	Programme design document form for CDM programmes of activities **(Version 06.0)**

Complete this form in accordance with the Attachment "Instructions for filling out the programme design document form for CDM programmes of activities" at the end of this form.

PROGRAMME DESIGN DOCUMENT (PoA-DD)	
Title of the PoA	Brazilian PoA for NAMA incentivized NCRE Projects
Version number of the PoA-DD	04.1
Completion date of the PoA-DD	13/07/2016
Coordinating/ managing entity	Tractebel Energia S.A.
Host Party(ies)	Brazil
Applied methodology(ies) and, where applicable, applied standardized baseline(s)	Methodology: ACM0002 "Grid-connected electricity generation from renewable sources"; version 16.0
Sectoral scope(s) linked to the applied methodology(ies)	Sectoral scope: 01; Energy industries (renewable - / non-renewable sources)

PART I. Programme of activities (PoA)

SECTION A.   General description of PoA

A.1.   Title of the PoA

Brazilian PoA for NAMA incentivized NCRE Projects
Version 04.1
Completion date: 13/07/2016

A.2.   Purpose and general description of the PoA

Policy/measure or stated goal that the PoA seeks to promote

The objective of the Brazilian Programme of Activities for Nationally Appropriate Mitigation Actions incentivized Non-Conventional Renewable Energy Projects (or by simplification "_Brazilian PoA for NAMA incentivized NCRE Projects_") is to contribute to environmental, social and economic sustainability by promoting the development of NCRE sources as an alternative to the dispatch of electricity from existing fossil fuel thermal power plants and the development of new power plants based on GHG intensive generation.

The Component Project Activities (CPAs) to be included in the PoA will be implemented within the Brazilian national territory and connected to the Brazilian Interconnected System (from the Portuguese Sistema Interligado Nacional – SIN) and will initially consist of new (Greenfield) solar, wind, small hydro (up to 30 MW), geothermal, wave and tidal power plants. The CPAs included in the PoA will reduce greenhouse gas (GHG) emissions by displacing electricity that would have otherwise been generated by the operation of power plants and by the addition of new generation sources connected to the SIN.

Despite Brazil's great potential for renewable electricity generation, NCRE power plants (i.e.: wind, small hydro power plants and solar photovoltaic) represent only 8.15% of country's installed capacity according to the National Electric Energy Agency (in Portuguese, Agência Nacional de Energia Elétrica, ANEEL)[1]. Besides, there is a need to satisfy the fast growth in Brazil's electricity demand which, according to the Ministry of Mines and Energy, is projected to be 49% between 2013 and 2022[2].

Given this context, the Brazilian Government has put in place different incentives for NCRE projects, so the country can maintain present energy consumption with lower emissions of greenhouse gases. This is observed in the Decennial Plan for Electric Energy Expansion 2022 (hereinafter referred as PDE 2022 according to its abbreviation in Portuguese) which constitutes the energy sector plan for climate change mitigation and adaptation, and therefore, is the basic instrument for the formulation of the strategy to achieve energy production and use goals, as well as monitoring these goals.

The PoA seeks to foster the implementation of multiple NCRE projects, providing an important contribution to renewable and clean non-conventional alternatives for electricity generation and achievement of the country's voluntary climate change mitigation goals. The PoA will also sustainably develop regional economies and consequently increase the quality of life in local communities.

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[1] Available at: http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.cfm. Accessed on: 02/08/2015.

[2] Brazilian Ministry of Mines and Energy: Decennial Plan for Electric Energy Expansion 2022 (PDE 2022 according to its abbreviation in Portuguese). Available at: http://www.epe.gov.br/PDEE/Forms/EPEEstudo.aspx. Accessed on: 02/08/2015.

Framework for the implementation of the proposed PoA

The Coordinating and Managing Entity (CME) – Tractebel Energia will promote the program and coordinate the efforts to develop, implement and operate the NCRE Power Plant Facilities.

For the avoidance of doubt, any CPA to be included in this PoA could be developed, implemented and/or operated by at least one of the following cases:
- Tractebel Energia S.A. or any of its subsidiaries, branches, shareholding companies, joint ventures or partnerships with other companies;
- Tractebel Energia S.A., as a subsidiary company from the ENGIE Group[3], or any subsidiaries, branches or shareholding companies of ENGIE Group;
- Any Entrepreneurs acting in the Brazilian Power Sector, as CPA proponents, conditional upon the eligibility criteria of this PoA and Tractebel Energia S.A. approval.

Nevertheless, for any cases listed above, Tractebel Energia S.A. will be the Coordinating and Managing Entity (CME) for all CPAs under this PoA.

Typically, each CPA will include one or more NCRE Power Plant(s), which will be managed individually and will report directly to Tractebel Energia.

Tractebel Energia will conduct the inclusion of the CPAs in the PoA and provide appropriate CDM training to the CPA personnel. Further details are described in section C below.

The organizational structure of the programme is as described below.
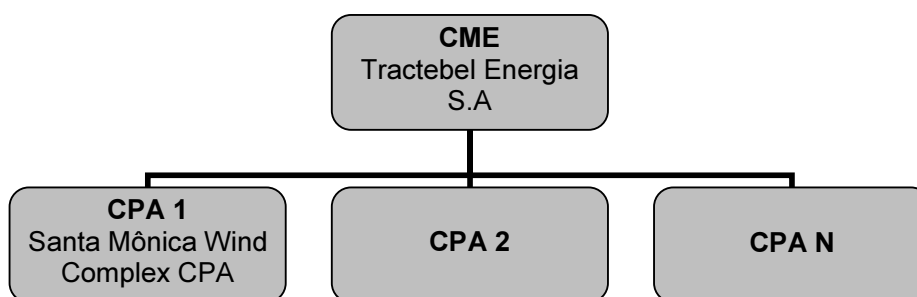
Figure 1. Organizational structure of the Brazilian PoA for NAMA incentivized NCRE Projects

Confirmation that the PoA is a voluntary action by the CME

Prior to the submission of the request for registration to the CDM Executive Board, the project participants of this PoA will obtain the Letter of Approval from the Designated National Authority (DNA)[4] of Brazil which will confirm its voluntary participation and that the project activity assists in achieving sustainable development (3/CMP.1, Annex, paragraph 40(a)) and therefore, is in compliance with the required procedure.

Tractebel Energia S.A. as CME of this PoA declares and confirms that:

- The proposed PoA is a voluntary action coordinated and managed by the Coordinating/Managing Entity.

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[3] ENGIE's Press Release, dated 24 April 2015: "*GDF SUEZ becomes ENGIE*". Available at: http://www.gdfsuez.com/en/journalists/press-releases/gdf-suez-becomes-engie/.

[4] The Designated National Authority (DNA) of Brazil is the Executive Secretariat of the Interministerial Commission on Global Climate Change (*Comissão Interministerial de Mudança Global do Clima – CIMGC*). Available at: http://www.mct.gov.br/index.php/content/view/14666.html.

- There are no existing mandatory laws or regulations in the PoA geographical boundaries that require the CME or any other party to develop a PoA for NCRE projects.
- NCRE projects are also voluntary and are not enforced by any law, decree or by-law.

