i}$ = Extent of forest in sub-category i (ha)

$F_{other,i}$ = Extent of other wooded land in sub-category i (ha)

P_{forest} = Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest areas (ha)

P_{other} = Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within other wooded land areas (ha)

i = Sub-category i of forest areas and other wooded land areas

Each of the parameters determined above will be determined in accordance with applicable TOOL30. The source of data will be determined for each specific CPA based on available information of each biome where the project is located.

Project emissions

The project emissions are calculated as follows:

$$PE_y = PE_{ele,y} + PE_{fuel,y} + PE_{cultivation,y} + PE_{CH_4,y}$$

Project emissions from dedicated plantations ($PE_{cultivation,y}$) and from use of charcoal ($PE_{CH_4,y}$) are not applied, so

$$PE_y = PE_{ele,y} + PE_{fuel,y}$$

Where

PE_y = Project emissions in year y (t CO₂)

$PE_{ele,y}$ = Project emissions due to electricity consumption in year y (tCO₂)

	<p>$PE_{fuel,y}$ = Project emissions due to fossil fuel or NRB consumption in year y (tCO₂)</p> <p><u>Leakage emissions</u></p> <p>According to the applied methodology and related tools, there are three types of leakage sources: shift of pre-project activities, emission related to the production of biomass and competing uses for biomass. In case any of these are applied, leakage will be considered.</p> <p>However, the determination of leakage is being based on expired guideline. Thus a CL has been raised.</p> <p>Therefore, the emission reductions will be calculated as follows</p> $ER = BE - PE - LE$ <p>No sampling plan will be used to monitor the parameters related to the CPAs.</p> <p>Moreover, due to temporary measures pending CMP guidance at CMP 16, it was required, as per 108th EB meeting report, paragraph 8)c), the raise of a FAR in order to take into consideration updated values for GWP.</p>
Findings	<p>CL 09 <i>PoA Section I.6.1: Leakage emissions</i> <i>The determination of leakage is being based on an expired guidance, i.e. "General guidance on leakage in biomass project activities". Moreover, specifications of AMS-II.G is not being taking into account, unlike required by applied methodology.</i></p> <p>FAR 01 <i>Global warming potential values that may be adopted by the CMP from 1st January 2021 shall be applied to this PoA in emission reductions achieved on or after 1st January 2021, as per guidance outlined in 108th EB meeting report, paragraph 7)c)</i></p>
Conclusion	<p>The baseline emissions are demonstrated for the generic CPA in accordance with applied methodology and tools. All formulae were duly demonstrated in the PoA-DD which collaborates for an easy understading of baseline calculations.</p> <p>Regarding project emissions, all applicable sources were duly informed, in accordance with applicable methodologies and tools. Generic information was duly included in the PoA-DD and specific information will be included in specific cases CPA, according to each CPA.</p> <p>Regarding the leakage, the leakage is to be considered for this CPA in case of competing use of biomass, which is determined based on ex-post surveys. In case surveys are not conducted, alternatively, the parameter $FC_{BL,i,j}$ (<i>Average annual baseline fossil fuel or NRB consumption value for fuel type j combusted in process i using volume or mass units (kg or m³)</i>) can be multiplied by 0.95 to account for leakage emissions.</p> <p>The calculation is in accordance with applied methodology and CDM rules and requirements.</p> <p>All formulae to be applied in the ER calculations are duly explained in the PoA-DD. Ex ante estimations will be demonstrated at each specific case CPAs.</p> <p>The calculation demonstrated in the PoA-DD is correct and accurate. The assessment has been carried out in accordance with VVS-PoA, paragraphs 122 to 126.</p>

D.2.3.5. Monitoring plan

Means of validation	<p><u>Fixed parameter:</u></p> <ul style="list-style-type: none"> - $FC_{BL,y}$: Average annual baseline fossil fuel or NRB consumption value for fuel type j combusted in process i using volume or mass units (kg or m³). In the case of NRB, it is determined by the total woody biomass consumption multiplied with the fraction of the NRB (fNRB). Baseline NRB consumption will be determined
----------------------------	---

for each CPA and will be based on NRB consumption of the latest three years available. This value will be then multiplied by f_{NRB} which will be updated annually (see parameter f_{NRB} in the monitored parameters). To be determined for each CPA

- **NCV_j** : Average net calorific value of fuel combusted. For NRB the value of 1.5×10^{-5} TJ/kg will be used as per applied methodology
- **$EF_{CO_2,j}$** = CO₂ emission factor of fuel type j combusted. For NRB the value of 81.6 t CO₂/TJ will be used as per applied methodology.
- **$P_{H,y}$** : Average annual historical baseline brick production. To be determined for each CPA
- **$TDL_{j,y}$** : Average technical transmission and distribution losses for providing electricity to source j in year y: Value equal to 20% fixed for this PoA.

Monitoring parameters:

- **$f_{NRB,y}$** : Fraction of woody biomass that will be utilized in the absence of the project activity in year y that can be established as non-renewable biomass. The parameter will be monitored for each CPA and for each Biome in which the CPA is inserted, as per requirements of TOOL30.
- **$MAI_{forest,i}$ / $MAI_{other,i}$** = Mean Annual Increment of woody biomass growth per hectare in subcategory i of forest areas / other wooded land areas (t/ha/yr). The parameters will be used to calculate the parameter f_{NRB} and will be monitored yearly determined in accordance with TOOL30 based on most recent information available
- **$F_{forest,l}$, $F_{other,l}$** = Extent of forest / other wooded land in sub-category l (ha). The parameters will be used to calculate the parameter f_{NRB} and will be monitored yearly determined in accordance with TOOL30 based on most recent information available
- **$P_{forest,l}$, $P_{other,i}$** : Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest areas / other wooded land areas. The parameters will be used to calculate the parameter f_{NRB} and will be monitored yearly determined in accordance with TOOL30 based on most recent information available. These non-accessible areas can be either protected areas without approved sustainable forest management plan or indigenous areas. In these areas, wood extraction for commercial purposes is prohibited. The parameter will be applied in the f_{NRB} calculations taking these concepts into account, for each CPA.
- **H** : Total annual consumption of wood in the absence of the project activity in the country/region/project area. This parameter will be monitored yearly as per paragraph 11)a) of TOOL30 version 02.0, based on Official statistics or reports or peer-reviewed literature.
- **$P_{PJ,y}$** : Annual net production: this parameter will be accounted by internal production registration.
- **$EC_{PJ,i,y}$** : Quantity of electricity consumed by the project. This parameter is related only to electricity consumed for biomass processing and treatment. This parameter will be monitored either by direct monitoring or indirect monitoring (by measuring the hours that the equipment is operative).
- **$EF_{CO_2,i,y}$** = Weighted average CO₂ emission factor of fuel type i in year y. The parameter value will be monitored in accordance with requirements of TOOL03 along the crediting period based on information from fuel providers or upper limit IPCC values.
- **$NCV_{i,y}$** : Weighted average net calorific value of fuel type i in year y. To be determined for each CPA. The parameter value will be monitored in accordance with requirements of TOOL03 along the crediting period, based on information from fuel providers or upper limit IPCC values.
- **$EF_{EF,i,y}$** : Grid emissions factor per MWh of power produced in year y. The data is monitored ex-post and information is provided by Brazilian DNA^{/13/}
- **$FC_{i,j,y}$** : Quantity of fuel combusted