Brief description of how the proposed PoA contributes to sustainable development

The proposed PoA will contribute to the sustainable development of Brazil by:

- Reducing GHG and local air pollutants (SO_2, NOx and PM) emissions from the Brazilian energy matrix;

- Improving energy security and grid stability by increasing diversification of power generation sources in terms of technologies and geographic location. Particularly, as Brazil's hydro and wind regimes are largely complementary, their combination allows to partially compensate the lack of hydropower storage capacity with minimal installation of thermal power generation units, while still providing sufficient energy security based on a portfolio of these complementary renewable sources;

- Improving the local infrastructure such as roads and electricity transmission systems;

- Stimulating the regional economy by, increasing tax revenues for the local government and job opportunities for local workers and service suppliers. The resulting economic stimulus will improve capital stock and availability in the region, which in turn will allow investment in the improvement of general infrastructure, productive capacity and consequently the satisfaction of the population's basic needs, thus promoting a virtuous cycle in the local economy;

- Stimulating the development of a proficient tertiary sector in the regions where the CPAs will be located to be able to satisfy the CPAs need of skilled operators and maintenance staff and therefore creating opportunities for education, professionalization and employment.

- Inducing the development of national technology and improving the domestic know-how. By promoting the establishment and growth of the necessary industry equipment and services, the PoA will contribute to the increasing availability of NCRE technologies, which will, consequently, reduce maintenance costs and risks of the technologies in the country;

- Generating extra income for the landowners in cases of land leasing, while they can continue using the area for other activities, thus it increases and diversifies the lands productivity.

A.3. CME and participants of PoA

Tractebel Energia S.A. is the CME of the proposed PoA and the entity which communicates with the CDM Executive Board. Tractebel Energia is also a project participant of this PoA.

Tractebel Energia is the largest private energy generator in Brazil, dedicating to the development and operation of power plants and is also an active agent in the electricity power market.

The company's headquarter is located in the city of Florianópolis, Santa Catarina State, and its plants are located in all five regions of Brazil, specifically in the states of Rio Grande do Sul, Santa Catarina, Paraná, São Paulo, Minas Gerais, Mato Grosso do Sul, Mato Grosso, Goiás, Tocantins, Maranhão, Piauí and Ceará.

The installed capacity of the company is 7,044 MW, which represents about 5.1% of Brazil's total installed capacity (138,123.172 MW)[5]. In total, the company operates 28 plants, nine of them are

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[5] ANEEL; Electricity generation capacity in Brazil;
http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.cfm. Accessed on: 02/08/2015.

large-scale hydroelectric power plants, five fossil fuel based thermal power stations and fourteen are based on complementary energy sources: two photovoltaic power plant, three biomass power plants, six wind power plants and three small hydro power Plants (SHP)[6].

The complementary power plants, as well as this Program of Activities, are a result of Tractebel Energia's policy to expand and complement its power generation capacity through investments in clean and renewable energy sources. To pursue this objective, the company makes active use of mechanisms such as the CDM or the Brazilian Program for the support of Alternative Energy Sources (PROINFA). As a result, the wind power plants of Beberibe and Pedra do Sal, as well as the small hydropower plants José Gelazio da Rocha, Areia Branca and Rondonopolis have been developed under the PROINFA, while the Cogeneration Plant Lages and the Trairi Wind Complex[7] were registered as CDM projects.

Tractebel Energia, is controlled by ENGIE Brasil[8], which holds 68.71% of its share capital. In Latin America, ENGIE provides innovative energy solutions in Argentina, Brazil, Chile and Peru, supporting this emerging continent in its economic growth, respecting the environment and providing essential services to its people. ENGIE Brasil is also a project participant of this PoA.

In Latin America, the group manages and operates a diversified energy matrix with an installed capacity of 14.2 GW, and an additional 3.3 GW installed capacity under construction[9]. Two-thirds of the electricity generated is from renewable sources.

ENGIE Brasil is part of the ENGIE Group, one of the leading energy providers in the world and active across the energy value chain, in electricity and natural gas upstream to downstream. The Group develops its businesses (energy, energy services and environment) around a responsible-growth model to respond to energy needs, ensure the security of supply, fight against climate change and maximize the use of resources.

A.4.   Party(ies)

Name of Party involved ("host" indicates host Party)	Private and/or public entity(ies) project participants, CME (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Brazil (host)	Tractebel Energia S.A. (Private Entity, Project Participant and CME) ENGIE Brasil (Private Entity and Project Participant)	No

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[6] Tractebel Energia; Generation assets; http://www.tractebelenergia.com.br/wps/portal/internet/parque-gerador. Accessed on: 02/08/2015.

[7] Composed by 4 wind power plants registered under the CDM as follows: Project 7017: Fleixeiras I Wind Power Plant CDM Project; Project 7021: Guajiru Wind Power Plant CDM Project; Project 7023: Trairi Wind Power Plant CDM Project and Project 7026: Mundaú Wind Power Plant CDM Project.

[8] "ENGIE Brasil" is part of ENGIE Group and it is the new name of "GDF SUEZ Energy Latin America Participações Ltda. (GSELA)". However, for legal purposes the name of GDF SUEZ Energy Latin America (GSELA) is still valid until further modifications to be formally announced by ENGIE.

[9] Available at: http://www.gdfsuez.com/en/group/strategy/our-international-presence/gdf-suez-latin-america/. Accessed on: 02/08/2015.

A.5.   Physical/Geographical boundary of the PoA

All CPAs to be included in the PoA will be implemented within Brazil's geographical boundary and will be connected to the National Interconnected System (SIN).

Figure 2. Geographical boundary of the PoA.

A.6.   Technologies/measures

The proposed PoA falls in Type I, Scope 1: Energy industries (renewable - / non-renewable sources).

The CPAs will consist of the installation of new (Greenfield) NCRE power plants of the following types of technologies: solar, wind, geothermal, small hydro power plants (from Portuguese *"PCH – Pequena Central Hidrelétrica"*), wave and tidal. As currently defined by the Brazilian Regulatory Agency (from the Portuguese "*ANEEL – Agência Nacional de Energia Elétrica*"), PCHs are hydro power plants with an installed capacity between 1 MW and 30 MW[10]. All these technologies are covered by the applicable version of the Large-scale Consolidated Methodology ACM0002 – Grid-connected electricity generation from renewable sources (version 16.0)[11].

Detailed information about the technology to be implemented on a specific project will be provided in each individual CPA-DD.

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[10]   ANEEL Resolution N° 394; 04/12/1998. Available at: http://www.portalpch.com.br/pdfs/Resolucoes/ANEEL_Resolu%C3%A7%C3%A3o-n_394_de_04.12.98.pdf. Accessed on: 16/03/2015. In case ANEEL's definition for the range of the installed capacity of small hydropower plants (PCHs) changes (increase or decrease) in the future, this shall be taken into consideration and applied for those future/new CPAs to be included in the PoA.

[11]   Available at: http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83 (Accessed on 26/01/2016).

Regarding how the technologies, measures and know-how will be transferred to the host Party (Brazil), this will depend on the type of technology, as well as its insertion in the country. In a broader context, the ambition of the PoA is to contribute to the consolidation of NCRE technologies in the country through the knowledge transfer and continuous capacity building. The table below provides an overview on how these aspects are expected to occur.

TECHNOLOGY TYPE	SOLAR	WIND	GEOTHERMAL	SMALL HYDRO	WAVE & TIDAL
Diffusion of technology in the country	√				
Nationalization of technology in the country		√			
Introduction of new technology in the country			√		√
Knowledge consolidation and capacity building of local professionals				√	
Interaction with international manufacturers	√	√	√		√
Development intensification in the sector				√	
Formation and qualification of local labor	√	√	√		√

Although the proposed PoA will initially consider solar, wind, small hydro, geothermal, tidal and wave technologies, Tractebel Energia S.A. might consider including other Non-Conventional Energy Technologies as defined by Brazil's national legislation and/or other additional technologies covered by the methodology ACM0002, in accordance with the latest applicable rules for "Changes to registered CDM project activity or programme of activities" of the latest applicable version of the "Clean Development Mechanism Project Cycle Procedure".

A.7   Public funding of PoA

At this stage, no public funding from Annex 1 parties to the United Nations Framework Convention on Climate Change (UNFCCC) is envisaged for this PoA or any CPA under this PoA. In case such funding will be used, a statement will be provided to demonstrate *"that such funding does not result in a diversion of official development assistance, is separate from, and is not counted towards the financial obligations"* of any Annex I Party, as defined by paragraph 34 of the CDM Project Standard (version 09.0).

SECTION B.   Demonstration of additionality and development of eligibility criteria

B.1.   Demonstration of additionality for PoA

According to the standard "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities" (version 04.0), additionality shall be demonstrated by establishing that in the absence of the CDM PoA, none of the implemented CPAs would occur. Since the aim of the Programme is to promote the development of Non-Conventional Renewable Energy (NCRE) sources, as defined by the Brazilian regulatory framework, it is also demonstrated that in absence of national incentives the CPAs would not occur.

Furthermore, the standard establishes that PoAs that consist of one or more large-scale projects as CPAs shall include eligibility criteria derived from all the relevant requirements contained in the additionality section of the large-scale methodologies applied to the CPAs.

In line with the above, and according to the methodology ACM0002 (version 16.0), additionality will be demonstrated and assessed using the "Tool for the demonstration and assessment of additionality" (version 07.0.0) at CPA level.

Alternatively, the project proponents have also the option to apply the "*simplified procedure to demonstrate additionality*", as per the provisions contained in section 5.3.1. of the methodology

ACM0002 (version 16.0), in which specific technologies mentioned in the positive list[12] can be defined as *automatically additional* if any of the following conditions is met:

(a) The percentage share of total installed capacity of the specific technology in the total installed grid connected power generation capacity in the host country is equal to or less than two per cent; or

(b) The total installed capacity of the technology in the host country is less than or equal to 50 MW.

Nonetheless, in order to provide the general background for the demonstration of the CPAs additionality through the use of the "Tool for the demonstration and assessment of additionality" (version 07.0.0) at CPA level and facilitate the assessment of the baseline situation considering the CDM rules for E- Policies, the following description provides an overview of the relevant: i) national and/or sectoral policies and circumstances; ii) the electricity market regulations; and iii) the treatment of inter alia subsidies/incentives and input values to be considered for the investment analysis in case CPA additionality is demonstrated based on this analysis.

- National and/or sectoral policies and circumstances

Brazil is known for having a predominantly renewable electricity generation matrix with a high participation of large scale hydropower plants that account for about 61.63% of the total installed capacity by August 2015[13]. According to a study developed by Abbud and Tancredi for the Brazilian Senate[14], this is a result of government investments in large hydropower plants with reservoirs, which were developed and funded by the government in the years before the privatisation process. The National Energy Plan 2030[15], published by the Brazilian Ministry of Mines and Energy, further explains that this focus on hydropower developments was a strategic decision taken by the Brazilian government back in the 1950's, in spite of more competitive fossil fuel based generation options. As a result, the key reason for the electricity market privatisation process initiated in 1995 was that the governmental companies responsible for the development of these large hydropower projects had accumulated large financial deficits and could no longer afford the necessary capital-intensive investments. As a consequence, hydro power investments dropped significantly and the construction of some ongoing projects had to be suspended (Abbud and Tancredi, p. 8).

To solve the investment crisis in the 90's, the Brazilian energy sector underwent several reforms, which will be better described in the "Electricity regulatory environment" section below. The key objective of these reforms was to attract private capital to recover the financial situation of the state owned companies and to assure the growth and security of energy supply to respond to Brazil's economic and social necessities. Thus, as a consequence of the financial and economic imbalances, as well as difficulties in the subsequent privatisation and regulatory redefinition, Brazil not only went through a severe energy crisis in 2001, but also saw the escalation of its thermal generation capacity from 7,051 MW in 1994 to 21,324 MW in 2007 (Abbud and Tancredi, p. 8).

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[12] As per the paragraph 29 of the methodology ACM0002 (version 16.0), the simplified procedure to demonstrate additionality is applicable to the following grid connected electricity generation technologies (positive list): (a) Solar photovoltaic technologies; (b) Solar thermal electricity generation including concentrating Solar Power (CSP); (c) Off-shore wind technologies; (d) Marine wave technologies; (e) Marine tidal technologies.

[13] ANEEL; Electricity generation capacity in Brazil; http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.cfm. Accessed on: 02/08/2015.

[14] Recent transformations of the Brazilian electricity generation matrix – main causes and impacts (*"Transformações recentes da matriz brasileira de geração de energia elétrica – causas e impactos principais)",* Omar Alves Abbud; Marcio Tancredi – Centro de Estudos da Consultoria do Senado; March 2010. Available at: http://www12.senado.gov.br/publicacoes/estudos-legislativos/tipos-de-estudos/textos-para-discussao/td-69-transformacoes-recentes-da-matriz-brasileira-de-geracao-de-energia-eletrica-causas-e-impactos-principais. Access on 02/08/2015.

[15] Ministry of Mines and Energy (*Ministério de Minas e Energia*) National Energy Plan 2030; 2007; 3 – Hydroelectric Generation; Section 3.1., page 73, Available at: http://www.mme.gov.br/web/guest/publicacoes-e-indicadores/plano-nacional-de-energia-2050. Accessed on: 02/08/2015.

This expansion of 202% was also responsible for a significant growth in the sector's GHG emissions. This strong augmentation in carbon intensive generation capacities occurred due to the fact that only very limited new hydropower capacity could be effectively implemented during this period, in spite of important policies and measures to promote the installation of complementary renewable energies such as biomass cogeneration, wind and small hydropower as initiated in 2002 (i.e. PROINFA).

This pattern remained with the establishment of new sector regulation initiated in March 2004, which is based on the firm forward contracting of electricity in centralized governmentally regulated auctions. Between the first auction, which occurred in December 2005 and November 2007, fossil fuelled plants were again the predominant source and between 2005 and 2008 a total of 15,400 MW of coal, fuel oil and gas fired power plants were contracted (Abbud and Tancredi, p. 17 and 39). Furthermore, by August 2015 fossil fuel based thermal installed capacity had scaled up to 26,505 MW representing more than 18% of the total installed capacity in the country.[16]

Meanwhile, Brazil has undergone important political discussions about its national climate policy and mitigation efforts. One prominent example of the early mitigation efforts [17] was the implementation of the "Programme to Incentivize Alternative Sources of Electric Energy" (from Portuguese "PROINFA – Programa de Incentivo às Fontes Alternativas de Energia Elétrica")[18]. As a result of PROINFA, 3,299.4 MW[19] of renewable generation capacity from small hydropower, wind and biomass generation power plants were contracted. Complementary to this governmental effort, CDM played an important role as 17,625 MW of renewable generation capacity have been registered until August 2015 under the UNFCCC and another 1,949 MW were under validation at that time[20].

Furthermore, the Brazilian government adopted regulatory actions to integrate climate change mitigation activities into its policies. The establishment of the Interministerial Committee on Climate Change (*Comitê Interministerial sobre Mudança do Clima – CIM*)[21] on 21 November 2007 represents a first action in this direction. On 4 June 2008[22], the Interministerial Committee on Climate Change submitted a draft of the legislation which would later establish the National Climate Change Mitigation Policy. As requested by Decree Nº 6.263, the proposal defined strategic objectives, strategies and measures for mitigation and adaptation as well as the development of the National Climate Change Mitigation Plan.

The National Climate Change Mitigation Plan was finalized in December 2008[23]. The publication offers a good summary of Brazil's regulatory evolutions and mitigation activities in all relevant sectors (Chapter I, page 15-19). In relation to the relevance of renewable energy sources for climate change mitigation, the document clearly defines that key strategies for reducing GHG emissions in the energy sector are to: i) substitute fossil fuels with other non–emitting sources such

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[16] ANEEL, Electric Energy Matrix; http://www.aneel.gov.br/aplicacoes/capacidadebrasil/OperacaoCapacidadeBrasil.cfm. Accessed on: 02/08/2015.