However this proposed monitoring is not fully in accordance with TOOL05. Thus a CAR has been raised. Refer to CAR 03 below

	Moreover, as the evidences of calculation of parameter fNRB were not provided, CL 10 has been raised
Findings	<p>CL 10 <i>PoA Section I.6.2, parameter fNRB, no evidence has been provided to support the ex-ante values</i></p> <p>CAR 03 <i>The proposed measurement of the parameter ECPJ (electricity consumed by the project activity) is not in accordance with applied version of TOOL 05.</i></p>
Conclusion	<p>The elements of monitoring plan are all duly described in the PoA-DD for the generic CPA.</p> <p>The parameter $f_{NRB,y}$ will be determined ex-post, calculated for each biome in which the CPA is inserted. The calculation will be carried out in accordance with TOOL30. The determination of the parameter is considered accurate, and in accordance with requirements of applied methodologies and tools.</p> <p>Apart from the monitored parameters above, it is duly explained in the PoA-DD that, at the inclusion of each CPA, it shall be ensured that:</p> <ul style="list-style-type: none"> - The CPA complies with all national applicable legislation, and it s is dully licensed by environmental agency. - The baseline kilns will not be operating after the start of operation of new kiln. - No NRB will be used after the operation start date of the CPA. - No firewood will be applied after the operation start date of CPA. <p>The monitoring plan described in the generic CPA is clear, reliable and in accordance with requirements of PS for PoA para 263.</p> <p>The monitoring plan described in the PoA-DD duly details the following elements of this plan:</p> <ul style="list-style-type: none"> - Data metering and recording - Management structure and responsibilities - Policies for over sighting and accountability of monitoring activities - Quality assurance and quality control - Training and monitoring personnel <p>It has been duly mentioned in the PoA-DD that no sampling plan will be used to monitor the parameters related to the CPAs.</p> <p>The validation team compared the provided monitoring plan with requirements of applied methodologies and tools and verified that it is feasible within the project design.</p> <p>All fixed and monitored parameters are determined in accordance with requirements of applicable methodology and tools, as required by VVS-PoA version 2.0, paragraph 124(a) and (b) and paragraph 129.</p> <p>The CME has demonstrated ability to implements the provided montitoring plan.</p>

D.2.4. Crediting period type and duration

Means of validation	As well as the PoA which this CPA is attached to, the crediting period type of this CPA is renewable and its duration is 3 x 7 years and 0 months. However not accurate information was mentioned in the PoA-DD. Thus a CL has been raised.
Findings	<p>CL 11 <i>PoA-DD Section J:</i> <i>The renewable times informed for the generic CPA is not in accordance with CDM requirements</i></p>
Conclusion	The crediting period type and duration of this CPA is now in compliance with the proposed PoA to which this CPA is attached. The newable times of this CPA will be 2 times. In other words, the crediting period is renewable, with possibility of two renewals totalizing 3 crediting period of 7 years and zero months.

D.2.5. Eligibility criteria for inclusion of CPAs

No.	Eligibility criterion - Category/Required condition	Means of validation	Findings	Conclusion
a.	Each CPA will be located within the physical/geographical boundary of the PoA.	The geographical boundary of this CPA comprehends the Northern, Central-west and Northeast regions of the Brazilian Territory. The CPAs will be implemented in the Amazon, Cerrado and Caatinga biomes as per definition in the proposed PoA. The validation of this criteria will be made by checking the geographical coordinates of the project in order to determine the region and the biome in which the ceramic is inserted, and by checking the Environmental License of the Ceramic.	Not Applicable	The documents required for evidencing the geographic location of the CPA are duly described in the PoA-DD.
b.	Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo);	This criteria will be verified by interviewing the CME and CPA implementer regarding the participation in other ER scheme. The CPA –DD description will include the identification of ceramic which will have unique identification, attested by its Environmental License.	Not Applicable	The conditions required for avoiding double counting of ERs in the CPA are duly described in the PoA-DD.
c.	Conditions to confirm that CPAs are neither registered as CDM project activities, included in another registered PoAs, nor the project activities that have been deregistered;	This criteria will be stated in the contract between the Ceramic and the CME, where the location is defined. Moreover, the CME will be checking if the CPA is part of other programme or registered under other emission reduction scheme.	Not Applicable	The requirements for evidencing that the CPAs are neither registered as CDM project activities, included in another registered PoAs, nor the project activities that have been deregistered are duly described in the PoA-DD.
d.	The specifications of technology/measure including the level and type of service, performance specifications	In the contract between the CME and the Ceramic it will be detailed the technology, level and	Not applicable	The documents required for evidencing the technology specifications, levels, type of services and

No.	Eligibility criterion - Category/Required condition	Means of validation	Findings	Conclusion
	including compliance with testing/certifications;	type of service, as well as capacity production, and any manufacturer specifications. The confirmation of technology will be made by checking contract with technology supplier.		testing/certifications are duly described in the PoA-DD.
e.	Conditions to check the start date of the CPA through documentary evidence;	In the inclusion contract, it is stated that the start date must be later than 08/03/2019, which is the start date of the PoA. In this contract, the project owners are required to state the earliest purchase date of the main equipment and provide evidence if required, such as contract, purchase orders, etc.	Not applicable	The documents required for evidencing CPA start date are duly described in the PoA-DD.
f.	Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs;	Each CPA will satisfy the applicability conditions for simplified baseline and monitoring methodologies as specified in the AMS-III.Z (Version 06.0)	Not applicable	The documents required for evidencing the applicability conditions of the applied methodology are duly described in the PoA-DD.
g.	The conditions that ensure that the CPA meets the requirements pertaining to the demonstration of additionality	The CPA shall result in GHG emission reductions within 60 ktCO ₂ e/year. The additionality assessment will be made in accordance to TOOL21 Methodological tool: Demonstration of additionality of small-scale project activities Version 13.1 for each CPA.	CL 03	The additionality assessment will be made in accordance to TOOL21 Methodological tool: Demonstration of additionality of small-scale project activities Version 13.1. In case investment analysis is applied, the parameters used are already defined in the generic CPA-DD as required by PS for POA. In case other barriers are applied, supporting evidence will be provided.
h.	Conditions to ensure the compliance with other requirements of the applied methodologies;	Refer to letter (f) above	Not applicable	The documents required for evidencing the applicability conditions of the applied methodology are duly described in the PoA-DD.

No.	Eligibility criterion - Category/Required condition	Means of validation	Findings	Conclusion
i.	The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis	The local stakeholder consultation was already carried out in PoA level. Evidences of Local stakeholder consultation at PoA level were provided to the validation team ^{/13/} . No stakeholder consultation is to be conducted for CPAs inclusion. Regarding the environmental impact analysis, it was also conducted at PoA level. However, not all information regarding LSC was provided in the PoA. Thus, CL was raised.	Refer to CL 04	LSC has been done in accordance with Brazilian DNA rules and requirements, which is in accordance with CDM PS for POA. It has been done in PoA stage due to similarity of projects. The EIA has also being done in PoA stage as there is no requirement of National/Local governments to conduct an EIA for this type of project. All information provided in the PoA is accurate.
j.	Conditions to provide an affirmation that funding from Annex I Parties, if any, does not result in a diversion of official development assistance	Confirmation by CME that there is no funding from Annex I parties for the kilns. If any, it will be confirmed that it does not result in a diversion of ODA.	Not applicable	The documents required for evidencing obtention of fundings from Annex I parties are duly described in the PoA-DD.
k.	Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation)	This target group is not applied to this CPA	Not applicable	Target group will not be applied in this CPA
l.	Where applicable, the conditions related to sampling requirements for the PoA in accordance with the "Standard for sampling and surveys for CDM project activities and programme of activities";	No sampling will be applied to the CPA. All components will be monitored individually. Moreover, no sampling plan will be used to monitor the parameters related to the CPAs.	Not applicable	No Sampling will be applied in the CPA
m.	Where applicable, the conditions that ensure that every CPA (in aggregate if it comprises of independent sub units) meets the small-scale or microscale threshold and remains within those thresholds throughout the crediting period of the CPA	The sum of the GHG emissions reductions of all components of the CPA shall be within 60 ktCO ₂ e/year throughout the crediting period. It will be checked in the estimated ER calculations	Not applicable	The evidences required for ensuring the small scale threshold are duly described in the PoA-DD.
n.	Where applicable, the requirements for the debundling check, in case the CPAs belongs to	In the contract, the project owners are required to state that within the previous	Not applicable	The evidences required for checking the debundling condition are duly

No.	Eligibility criterion - Category/Required condition	Means of validation	Findings	Conclusion
	small-scale or microscale project categories	two years no other of his PV plants located in a distance of less than 1 km has been registered as CDM project or included as CPA to a PoA. The CME will be checking this information presented in the inclusion contract.		described in the PoA-DD.
o.	Requirements to confirm that the CPA complies with national legislation	<p>When including the CPA, the DOE shall confirm that:</p> <ul style="list-style-type: none"> •It complies with all applicable environmental regulations; •The CPA is legally registered, and; <p>Brick manufacturing is duly licensed.</p> <p>All applicable licenses are to be provided to validation team during the validation of CPA inclusion.</p>	Not applicable	The evidences required to assess whether the CPA complies with national legislation are enough and are well described in the PoA-DD/generic CPA.

According to the instructions for completing the PoA-DD a table template shall be used for description of eligibility criteria. As it was not followed, a CL has been raised.

CL 12

PoA-DD Section K:

The table provided is not in accordance with PoA template. Moreover, the table is not completed in accordance with instructions for completing the PoA-DD

Conclusion: after findings resolution, the correct table template for eligibility criteria has been used in the PoA-DD

SECTION E. Internal quality control

The draft validation report that is prepared by validation team is reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by ESPL were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable CDM rules/requirements.

The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope to which the project activity is related. All members of technical review team are independent of the validation team.

During the technical review process, additional findings may be identified or the closed out findings may be opened, which needs to be satisfactorily resolved before the request for registration of the PoA is submitted to UNFCCC. The independent technical reviewer may either approve the report as such or reject/return the same, in such case, providing the comments/findings/issues that needs to be resolved by the validation team. The decision taken by the technical reviewer is final and is authorized on behalf of ESPL.

SECTION F. Validation opinion

Earthood Services Private Limited, contracted by Clean Sistemas de Automação Industrial EIRELI., has performed the independent validation of the PoA “Fuel switching, energy efficiency and renewable energy in ceramic industries” as reported in the PoA-DD (final). Clean Sistemas de Automação EIRELI (CME) is responsible for the description, monitoring plan and estimated GHG emissions reductions of component project activity.

ESPL commenced the validation based on the baseline and monitoring methodologies reported in the PoA in each generic CPA.

ESPL’s validation approach is based on the understanding of the risks associated with reporting the implementation of the PoA, estimates of GHG emission data and the controls to be implemented to mitigate these. ESPL planned and performed the validation by obtaining evidence, other information and explanations that ESPL considered necessary to give reasonable assurance that the estimated GHG emission reductions are fairly to be achieved.

The validation team confirms that:

- the proposed PoA complies with the corresponding latest version of the PoA-DD form;
- the proposed PoA complies with all eligibility criteria for the registration of the CDM PoA; and
- the proposed PoA complies with all relevant CDM rules and requirements.

Therefore, Earthood Services Private Limited is able to confirm that the proposed PoA “Fuel switching, energy efficiency and renewable energy in ceramic industries” complies with all requirements related to the PoA validation as per CDM rules/procedures/guidances.