[17] Other examples are reduction in transmission fees for NCRE energies with dispatch below 30 MW average, as well as the possibility to sell such energy on the free market. These incentives are described below. ANEEL Normative Resolution 77. Available at: http://www.aneel.gov.br/cedoc/ren2004077.pdf. Accessed on: 03/08/2015.

[18] Available at http://www.mme.gov.br/programas/proinfa/. Accessed on: 03/08/2015.

[19] National Plan for Climate Change, Page 35, Table 2; 01/12/2008. Available at: http://www.mma.gov.br/clima/politica-nacional-sobre-mudanca-do-clima/plano-nacional-sobre-mudanca-do-clima. Accessed on: 03/08/2015

[20] Calculated based on the "CDM pipeline overview" and "PoA pipeline overview"; 01/08/2015. Available at: http://www.cdmpipeline.org/. Accessed on: 03/08/2015.

[21] The Committee was created with the attribution to develop, implement, monitor and evaluate the National Policy on Climate Change (Plano Nacional sobre Mudança do Clima – PNMC), as well as to propose and implement priority short term actions. Decree No 6.263, dated 21 November 2007. Available at: http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2007/Decreto/D6263.htm. Accessed on: 03/08/2015.

[22] Available at http://www.camara.gov.br/sileg/integras/574554.pdf. Access on: 07/12/2014.

[23] National Plan for Climate Change. Available at: http://www.mma.gov.br/clima/politica-nacional-sobre-mudanca-do-clima/plano-nacional-sobre-mudanca-do-clima. Accessed on: 03/08/2015

as hydropower, solar, wind and sustainable biomass and ii) preserve or use more efficiently all types of energy available (page 30).

Furthermore, (Chapter IV.5 – page 114) the document describes the importance of adequate economic instruments, governmental policies and financial incentives that shall induce the private sector to develop GHG mitigation activities. The section makes clear reference to the CDM, but also to complementary policies, including preferential financing to make mitigation activities economically viable.

In addition, the document (page 118) describes the importance of the CDM as support to national GHG mitigation projects and identifies the development of Brazil's hydropower, solar and wind potential as one of the key opportunities to reduce the growth of GHG emissions with the support of the Clean Development Mechanism.

The further evolution and consolidation of Brazil's GHG mitigation effort led to the definitive publication of Law Nº 12.187/09[24] of the Climate Change National Policy ("*Política Nacional sobre Mudança do Clima - PNMC*") by the end of 2009. In addition to the principles already discussed above, the definitive law (Article 6) defines that its instruments comprise:

> *- Specific credit lines and financing conditions offered by private and public banks (§ VII); as well as other national financial and economic measures (§ XI);*
> *- The financial and economic measures for climate change mitigation [...] that exist under the UNFCCC and the Kyoto Protocol (§ X);*
> *- Existing measures, or to be created, to encourage the development of processes and technologies that contribute to emissions reduction and removals of greenhouse gases, as well as to adaptation, among which the establishment of preference criteria for public tenders and procurements, comprising public-private partnerships and the authorization, permission and concession for the exploration of public services and natural resources, for the proposals that provide larger energy savings, water and other natural resources and reducing greenhouse gases emissions and residues (§XII).*

Moreover, the focus on the development of non-conventional renewable sources (as well as structuring hydropower projects) was consolidated in the energy sector mitigation strategy presented by the Brazilian Government's Communication to UNFCCC during the CMP5 in December 2009, which was later endorsed by the Climate Change National Policy Law and its Regulation Decree 7.390 from 09 December 2010[25]. These two legal instruments established the necessary regulatory environment for the adoption of Nationally Appropriate Mitigation Actions (NAMAs) and confirmed the CDM as an important mechanism to achieve Brazilian's voluntary emission reduction targets.

In September 2015, Brazil also published its intended Nationally Determined Contribution (iNDC)[26] which defines the objective to limit domestic GHG mitigations to 1.3 GtCO$_2$e in the year 2025. Moreover, Brazil shows open to the use of international market instruments as long as they are established under the Convention, the Kyoto Protocol or the Paris Agreement, and as long as any transfer of mitigation outcomes has the prior and formal consent of the Brazilian government. Also, Brazil, together with the European Union, had a decisive role[27] in developing and proposing the

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[24] Climate Change National Policy. Available at: http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/lei/l12187.htm. Accessed on: 03/08/2015.

[25] Available at: http://www2.camara.leg.br/legin/fed/decret/2010/decreto-7390-9-dezembro-2010-609643-normaatualizada-pe.pdf. Accessed on: 03/08/2015.

[26] Available at: http://www4.unfccc.int/submissions/INDC/Published%20Documents/Brazil/1/BRAZIL%20iNDC%20english%20FINAL.pdf

[27] The joint proposal by Brazil and the European Union on Cooperative Approaches is available from: http://www4.unfccc.int/submissions/Lists/OSPSubmissionUpload/73_174_130940572585423261-08.12.15%20-%20Brazil-EU%20joint%20proposal%20on%20%20Markets.docx

fundaments for the development of a new mechanism to define the regulation for international cooperation based on internationally transferred mitigation outcomes, as well as their accounting, which were defined in Paragraph 6 of the Paris Agreement[28].

With these evolutions at hand, the Project Participants uses the CDM as a suitable mechanism to document its early action, while maintaining the option to transfer or upgrade the PoA or its CPAs to any new rules or mechanisms that will arise in the context of the Paris Agreement, as soon as available.

- *The Regulatory Framework of the Brazilian Electric Sector*

As briefly mentioned above, the Brazilian electric sector regulatory framework went through important structural and conceptual changes over the past 2 decades, resulting in three different electricity regulatory models: i) the state-based model (until 1995); ii) the free market model (1995 to 2003); and iii) the new model, implemented in 2004 and valid up to date[29].

Under the state owned model, the energy sector was dominated by almost exclusively state-owned and verticalized companies that covered the segments of generation, transmission and distribution. During the period of state monopoly, the majority of the currently existing generation capacity was built, mostly consisting of large hydropower plants with important energy reservation capacity (i.e. dams).

From 1995 onwards, due to a lack of capacity to further finance the necessary investments for expansion in energy generation, transmission and distribution, the government initiated a partial privatization process, structured by four main pillars: i) creation of a competitive environment (free market), with a gradual elimination of the captive consumers; ii) partial dismantling of the state owned verticalized companies by dividing and privatizing the segments of generation, transmission and distribution; iii) allowing free access to the transmission lines for generators and consumers; and iv) placing the operation and planning responsibilities to the private sector.[30]

The adoption of the free market model allowed the participation of private entities and the implementation of the Concession Law (Law No 8,987 of 13 February 1995)[31] and promoted the construction of some renewable plants in Brazil.

Unfortunately, the free market model did not provide the investment in generation capacity needed to satisfy the growing demand and it resulted in an energy crisis in 2001, when energy consumption of consumers and industry was rationed and Brazil's economic development was badly hit.

As a response to the 2001 energy crisis, a new regulatory framework was put in place in 2004, resulting in a more active role of Brazil's government by virtually suspending the privatization process initiated in the 1990's and centralizing the functions of electricity planning at national government level, while promoting private sector investments to fund the required expansion in generation capacity. This new regulatory model provided a more efficient mechanism of power procurement between generators and distributors, primarily by creating two parallel electricity trading environments:

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[28] Available from: http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf

[29] CCEE - Câmara de Comercialização de Energia Elétrica (Electric Power Commercialization Chamber): "Mudanças no setor elétrico brasileiro" (Changes in the Brazilian Power Sector). Available at: http://www.ccee.org.br/portal/faces/pages_publico/onde-atuamos/setor_eletrico?_adf.ctrl-state=az4wf056n_4&_afrLoop=2312209392571299. Accessed on: 03/08/2015.