Appendix 1. Abbreviations

Abbreviations	Full texts
ACM	Approved Consolidated Methodology
BE	Baseline Emission
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CM	Combined Margin
CME	Coordinating/Managing Entity
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CP	Crediting Period
CPA-DD	Component Project Activity Design Document
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA	Environmental Impact Assessment
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Green House Gas
GSC/GSP	Global Stakeholder Consultation Process
GW	Giga Watt
GWh	Giga Watt hour
IPCC	Intergovernmental Panel on Climate Change
LFG	Landfill gas
LSC	Large scale
KP	Kyoto Protocol
kW	kilo Watt
kWh	kilo Watt hour
LoA	Letter of Approval/Authorization
MoC	Modalities of Communication
MoV	Means of Validation
MP	Monitoring Plan
MW	Mega Watt
MWh	Mega Watt hour
OM	Operating Margin
ONS	Electric System National Operator
PA	Project Activity
PCP	Project Cycle Procedure
PDD	Project Design Document
PE	Project Emission
PLF	Plant Load Factor
PoA-DD	Programme of Activities Design Document
PP	Project Participant
PS	Project Standard
PV	Photovoltaic
RFR	Request for Registration
SIN	National Interconnected System (Sistema Interconectado Nacional)
SSC	Small Scale
tCO ₂ e	Tonnes of Carbon di oxide equivalent
UNFCCC	United Nations Framework Convention on Climate Change
VT	Validation Team
VVS	Validation and Verification Standard

Appendix 2. Competence of team member and technical reviewers

Name	Ricardo Lopes		
Country	Brazil		
Education	Technical Diploma in Data Processing		
Experience	12 years		
Field	CDM, Energy, Environment		
Approved Roles			
Team Leader	Yes		
Validator	Yes		
Verifier	Yes		
Methodology Expert	Yes (ACM0001, ACM0002, AM0026, AMS ID, AMS III.H, AMS III.F)		
Local expert	Brazil, Argentina, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Nicaragua, Uruguay		
Financial Expert	Yes		
Technical Reviewer	No		
TA Expert	Yes (1.2, 13.1)		
Reviewed by	Shreya Garg	Date	04/06/2019
Approved by	Anshika Gupta	Date	04/06/2019

Name	Marcelo Sebben		
Country	Brazil		
Education	M.Sc. (Sustainable Energy System) B. Eng. (Chemical Engineering)		
Experience	+12.5 Years		
Field	Chemical process industry, CDM, Energy, Climate Change		
Approved Roles			
Team Leader	Yes		
Validator	Yes		
Verifier	Yes		
Methodology Expert	Yes (ACM0001, ACM0002, ACM0006, AM0065, AMS ID, AMS-I.E, AMS-I.C, AM0026, AMS-I.A, AMS-I.F, AMS-III.E, AMS-III.H, AMS-III.I, AMS-III.J, AMS-III.Z. GS: Ecologically Sound Fuel Switch to Biomass with Reduced Energy Requirement, GS: Technologies and Practices to Displace Decentralized Thermal Energy Consumption)		
Local expert	Brazil, Chile, Honduras, Colombia		
Financial Expert	Yes		
Technical Reviewer	No		
TA Expert	Yes (TA 1.1, 1.2, 4.1, 5.1, 9.1, 13.1)		
Reviewed by	Shreya Garg	Date	02/09/2019
Approved by	Anshika Gupta	Date	02/09/2019

Name	Sanjeev Kumar		
Country	India		
Education	B. Tech. (Chemical Engineering) M.Tech. (Energy Management)		
Experience	13.5 years +		
Field	Climate Change, Environment, Energy		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	YES (ACM0002, ACM0006, ACM0004, ACM0009, ACM0012, ACM0001, AMS I.D, AMS I.F, AMS I.C, AMS I.A, AMS II.C, AMS II.D, AMS II.E, AMS III.H, AM0009, AM0013, AM0025, AM0056, AM0028, AM0029, AM0008, AMS III.R, ACM0003)		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, 4.1, 13.1)		
Reviewed by	Shreya Garg	Date	16/01/2020
Approved by	Anshika Gupta	Date	16/01/2020

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	UNFCCC	Standard: CDM PS for PoA	version 02.0	Other
2.	UNFCCC	Standard: CDM PCP or PoA	version 02.0	Other
3.	UNFCCC	Standard: CDM VVS or PoA	version 02.0	Other
4.	UNFCCC	Form: CDM-PoA-DD-FORM	version 09.0	Other
5.	CME	Programme of Activities design document (draft)	version 1.4 – 15/10/2019	CME
6.	CME	Programme of Activities design document (Revised/final)	Version 2 – 05/12/2019 Version 3 – 10/12/2019 Version 4 – 18/12/2019 Version 5 – 31/05/2020 Version 6 – 10/11/2020 Version 7 – 14/02/2021 Version 7.1 – 30/03/2021 Version 7.2 – 05/06/2021 (final)	CME
7.	UNFCCC	<u>Methodologies:</u> AMS.III.Z – Fuel switching, process improvement and energy efficiency in brick manufacture AMS-II.G. Small-scale Methodology: Energy efficiency measures in thermal applications of non-renewable biomass	Version 06.0 Version 11.0	Other
8.	UNFCCC	<u>Applied tools:</u> 1. TOOL03 Methodological tool: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion - 2. TOOL05 Methodological tool: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation. 3. TOOL07 Methodological tool: Tool to calculate the emission factor for an electricity system. 4. TOOL15 Methodological tool: Upstream leakage emissions associated with fossil fuel use - version 02.0. 5. TOOL16 Methodological tool: Project and leakage emissions from biomass.	1. version 03.0. 2. Version 03.0 3. Version 07.0 4. Version 02.0 5. Version 04.0	

		6. TOOL21 Methodological tool: Demonstration of additionality of small-scale project activities. 7. TOOL22 Methodological tool: Leakage in biomass small-scale project activities. 8. TOOL30 Methodological tool: Calculation of the fraction of non-renewable biomass	6. Version 13.1 7. Version 04.0 8. Version 02.0	
9.	UNFCCC	<u>Applied guidelines/rules</u> General guidelines for SSC CDM methodologies	Version 23	Other
10.	UNFCCC MCTIC	<u>Start date of PoA</u> 1. Email confirmation to UNFCCC secretariat sent and dated on 08/03/2019 with the completed form CDM-PoA-PC-FORM 2. Email confirmation to Brazilian DNA sent and dated on 08/03/2019 with the completed form CDM-PoA-PC-FORM 3. Information published in the UNFCCC/CDM website – Prior Consideration of the CDM mentioning that the Secretariat has received the PC form on 08/03/2019	08/03/2019 08/03/2019 https://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html	CME
11.	MCTIC CME	<u>Local Stakeholder consultation</u> 1. LSC rules according to Brazilian DNA 2. ANNEX III containing the information required by Brazilian DNA to be provided to Stakeholders 3. Presentation of the PoA to Local Stakeholders Consultation 4. Invitation letters 5. Receipt confirmation 6. Comments made by CETESB and outcome 7. Local stakeholder consultation website	1. http://www.mctic.gov.br/mctic/opencom/ciencia/SEPED/clima/cimgc/Comissao Interministerial de Mudanca Global do Clima CIMG.html	CME

			7. http://www.c-lean.com/documentos/	
12.	CONAMA	<u>Environmental Legislation</u> 1. CONAMA Resolution nº 237/97, issued on 19/12/1997 – establishes the requirements for Environmental License 2. Law 6,938/81 issued on 31/08/1981 – establishes the Environmental National Policy	1. http://www2.mma.gov.br/port/conama/res/res97/res23797.html 2. http://www.planalto.gov.br/ccivil_03/LIS/L6938.htm	CME
13.	MCTIC – Ministry of Ciency and Technology (General Coordination of Climate Science and Sustainability)	Emission factor of the Brazilian Grid	https://www.mctic.gov.br/mctic/opencms/ciencia/SEPED/clima/textogeral/emissao_despacho.html Last visit on 09/01/2019	CME
14.	MCTIC	1. DNA of Brazil – General Coordination of Climate Science and Sustainability 2. Decree 10.145 from 28/11/2019 issued by Brazilian Government stating the responsibilities of Brazilian DNA	1. http://antigo.mctic.gov.br/mctic/opencms/ciencia/SEPED/clima/cimgc/Comissao_Interministerial_de_Mudanca_Global_do_Clima_CIMGC.html 2. http://www.in.gov.br/web/dou/-/decreto-n-10.145-de-28-de-novembro-de-2019-230458399	Other
15.	PP	<u>Use of NRB as common practice evidences</u> 1. UHLIG, A. Lenha e carvão vegetal no Brasil: balanço oferta-demanda e métodos para a estimação do consumo. 2008, 156f. Dissertação (Pós-Graduação em Energia) – Universidade de São Paulo, pages 37. 2. National Technology Institute (Instituto Nacional de Tecnologia). Projeto EELA no Brasil – Cerâmica Vermelha. Rio de Janeiro, 2017. 135p	1. http://www.teses.u.br/teses/disponiveis/86/86131/tde-14052008-113901/publico/UHLIG_Tese1.pdf 2. http://www.int.gov.br/docman/biblioteca/1443-livro-cer%C3%A2mica-vermelha-%E2%80%93	

		<p>3. NERI, J.T. Energia Limpa, Sustentável ou de Subsistência? Cerâmica Industrial, Rio Grande do Norte; V,8, n.1,35 -6,2003.</p> <p>4. O GLOBO (2019).</p> <p>5. Brasil. Ministério do Meio Ambiente. Biomassa para energia no Nordeste: atualidade e perspectivas. Ministério do Meio Ambiente/Programa das Nações Unidas para o Desenvolvimento. Brasília, DF. 2018. 161 p</p> <p>6. Brazil. Ministério da Agricultura, Pecuária e Abastecimento. Florestas do Brasil em resumo: 2019. Serviço Florestal Brasileiro, Brasília/DF. 207 p</p> <p>7. Ndagijimana, C. Pareyn, F.G.C., Riegelhaupt, E. Uso do solo e desmatamento da Caatinga: um estudo de caso na Paraíba e no Ceará – Brasil. Estatística Florestal da caatinga. Ano 2. Volume 2. Agosto 2015. pp 18-29. Associação Plantas do Nordeste, Recife/PE.</p> <p>8. Boletim SNIF 2019. Ed.1.</p> <p>9. UHLIG, A. Lenha e carvão vegetal no Brasil: balanço oferta-demanda e métodos para a estimativa do consumo. 2008, 156f. Dissertação (Pós-Graduação</p>	<p>projeto-eela-no-brasil/file</p> <p>3. http://www.ceramicaindustrial.org.br/pdf/v08n01/v8n1_5.pdf</p> <p>4. https://www.labgis.uerj.br/noticias/analise-maior-problema-do-desmatamento-na-amazonia-e-a-fiscalizacao-e-nao-os-sistemas-de-monitoramento</p> <p>8. http://snif.florestal.gov.br/images/pdf/publicacoes/Boletim-SNIF_Ed1_2019.pdf</p> <p>9. http://www.teses.usp.br/teses/disponiveis/86/86131/tde-</p>	
--	--	---	---	--

		em Energia) – Universidade de São Paulo, pages 26.	113901/publico/UH_LIG_Tese1.pdf	
16.	CME	Modalities of Communication Form (MoC)	06/12/2019	CME
17.	MCTIC	<u>Letter of Approval</u> 1. Letter of Approval received from Brazilian DNA ref.# 6803685 (SEI/MCTI) dated on 17/03/2021 which also authorizes the CME (Clean Sistemas de Automação Industrial EIRELI) to coordinate and to be a project participant of the PoA. 2. Email from (Interministerial Chamber of Climate Change - cimgc@mctic.gov.br) with LoA has been attached. 3. LoA Signature conference: the authenticity has been checked in the indicated website which verification code 6803685 and CRC code 501935D8	17/03/2021 18/03/2021 http://sei.mctic.gov.br/verifica.html	CME
18.	UNFCCC	CDM EB 23, Annex 18 – Definition of Renewable Biomass	https://cdm.unfccc.int/EB/023/eb23_repan18.pdf	
19.	Brazilian DNA (MCTIC)	<u>Brazilian DNA</u> 1. General Coordination of Climate, Science and Sustainability from the Ministry of Science, Technology and Innovations (MCTIC)	https://antigo.mctic.gov.br/mctic/opencms/ciencia/SEPED/clima/index.html	
20.	-	IPCC publications	www.ipcc-nggip.iges.or.jp	Other
21.	-	UNFCCC	http://cdm.unfccc.int	Other
22.	CME	<u>Risk acknowledgement and acceptance form</u> - CDM-RAA-FORM - Form signed by CME	29/03/2021	CME