[30] "*Modelo Institucional do Setor Elétrico Brasiliero*"; Aguiar F.L.; 2007. Available at: http://www.realestate.br/images/File/arquivosPDF/DST_FernandoAguiar.pdf. Accessed on: 03/08/2015.

[31] Available at: http://www.planalto.gov.br/ccivil_03/leis/l8987cons.htm. Accessed on: 03/08/2015.

i) The Regulated Contracting Environment (from Portuguese "ACR – *Ambiente de Contratação Regulada"),* where energy is finally contracted based on the lowest tariffs defined by a regulated auctioning process, and

ii) The Free Contracting Environment (from Portuguese "ACL – *Ambiente de Contratação Livre"*).

Table 1. Energy regulatory frameworks in Brazilian history[32]

State Owned Model (until 1995)	Free Market Model (1995 to 2003)	New Model (2004)
Financing using public funds.	Financing using public and private funds.	Financing using private and public funds.
Verticalized companies.	Companies classified by activity: generation, transmission, distribution and commercialization.	Companies classified by activity: generation, transmission, distribution, commercialization, imports and exports.
Predominantly State-controlled companies.	Opening up of the market and emphasis on the privatization of the companies.	Coexistence between State-controlled and private companies.
Monopolies – No competition.	Competition in generation and commercialization.	Competition in generation and commercialization.
Captive Consumers.	Both Free and Captive Consumers.	Both Free and Captive Consumers.
Tariffs regulated throughout all sectors.	Prices are freely negotiated for the generation and commercialization.	Free environment: Prices are freely negotiated for the generation and commercialization.
Regulated Market.	Free Market.	Coexistence between Free and Regulated Market.
Determinative Planning – Coordinator Group for the Planning of Electricity Systems (GCPS).	Indicative Planning coordinated by the National Council for Energy Policy (CNPE).	Indicative Planning coordinated by the Energy Research Company (EPE).

Therefore, within the new regulatory framework, the Power Generators, which can be state owned companies or privately owned Independent Power Producers have two options to sell their energy and thus to finance their projects.

Under the ACR, the investors offer the electricity to be generated by their investments under regulated auctions. The rules, terms and eligible technologies for these auctions are defined by the Ministry of Mines and Energy (MME) and the Brazilian Electricity Regulatory Agency (Agência Nacional de Energia Elétrica - ANEEL); while the auction is executed by the Electric Power Commercialization Chamber (CCEE – Câmara de Comercialização de Energia Elétrica). Main modalities for such auctions refer to different duration and starting date of the respective *Power Purchase Agreements* (PPAs), which may have duration of 20 or 30 years, depending on the economic or operational lifetime of the underlying energy source and technology. After conclusion of the Auction the PPAs are signed between the respective energy generator and a pool of regulated distribution companies which are defined by the regulators. Such long-term PPAs with a pool of distribution companies represent a convenient option to define a reliable long term cash flow, which is not only important to protect equity investors from unexpected market variations, but also a key requirement to obtain appropriate conditions for third party financing. The auctions are defined and designed for one or a set of specific technologies and resources and therefore allow the government to influence the expansion of the Brazilian generation park.

Alternatively, Independent Power Producers have the option to sell electricity to the Free Electricity Market ACL where authorized electricity purchasers and electricity sellers negotiate among

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[32] CCEE - Câmara de Comercialização de Energia Elétrica (Electric Power Commercialization Chamber): "Mudanças no setor elétrico brasileiro" (Changes in the Brazilian Power Sector). Available at: http://www.ccee.org.br/portal/faces/pages_publico/onde-atuamos/setor_eletrico?_adf.ctrl-state=az4wf056n_4&_afrLoop=2312209392571299. Accessed on: 03/08/2015.

themselves the conditions and clauses of their PPAs, such as price, duration, guarantees, off take and delivery obligations and payment conditions.

The consumers which are eligible to participate in the free market are usually medium and large industrial clients with significant power demand. According to their specifications and the applicable regulations, they can be classified into two groups:

- Consumers A1, A2, and A3: Organizations with a load higher or equal to 3,000 kW and supplied at tensions higher or equal to 69 kV (New consumers installed after 27 May 1998 may be supplied at any tension). These consumers may buy any kind of electricity from any eligible power generator;

- Special Consumers A4: Organizations between 500 kW and 3,000 kW supplied at any tension. Special consumers are only allowed to purchase so called incentivized electricity (*energia incentivada*) from eligible renewable sources, such as wind power plants, small hydro power plants, biomass fired power plants and landfill gas fired power plants.

In the free market, PPA durations are short to medium term, covering mostly between one and three years, which is completely different from the long duration of the 20 or 30-year PPAs as defined in the captive market and which implies an important risk of contract renovation and renegotiation. In addition, contracts are signed with individual industrial clients and not with a portfolio of regulated distribution companies, a fact that implies increased exposure to the client's credit risk. In conclusion, selling electricity to the Free Electricity Market implies an increased level of risk and exposure to the oscillation of the demand and electricity price.

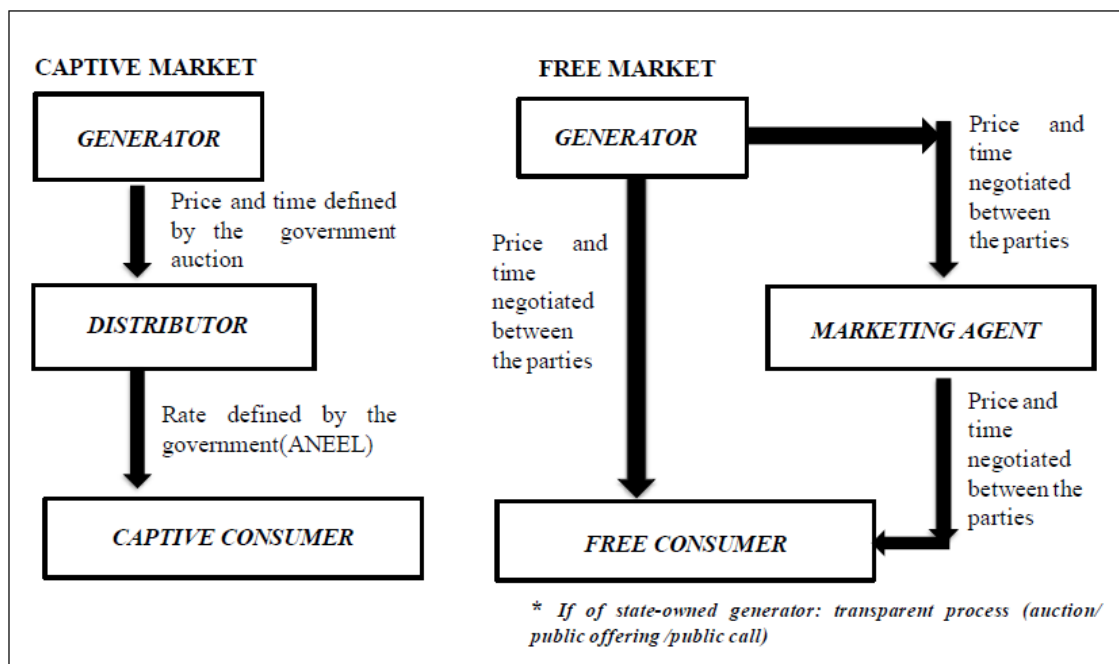The figure follow represents a comparison of the Free and the Captive Energy Markets commercialization schemes:

Figure 3. Comparison between the Free and Captive Energy Markets commercialization schemes.