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

Table 1. CLs from this validation

CL ID	01	Section no.	D.1.2	Date : 19/11/2019
Description of CL				
<p>PoA-DD Section A.1:</p> <ul style="list-style-type: none"> - it is mentioned that the project activity will contemplate the switching from non-renewable biomass and fossil fuel to renewable biomass. However, in section I.5, it is stated that no fossil fuel will be considered in the baseline. Thus, information is inconsistent. - It is not clear whether all regions of Brazil will be contemplated in the PoA 				
Project participant response				Date : 29/11/2019
<ul style="list-style-type: none"> - The project activity will contemplate the switching from non-renewable biomass to only renewable biomass. Fossil fuel will not be considered in the baseline. The section A.1 was corrected and the information is consistent in Version 02 of the PoA. - The Component Project Activities (CPAs) that will be included in this PoA may be implemented in the North, Northeast and Central-west regions of Brazil, specifically in the Amazon, Caatinga and Cerrado biomes. 				
Documentation provided by project participant				
PoA_DD_Clean_EN_v3				
DOE assessment				Date: 18/11/2020
<p>Information is now consistent between both sections. It has been stated that in the baseline, only NRB will be consumed. Moreover, it is now clear in the PoA-DD that CPAs will be only installed in the Northern, Central-west and Northeast regions of Brazil, and their biomass will be extracted from Amazon, Caatinga or Cerrado Biomes.</p>				
CL is closed.				

CL ID	02	Section no.	D.1..2	Date : 19/11/2019
Description of CL				
<p>PoA-DD Section A.3:</p> <ul style="list-style-type: none"> - the technology to be applied in the POA is not duly explained in this section unlike requested by the instructions for completing the PoA-DD. - it is not described how technology will be transferred to host country. - The POA-DD is making reference to a standard that is not available - It is not clear the description of the eligibility criteria in this section 				
Project participant response				Date : 29/11/2019
<ul style="list-style-type: none"> - The technology was duly explained in this section as requested by the instructions for completing the PoA-DD. - It was described how technology will be transferred to host country and the correction is available in Version 02 of the PoA. - The reference to a standard that is not available was excluded the Section mentioned. - The eligibility criteria were excluded the section mentioned and relocated to Section K. 				
Documentation provided by project participant				
PoA_DD_Clean_EN_v2				
DOE assessment				Date: 06/12/2019

It has been observed that all information is now duly included in the PoA section A.3:

- The technology to be applied in the PoA is duly explained when fuel switch occurs along with the installation of new kiln.
- The transference of technology to the host party is duly explained in this section. It is stated that there will be no transfer of technology to the host party as the technology is already developed in the host country.
- The tools and methodologies to which the PoA-DD is referring are all the latest available and are all applicable to the PoA.
- The reference to eligibility criteria was excluded from this section.

CL is closed

CL ID	03	Section no.	D.1.4; D.2.5	Date : 19/11/2019
Description of CL				
PoA-DD Section C:				
<ul style="list-style-type: none"> - Not all input parameters needed for performing an investment analysis were described in the PoA-DD. - In the last paragraph it is mentioned that the investment analysis should reflect the economic decision-making context at the point of decision to start the project. However, the project standard for PoA, paragraph 124) g) iv) a) states that "The additionality of each CPA shall then be assessed by using the actual values, applicable to that CPA at the time of inclusion, in the investment analysis conducted for the purpose of demonstrating the additionality of the CPA" 				
Project participant response				Date : 29/11/2019
All parameters needed for performing additionality analysis were described in the PoA-DD. In addition, the additionality analysis will be assessed by using actual values as requested.				
Documentation provided by project participant				
PoA_DD_Clean_EN_v2				
DOE assessment				Date: 06/12/2019
The parameters that will be used for investment analysis were included as required by PS for PoA version 2 para 124)g)iv).				
CL is closed				

CL ID	04	Section no.	D.1.8; D.2.5	Date : 19/11/2019
Description of CL				
PoA-DD Section F.3				
<ul style="list-style-type: none"> - The comments received in the Local Stakeholder consultation were not mentioned in the PoA-DD unlike required by the PoA requirements. - It is not clear in the PoA-DD which information was made available to the stakeholders in accordance with paragraph 58 of the PS for PoA. 				
Project participant response				Date : 29/11/2019
The comments received in the Local Stakeholder Consultation were now mentioned in the PoA as required by the PoA requirements. The comments are available in Version 02 of the PoA-DD.				
Documentation provided by project participant				
PoA_DD_Clean_EN_v2 MDL_AnexoIII_PoAClean Receipt confirmation of all stakeholders				
DOE assessment				Date: 09/12/2019
All comments received during the LSC were duly included in the PoA-DD. No negative comments were received.				
CL is closed				

CL ID	05	Section no.	D.1.10	Date : 19/11/2019
Description of CL				
PoA-DD Section A.2: the DNA mentioned in the footnote #2 is not the correct Brazilian DNA.				
Project participant response				Date : 29/11/2019
The footnote #2 was corrected according to CDM Website available at: < https://cdm.unfccc.int/DNA/index.html >. The correct Brazilian DNA is the Ministry of Science, Technology, Innovations and Communications as mentioned in the CDM.				
Documentation provided by project participant				
PoA_DD_Clean_EN_v2				

DOE assessment	Date: 05/12/2019
The Brazilian DNA is now correctly referred in the PoA-DD.	
CL is closed	

CL ID	06	Section no.	D.2.1	Date : 19/11/2019
Description of CL				
<i>PoA Section H.3: The small-scale project type (Type I, Type II and/or Type III) applicable to the generic CPA in accordance with the project standard is not being informed.</i>				
Project participant response				Date : 29/11/2019
<i>The small-scale project type III was included in Section H.3 and are available in Version 02 of the PoA</i>				
Documentation provided by project participant				
<i>PoA_DD_Clean_EN_v2</i>				
DOE assessment				Date: 06/12/2019
Information has been included in accordance to instructions for completing the PoA-DD form.				
CL is closed.				

CL ID	07	Section no.	D.2.3.1	Date : 19/11/2019
Description of CL				
<i>PoA-DD: Section B: reference to a standard that is not available is being made Section I.1: the applied version of tool 07 is not the latest available. Moreover, the application of the mentioned tools is not in accordance with actual programme design</i>				
Project participant response				Date : 29/11/2019
<i>The reference was replaced current Project Standard for POA version 02.</i>				
Documentation provided by project participant				
<i>PoA_DD_Clean_EN_v2</i>				
DOE assessment				Date: 06/12/2019
The PoA-DD has been written based on updated tools and methodologies. All references to outdated documents were removed.				
CL is closed.				

CL ID	08	Section no.	D.2.3.3	Date : 19/11/2019
Description of CL				
<i>PoA-DD Section I.5: - It is not clear which is the baseline scenario defined for the proposed generic CPA - Information regarding how national and or sectoral policies, regulations and circumstances are taken into account as per PS paragraph 105 is missing.</i>				
Project participant response				Date : 29/11/2019
<i>The baseline scenario was defined according to the generic CPA.. In addition, information regarding how national and/or sectoral policies, regulations and circumstances was considered as per PS paragraph 105.</i>				
Documentation provided by project participant				
<i>PoA_DD_Clean_EN_v2</i>				
DOE assessment				Date: 09/12/2019
It has been observed that the baseline scenario has been determined for the generic CPA.. Moreover, the impact of national regulations/incentives (E+ /E- policies) were also discussed in the PoA-DD.				
CL is closed				

CL ID	09	Section no.	D.2.3.4	Date : 19/11/2019
Description of CL				
<i>PoA Section I.6.1: Leakage emissions - The determination of leakage is being based on an expired guidance, i.e. "General guidance on leakage in biomass project activities". Moreover, specifications of AMS-II.G is not being taking into account, unlike required by applied methodology.</i>				
Project participant response				Date : 29/11/2019

The determination of leakage now is being based on tool available: TOOL22: Leakage in biomass small-scale project activities – Version 04. In addition, the specifications of AMS-II.G. are being considering according applied methodology.

Documentation provided by project participant

PoA_DD_Clean_EN_v2

DOE assessment

Date: 06/12/2019

The leakage assessment in now in accordance with TOOL22: Leakage in biomass small-scale project activities – Version 04 and AMS-II.G as required by the applied methodology.

The assessment carried out consistently.

CL is closed

CL ID	10	Section no.	D.2.3.5	Date : 19/11/2019
Description of CL				
PoA Section I.6.2, parameter fNRB, no evidence has been provided to support the ex-ante values.				
Project participant response				Date : 29/11/2019
Parameter will be monitored ex-post for each CPA included in the PoA as per TOOL30 requirements.				
Documentation provided by project participant				
PoA_DD_Clean_EN_v3				
DOE assessment				Date: 18/11/2020
The parameter will be calculated ex-post for each CPA considering the biome in which the CPA is inserted, in accordance with TOOL30 requirements.				
CL is closed				

CL ID	11	Section no.	D.2.4	Date : 19/11/2019
Description of CL				
PoA-DD Section J:				
- The renewable times informed for the generic CPA is not in accordance with CDM requirements				
Project participant response				Date : 29/11/2019
The renewable times informed for the generic CPA was corrected and is in accordance with CDM requirements.				
Documentation provided by project participant				
PoA_DD_Clean_EN_v2				
DOE assessment				Date: 09/12/2019
The information is now duly included in the PoA-DD. The number of renewals of crediting periods are two for each CPA, totalizing 3 crediting period each CPA.				
CL is closed				

CL ID	12	Section no.	D.2.5	Date : 19/11/2019
Description of CL				
PoA-DD Section K:				
- The table provided is not in accordance with PoA template. Moreover, the table is not completed in accordance with instructions for completing the PoA-DD				
Project participant response				Date : 29/11/2019
The table provided is now in accordance with PoA template. In addition, the eligibility criterion category is now in accordance with instructions for completing the PoA-DD.				
Documentation provided by project participant				
PoA_DD_Clean_EN_v2				
DOE assessment				Date: 09/12/2019
Information is now duly included in the PoA-DD, which is in accordance with instructions for completing the PoA-DD.				

Table 2. CARs from this validation

CAR ID	01	Section no.	D.1.12	Date : 19/11/2019
Description of CAR				
A valid Modalities of Communication Form (MoC) has not been provided to the validation team during the site visit..				
Project participant response				Date : 29/11/2019
<i>The Modalities of Communication Form (MoC) has been developed and sent to the validation team</i>				
Documentation provided by project participant				
<i>PoA_DD_Clean_EN_v2</i>				
DOE assessment				Date: 09/12/2019
No MoC has been provided				
CAR remains open				
Project participant response				Date : 10/12/2019
<i>The Modalities of Communication Form (MoC) has been developed and sent to the validation team</i>				
Documentation provided by project participant				
<i>PoA_DD_Clean_EN_v3</i>				
DOE assessment				Date: 10/12/2019
The MoC has been provided and has been duly completed in accordance with PS for POA.				
CAR is closed				

CAR ID	02	Section no.	D.2.1; D.3.1	Date : 29/11/2019
Description of CAR				
According to PS for POA para 77, "For a proposed CDM PoA applying more than one technology/measure or more than one methodology, the coordinating/managing entity shall prepare a generic CPA-DD for each technology/measure, each methodology and each combination thereof". Thus the CME is required to evaluate the applicability of this statement in the proposed PoA.				
Project participant response				Date : 29/11/2019
<i>The PoA applied one technology/measure, therefore, one generic CPA-DD was provided to audit team.</i>				
Documentation provided by project participant				
<i>PoA_DD_Clean_EN_v2</i>				
DOE assessment				Date: 09/12/2019
A generic CPA has been described for the technology type as per requirements of PS for PoA para 77.				
CAR is closed				

CAR ID	03	Section no.	D.2.1; D.3.1	Date : 17/12/2019
Description of CAR				
<i>The proposed measurement of the parameter ECPJ (electricity consumed by the project activity) is not in accordance with applied version of TOOL 05.</i>				
Project participant response				Date : 18/12/2019
<i>The proposed measurement of the parameter ECPJ is now in accordance with the applied version of TOOL05. No indirect way to measure the ECPJ parameter will be applied.</i>				
Documentation provided by project participant				
<i>PoA_DD_Clean_EN_v4</i>				
DOE assessment				Date: 18/12/2019
The measurement of the parameter is now in accordance with applied tool.				
CAR is closed				

CAR ID	04	Section no.	D.2.3.2, D.2.3.4 and D.2.3.5	Date : 27/05/2021
Description of CAR				