- Policies and incentives for the promotion of renewable energies

As mentioned above, initially renewable energies and especially the non-conventional resources played a very limited role in the expansion of the Brazilian energy matrix. The insertion of NCRE, particularly wind energy, is a result of subsequent supporting policies.

The first incentive was the creation, in 2002, of the Program for the Support of Alternative Energy Sources (from Portuguese "PROINFA – Programa de Incentivo às Fontes Alternativas de Energia"). PROINFA is a federal government program that defines attractive feed in tariffs for investments in complementary energies such as biomass, small hydropower and wind energy. To complement the attractive feed in tariffs, the PROINFA program offers a special financing package from the National Bank of Social and Economic Development (from Portuguese "BNDES – Banco Nacional de Desenvolvimento Econômico e Social"), and the 20 year PPAs offer important mechanisms to protect investors against variations in wind and market conditions.

Another important incentive created for NCRE was the establishment of discounts in the fees for using the electricity transmission system, the so called TUST/TUSD – G. This discount was established for complementary energies up to 30 MW, which supply to the National Interconnected Grid. The legislation also provides discounts on the payable TUSD[33] for consumers in the Free Electricity Market, providing they buy the so called incentivized energies (*energia incentivada*). The incentivized energies purchase entitles the company to a reduction of at least 50% in the distribution system fees. This discount, when compared to the normal electricity pool, again provides complementary renewable energies with a comparative advantage as it attracts consumers to preferably contract such resources.

The policies and incentives here presented are further analysed in the treatment of inter alia subsidies/financial incentives described below to assure their adequate treatment in the definition of the projects baseline and additionality discussion.

- ***Investment analysis***

In the case a CPA uses an investment analysis to demonstrate additionality, it will take into consideration:

- *Treatment of inter alia subsides/financial incentives (E- Policies)*

According to the Tool for the demonstration and assessment of additionality (version 7.0.0), subsidies and incentives shall be included in the calculation of the financial indicator under consideration of EB guidance on the consideration of national/local/sectorial policies and measures for the baseline setting. At its 22nd meeting, the CDM Executive Board (EB22) defined that national and/or sectoral policies and circumstances are to be taken into account on the establishment of a baseline scenario, without creating perverse incentives that may impact host Parties' contributions to the ultimate objective of the Convention. As a result, the Board agreed to define E- Policy as:

> *"National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to promote the diffusion of renewable energy or to finance energy efficiency programs)."*

Further, the Board agreed that such policies should be addressed as follows:

> E- Policies *"that have been implemented since the adoption by the COP of the CDM M&P (decision 17/CP.7, 11th November 2001) need not be taken into account in developing a baseline scenario (i.e. the baseline scenario could refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place)."*

The importance of the E- Policy concept has been reinforced by CMP 5 in Copenhagen who provided, as part of the decision 2/CMP.5 on "Further guidance relating to the clean development mechanism" the following guidance 157:

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[33] ANEEL (2004). Normative Resolution 77. Available at http://www.aneel.gov.br/cedoc/ren2004077.pdf

"*10. Affirms that it is the prerogative of the host country to decide on the design and implementation of policies to promote or give competitive advantage to low greenhouse gas emitting fuels or technologies;*

11. Requests the Executive Board to ensure that its rules and guidelines related to the introduction or implementation of the policies referred to in paragraph 10 above promote the achievement of the ultimate objective of the Convention and do not create perverse incentives for emission reduction efforts;"

Based on the above requirement, the Board has continued its work on E-policies and at EB74 a draft "Guideline on application of E- Policy for additionality demonstration through investment analysis and proposed revision to Combined tool and Additionality tool"[34] prepared by the Secretariat was discussed. Further analysis was requested from the Secretariat, however, no further documents have been published up to now.

The treatment of these subsidies/financial incentives in the definition of the baseline scenario and thus, investment analysis has also been considered in the PDE 2022 which states:

"It is worth noting that the various actions that contribute to the reduction of GHG emissions in order to meet the pre-set target for 2020, fall into, with regard to the Clean Development Mechanism (CDM), the specific rules established by the CDM Executive Board (Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios; EB22, Annex 3). These rules applied to PDE 2022 characterize it as an "E-Policy". This means that the PDE 2022 scenario should not be considered as a baseline for evaluation of emissions reduction policies. Indeed, under "E-Policy" "the baseline scenario could refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place". In other words, the PDE 2022 does not interfere negatively in obtaining carbon credits in the development of sectoral projects that contribute to GHG emission mitigation. Sated in another way: the PDE is not a BAU - Business as usual because already comprises the necessary measures to achieve the basic goals set since its formulation, among which includes the reduction of GHG emissions. According to the classification of the IPCC, the PDE is recognized as a mitigation scenario or intervention because it incorporates specific goal of CO_2e emissions and comprises, explicitly and implicitly, policies and measures to facilitate the achievement of the goal."[35]

The Brazilian government has been promoting a set of regulatory and economic measures and incentives aiming at promoting the expansion of the national power generation matrix based on renewable electricity sources and low carbon emitting technologies. In order to achieve these goals, Brazil has instituted the National Policy on Climate Change (*"Política National sobre Mudança do Clima – PNMC"*) through the publication of the Law n° 12.187/2009[36], and regulated by the Decree n° 7.390/2010[37]. It is important to highlight the Article 6 which defines the complementary instruments and tools to promote Greenhouse Gases (GHG) emission reductions, such as:

i. *Specific credit lines and financing conditions offered by private and public banks (§ VII); as well as other national financial and economic measures (§ XI);*

ii. *The financial and economic measures for climate change mitigation [...] that exist under the UNFCCC and the Kyoto Protocol (§ X);*

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[34] EB74 Documents under consideration at the meeting; Annex 8 - Guideline on application of E- policy for additionality demonstration through investment analysis and proposed revision to Combined tool and Additionality tool. Available at: UNFCCC web page/CDM/Governance/EB/EB Meeting Archive/EB74/; https://cdm.unfccc.int/Meetings/MeetingInfo/DB/A98ON4QWRFIGSP6/view. Accessed on: 11/12/2015.

[35] Decennial Plan for Electric Energy Expansion 2013 – 2022; Ministry of Mines and Energy; Pages 345. Available at: http://www.epe.gov.br/Estudos/Documents/PDE2022.pdf. Route of access: EPE homepage/Balances and Plans. Accessed on: 03/08/2015.

[36] Available at: https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/Lei/L12187.htm#art12.

[37] Available at: https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/decreto/d7390.htm.

iii. Existing measures, or to be created, to encourage the development of processes and technologies that contribute to emissions reduction and removals of greenhouse gases, as well as to adaptation, among which the establishment of preference criteria for public tenders and procurements, comprising public-private partnerships and the authorization, permission and concession for the exploration of public services and natural resources, for the proposals that provide larger energy savings, water and other natural resources and reducing greenhouse gases emissions and residues (§XII).

Therefore, these principles were the basis for the following incentives:

- Hiring energy sources based on long term contracts by auctions in the regulated market ("*Ambiente de Contratação Regulada – ACR*") or either on the free market ("*Ambiente de Contratação Livre – ACL*"), through bilateral contracts signed with special consumers.
- Specific financing conditions structured with public and private banks.
- Complementary fiscal and sectorial incentives, especially the 50% reduction of the transmission and distribution fees (TUSD/TUST – G) for complementary energies with installed capacity up to 30 MW.
- The use of the CDM by the entrepreneurs.

In order to enlighten the role of the CDM in promoting investments, the MME's Ordinance n° 29 of the 28th of January of 2011 defined that projects hired by means of regulated auctions can claim for themselves the credits from the Clean Development Mechanism (CDM), as described below.

"Art. 2: The entrepreneurs, who negotiate electric energy from alternatives sources in Auctions presented in Decree n° 5.163, from 2004, and Decree n° 6.353, from 2008, can claim for themselves the credits from the Clean Development Mechanism – CDM, being their entire responsibility the development and obtainement of all required documents and the execution of all stages of the registration process for their entrepreneurship, with the CDM Executive Board."[38]

The CPAs to be included in this PoA may pursue these or other future benefits to be introduced by the Brazilian government. However, provided such instruments to incentivize NCRE are classified as an E- Policy according to the CDM rules the impact of the policy shall not be taken into account for developing the baseline scenario of the CPAs to be included in the present PoA.

- *Input parameters*

If the investment analysis approach is used for the demonstration of additionality, an investment analysis will be conducted for each CPA. The list below includes not exhaustive examples of input parameters and supporting documentation that can be supplied by the CPA in such cases.

Parameter	Sources for supporting documentation
Net Annual Electricity Generation	Net Annual Electricity Generation should be defined based on the Plant Load Factor according to the "Guidelines for the reporting and validation of plant load factors" i.e. (a) The plant load factor provided to banks and/or equity financiers while applying for project financing of the CPA, or to the government while applying for implementation approval of the CPA; (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company). The CPA implementer must clearly document which option was chosen and how the Annual Electricity Generation was calculated.
Electricity Tariff	Information on the average price of grid electricity from: (i) public auctions for NCRE sources; (ii) the energy regulator; (iii) grid operator and\or utility; or (iii) government

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[38] Mines and Energy Minister (MME as Ministro de Minas e Energia in Portuguese): Ordinance MME n° 29 from the 28th of January of 2011. Available at: http://www.epe.gov.br/leiloes/Documents/Leil%C3%B5es%20A-3%20e%20Reserva%202011/Portaria%20MME%20n%C2%BA%2029-11.pdf. Last visited at 03/08/2015.

Parameter	Sources for supporting documentation
	departments.
Capex	Based on information from: (i) feasibility related studies; (ii) third party opinions; or (iii) supplier quotes.
Opex	Based on information from: (i) feasibility related studies; (ii) third party opinions; or (iii) supplier quotes.
Selling, General and Administrative Expenses (SG&A costs)	Based on public information from: (i) company annual reports.
Land leases (if applicable)	Based on information from: (i) third parties opinions; or (ii) quotations/ contracts.
Period of Investment Analysis	Technical lifetime based on information from: (i) feasibility related studies; (ii) third party opinions; or (iii) equipment suppliers.
Fair Value of Assets at end of Investment Analysis (if applicable)	Based on information from feasibility related studies or third party opinion.
Depreciation (% per year)	Based on information from tax legislation or third party opinion.
Tax Rate (%)	Based on information from tax legislation or third party opinion.
Cost of equity	Based on: (i) default values provided by the UNFCCC CDM EB; or by (ii) calculating the cost of equity using best financial practices (e.g.: CAPM), based on data sources which can be clearly validated by the DOE, while properly justifying all underlying factors.
Cost of Debt	Taken from: (i) proposals from potential lenders; (ii) the commercial lending rates and guarantees required for Brazilian energy generation projects; (iii) the commercial lending rate in Brazil or (iv) the yield of a 10 year bond issued by the government of Brazil or, if this is not available, the bond with the maturity which is closest to 10 years.
Financing from Debt (%)	Based on: (i) information from potential debt providers and the CPA implementer; (ii) typical debt/equity finance structure observed in the energy sector of Brazil: or iii) if such information is not available, 50% debt and 50% equity financing as a default.
Financing from Equity (%)	Based on: (i) information from potential equity investors and CPA implementer; (ii) typical debt/equity finance structure observed in the energy sector of Brazil: or iii) if such information is not available, 50% debt and 50% equity financing as a default.
Construction Start Date	Based on information from sources such as contracts, feasibility studies or project plans.
Date Project Starts Producing	Based on information from sources such as contracts, feasibility studies or project plans.

Section B.2. below contains the eligibility criteria for inclusion of a CPA in the PoA, including the relevant requirements contained in the additionality section of methodology ACM0002 (version 16.0).

B.2.   Eligibility criteria for inclusion of a CPA in the PoA

The eligibility criteria for the inclusion of a CPA in the PoA described below has been defined as per the provision established in:

- The Standard for the "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities" (version 04.0)[39];
- Methodology ACM0002 (version 16.0), including all the relevant requirements contained in the additionality section of it and any other requirement embedded in the methodology[40];
- "Tool to calculate the emission factor for an electricity system" (version 05.0)[41];
- "Tool for the demonstration and assessment of additionality" (version 07.0.0)[42].

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA
(a) The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA;	All installations in a CPA shall take place within the geographical boundaries of Brazil and shall be connected to the SIN grid.
(b) Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo);	The CME shall demonstrate that each CPA does not lead to double counting of emission reduction by confirming that each CPA is not part of any of the categories below: (1) Standalone CDM project activity; (2) Bundled CDM project activity; (3) Another registered PoA.
(c) The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;	The CPA shall consist of a Greenfield grid-connected renewable energy power generation project of one of the following types: - Solar power plant/unit; - Wind power plant/unit; - Small hydro power plant/unit with or without reservoir (currently defined by ANEEL[43] as between 1 MW and 30 MW); - Geothermal power plant/unit; - Wave power plant/unit; - Tidal power plant/unit. All CPAs will be required to be in conformity with national requirements where available.
(d) Conditions to check the start date of the CPA through documentary evidence;	The CPA start date shall not be on or before the start date of PoA: 05/05/2014, date which the Prior Consideration of the CDM has been published in the UNFCCC website. The CPA start date should be the earliest date at which either the implementation or construction or real action of a project activity begins in line with "Glossary of CDM terms". Documentary evidence of the CPA start date shall be provided by the time of inclusion of each CPA in the PoA.
(e) Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs;	The CPA must comply with the following requirements as per the provisions established in the methodology ACM0002 (version 16.0):

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[39] Available at: http://cdm.unfccc.int/Reference/Standards/index.html.

[40] Available at: http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83.

[41] Available at: http://cdm.unfccc.int/Reference/tools/index.html.

[42] Available at: http://cdm.unfccc.int/Reference/tools/index.html.

[43] ANEEL Resolution N° 394; 04/12/1998. Available at: http://www.portalpch.com.br/pdfs/Resolucoes/ANEEL_Resolu%C3%A7%C3%A3o-n_394_de_04.12.98.pdf. Accessed on: 08/03/2015.

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA

	- The CPA shall consist of a grid-connected renewable energy power generation project activity that installs a Greenfield power plant.
	
	- The CPA shall include renewable energy power plant/unit of one of the following types:
	  - Small hydro power plant/unit with or without reservoir (currently defined by ANEEL[44] as between 1 MW and 30 MW);
	  - Wind power plant/unit;
	  - Geothermal power plant/unit;
	  - Solar power plant/unit;
	  - Wave power plant/unit;
	  - Tidal power plant/unit.
	
	- In case of hydro power plants, one of the following conditions shall apply:
	  (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or
	  (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density is greater than 4 W/m^2; or
	  (c) The project activity results in new single or multiple reservoirs and the power density is greater than 4 W/m^2; or
	  (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs is lower than or equal to 4 W/m^2, all of the following conditions shall apply:
	    (i) The power density calculated using the total installed capacity of the integrated project, is greater than 4 W/m^2;
	    (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;
	    (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be:
	      a. Lower than or equal to 15 MW; and
	      b. Less than 10 per cent of the total installed capacity of integrated hydro power project.
	