During the request for registration process, the following issues have been found	
1.	The C/ME entity did not describe how to define the project boundary of each of the corresponding CPAs, including which sources and GHGs are to be included in the project boundary under which conditions or circumstances, in accordance with the applied methodologies and the applied standardized baselines. Please refer to the PS-PoA version 2.0, paragraph 100 Specifically, the C/ME did not describe the boundary of the CPA in the generic component
2.	The C/ME did not describe how the data and parameters that will not be monitored were determined before the registration of the proposed PoA and remain fixed throughout the PoA period. Please refer to PS-PoA version 2.0, paragraph 112. Specifically, the generic component the parameters "Upper CO2 emission factor of fuel type i" and "Upper net calorific value of the fuel" as fixed ex-ante. However, according to the applied version of the "TOOL03: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion", these parameters are to be monitored ex-post based on different data sources.
3.	The C/ME did not describe how to undertake the ex-ante and ex-post calculations of baseline, project and leakage GHG emissions to be achieved by the CPAs, in accordance with the applied methodologies and the applied standardized baselines. Please refer to PS-PoA version 2.0, paragraph 108. The PoA-DD and the generic component state that the CPA will prevent the consumption of non-renewable biomass (NRB), and the fraction of non-renewable biomass (fNRB) will be determined based on the "TOOL30: Calculation of the fraction of non-renewable biomass". However, the generic component does not include the relevant equations and methodological choices/assumptions to determine the fNRB from the TOOL30.
4.	The C/ME did not describe how to develop a monitoring plan for the CPA in accordance with the applied methodology. Please refer to PS-PoA version 2.0, paragraph 115. Specifically, the generic component states that the parameter fNRB will be monitored ex-post based on the TOOL30, however the monitoring provisions of the parameters needed to determine fNRB were not included in the monitoring plan.
5.	The C/ME did not describe a sampling plan in accordance with the "Standard: Sampling and surveys for CDM project activities and programme of activities". Please refer to PS-PoA version 2.0, paragraph 114. Specifically, the C/ME shall provide a description of the sampling plan for situations where sampling is required to determine baseline or project emissions.
Project participant response	
Date : 10/06/2021	
1.	This CPA is implemented within Brazil's geographical boundary, in either north, northeast or central west region, in the Amazon, Caatinga or Cerrado biome. Moreover, it has been detailed that the Project Boundary will be the physical, geographical site where the brick production takes place. It also includes all installations, processes or equipment affected by the switching.
2.	The parameters CO2 emission factor of fuel type I and net calorific value of the fuel were transferred to section I.7.1 of the PoA-DD as they are monitored parameters along the crediting period. They will be monitored in accordance with applied version of TOOL03.
3.	Relevant equations for determining the parameter fNRB were included in the PoA-DD section I.6.1. The parameter will be calculated in accordance with TOOL30 version 02.0 (applied version to this PoA-DD)
4.	All monitored parameters required to determine the parameter fNRB were now included in section I.7.1 of the PoA-DD in accordance with provisions of TOOL30.
5.	No sampling plan will be applied during monitoring of the CPAs. It has now been clarified in section I.7.2 and section K of the PoA-DD. The information initially presented in the POA-DD, section I.7.2 has been removed as it was wrongly inserted in previous versions of the document.
Documentation provided by project participant	
<i>PoA_DD_Clean_EN_v7.2</i>	
DOE assessment	
Date: 15/06/2021	

1. the CME has now described how to define the project boundary of each corresponding CPA in section I.4 of the PoA-DD. The geographical region and biome will be defined for each specific CPA (needed for calculating the parameter fNRB). Moreover, it has been defined that the boundary will be the physical, geographical site where the brick production takes place. It also includes all installations, processes or equipment affected by the CPA. Moreover, it is now specified that the project boundary has been determined in accordance with applied methodology and tools in section D.2.3.2 of the Validation report.
2. Parameters EFCO2 and NCV for fossil fuel consumed in the CPA due to the implementation of it are correctly transferred to monitored parameters (section I.7.1 of the PoA-DD) in accordance with requirements of TOOL03. Moreover, Information has been duly included in section D.2.3.5 of the Validation report.
3. The generic component now includes the relevant equation and methodological choices/assumptions to determine fNRB, in accordance with valid version of TOOL30 (version 02.0) in section I.6.1 of the PoA-DD. Moreover, the DOE validated the equations from TOOL 30 now applied in Generic CPA. Information can be found in the Validation report section D.2.3.4.
4. Parameters MAforest,l, MAlother,i, Fforest,l, Fother,l, Pforest,l, Pother,l, and H are now included as monitored parameters as required by applicable version of TOOL30. The parameters will be monitored yearly as well as the calculation of the parameter fNRB. The information is now clear in section I.7.1 of the PoA-DD. The validation team now validated the monitoring provisions of the parameters needed to determine fNRB, from the TOOL30 as can be seen in the Validation report section D.2.3.5.
5. it has now been determined in section I.7.2 of the PoA-DD that no sampling plan will be applied for monitoring the corresponding CPA, which is now coherent with information provided in section K of the POA-DD. The information was duly provided and validated in the validation report, sections D.2.3.4, D.2.3.5 and Section D.2.5 item L.

CAR is closed

Table 3. FARs from this validation

FAR ID	01	Section no.	D.2.3.4	Date:	23/03/2021
Description of FAR					
<i>Global warming potential values that may be adopted by the CMP from 1st January 2021 shall be applied to this PoA in emission reductions achieved on or after 1st January 2021, as per guidance outlined in 108th EB meeting report, paragraph 7)c)</i>					
CME response					Date: 29/03/2021
<i>Ok. Agreed</i>					
Documentation provided by CME					
<i>Risk acknowledgement and acceptance form (reg_form37 signed)</i>					
DOE assessment					Date: 30/03/2021
Although required by EB, it is agreed by the validation team that the FAR is not applicable to this project activity, considering that only CO2 baseline emissions are foreseen in this CPA. Therefore possible change in the GWP will not affect this CPA. Nevertheless, this situation will be verified during the next CPA inclusion/verification period in order to confirm this information. Moreover, the CDM-RAA-FORM is being provided by CME regarding the risk aknowledgeadment.					
<u>FAR will be verified during the next CPA inclusion/verification</u>					

- - - - -

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN);• Make editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
01.0	4 May 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Registration Keywords: programme of activities, validation report		