	- In the case of integrated hydro power projects, the project proponent shall:
	  (a) Demonstrate that water flow from upstream

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[44] ANEEL Resolution N° 394; 04/12/1998. Available at: http://www.portalpch.com.br/pdfs/Resolucoes/ANEEL_Resolu%C3%A7%C3%A3o-n_394_de_04.12.98.pdf. Accessed on: 08/03/2015.

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA

	power plants/units spill directly to the downstream reservoir and that collectively contribute to the generation capacity of the integrated hydro power project; or
	
	(b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of the water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for a minimum of five years prior to implementation of CDM project activity.
	
	- The CPA shall not consist of:
	  - Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;
	  - Biomass fired power plants/units.
	
	- The CPA shall also comply with the applicability conditions included in the tools referred in the methodology ACM0002 (version 16.0) and applicable to the CPAs included in the present PoA:
	(a) "Tool to calculate the emission factor for an electricity system" (version 05.0);
	(b) "Tool for the demonstration and assessment of additionality" (version 07.0.0);
	(c) "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" (version 03.0.1).

(f) The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in section 4.1 of the standard "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities" (version 04.0);	The CPA shall demonstrate additionality as per the stepwise procedure contained in the "Tool for the demonstration and assessment of additionality" (version 7.0.0): Step 0: Demonstration whether the proposed project activity is the first-of-its-kind; Step 1: Identification of alternatives to the project activity; Step 2: Investment analysis; Step 3: Barriers analysis; and Step 4: Common practice analysis

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA
	Alternatively, the project proponents have also the option to apply the "simplified procedure to demonstrate additionality", as per the provisions contained in section 5.3.1. of the methodology ACM0002 (version 16.0).
(g) The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis;	- Environmental impact analysis shall be conducted at CPA level for all CPAs with installed capacity higher than 10 MW, according to the applicable environmental laws and regulations. - Local stakeholder consultation is conducted at the PoA level and according to the Brazilian DNA requirements to issue the Letter of Approval. The CME does not stipulate any specific requirement for local stakeholder consultations at CPA level.
(h) Conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance (ODA);	The financing for the CPA will be confirmed to be consistent with the PoA financing described in the PoA-DD. A confirmation will be required that no funding is coming from Annex I parties, or if it does, that this is not a diversion of ODA.
(i) Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation);	The CPA shall correspond with the target group: Greenfield grid-connected (SIN) renewable energy power projects, such as: small hydro (currently defined by ANEEL [45] as between 1 MW and 30 MW), solar, wind, geothermal, wave and tidal. The projects are not expected to have any distribution mechanisms.
(j) 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";	Not applicable. All the CPAs included in the PoA shall be monitored individually.
(k) Where applicable, the conditions that ensure that every CPA in aggregate meets the small-scale or micro-scale threshold criteria and remains within those thresholds throughout the crediting period of the CPA;	Not applicable. Large scale consolidated methodology ACM0002 (version 16.0) is applied to this CDM-PoA and its CPAs. Thus, even if a CPA total installed capacity is equal to or below 15 MW, it must comply with the conditions/criteria established by the methodology ACM0002 (version 16.0).
(l) Where applicable, the requirements for the de-bundling check, in case CPAs belong to small-scale (SSC) or micro-scale project categories.	Not applicable. Large scale consolidated methodology ACM0002 (version 16.0) is applied, so no de-bundling check is applicable.

According to paragraph 65 of ACM0002 version 16.0, under this PoA, three types of CPAs have been identified based on the similarity of the demonstration of additionality, emission reduction calculations and monitoring of each type.

The three types of CPA included under the PoA are:
- Method for wind, solar, wave and tidal projects;
- Method for small hydropower plant projects with or without reservoir;
- Method for geothermal projects.

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[45] ANEEL Resolution N° 394; 04/12/1998. Available at: http://www.portalpch.com.br/pdfs/Resolucoes/ANEEL_Resolu%C3%A7%C3%A3o-n_394_de_04.12.98.pdf. Accessed on: 03/08/2015

This approach is in line with paragraph 65 of ACM002 version 16.0 and the provisions established in CDM project standard v09.0, paragraph 207 and footnote 21 which states: "For PoAs applying more than one technology/measure or more than one methodology, the coordinating/managing entity shall prepare a generic CPA for each technology/measure, each methodology and each combination thereof"…"However, separate generic CPA-DDs are not required to cover cases that do not differ in terms of emission reduction calculations".

Details about the eligibility requirements and how the eligibility criteria are satisfied are described at the CPA Level.

B.3. Application of technologies/measures and methodologies

The technologies/measures included in the present PoA are grid-connected renewable energy power generation plants/units of one of the following types: solar, wind, small hydro with or without reservoir (currently defined by ANEEL[46] as between 1 MW and 30 MW), geothermal, tidal and wave.

The applied methodology is ACM0002: Grid-connected electricity generation from renewable sources --- Version 16.0.

Only Greenfield power plants are eligible under this PoA. Thus, *"the baseline scenario is the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".*

No sampling will be applied. All CPAs will be monitored individually.

B.4. Date of completion of application of methodology and standardized baseline and contact information of responsible person(s)/ entity(ies)

Date of completion of study on application of the selected methodology: 03/08/2015

The entities responsible for the application of the selected methodology were Tractebel Energia S.A. (project participant and CME of this PoA), ENGIE Brasil[47] (project participant and holding company of Tractebel Energia S.A.) and Climate Link Limited (carbon advisor).

Contact information is provided below:

Company name: Tractebel Energia S.A.
Address: Rua Paschoal Apóstolo Pítsica, 5064, Florianópolis, Brazil
Contact person1: Márcio Gugelmin Zimmermann
Telephone number: +55 48 3221 7035
E-mail: marcio.gugelmin@engie.com
Contact person2: Guilherme Slovinski Ferrari
Telephone number: +55 48 3221 7072
E-mail: guilherme.ferrari@engie.com

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[46]ANEEL Resolution N° 394; 04/12/1998. Available at:
http://www.portalpch.com.br/pdfs/Resolucoes/ANEEL_Resolu%C3%A7%C3%A3o-n_394_de_04.12.98.pdf.
Accessed on: 03/08/2015.

[47] "ENGIE Brasil" is part of ENGIE Group and it is the new name of "GDF SUEZ Energy Latin America Participações Ltda. (GSELA)". However, for legal purposes the name of GDF SUEZ Energy Latin America (GSELA) is still valid until further modifications to be formally announced by ENGIE.

Company name: ENGIE Brasil.
Address: Av Almirante Barroso, 52, 14th floor
Contact person1:   Mr. David Freire da Costa
Telephone number: +55 21 3974 5418
E-mail: david.costa@engie.com
Contact person2:   Mr. Philipp Hauser
Telephone number: +55 21 3974 5443
E-mail: philipp.hauser@engie.com

Company name: Climate Link Limited
Address: 115 Magdalen Road, Oxford. OX4 1RQ
Contact person 1:   Ms. Adriana Torchelo
Telephone number: +44 (1) 1865 600903
E-mail: adriana.torchelo@climate-link.com
Contact person 2:   Mr. Rodrigo Bezerra
Telephone number: +44 (0) 1865 600903
E-mail: rodrigo@climate-link.com

SECTION C.   Management system

In accordance with the specific requirements identified in the Standard: "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities" (version 04.0), the management system of the PoA is as follows:

Definition of roles and responsibilities

A CDM team of the PoA will be appointed by the CME (Tractebel Energia S.A.). The CDM team will be responsible for ensuring the CPAs are correctly assessed including satisfying the eligibility criteria requirements. The CDM team may perform the assessment himself or outsource the requirement to a third party providing the responsible entity can meet the following requirements:

- Working knowledge of ACM0002 (version 16.0);
- Access to PoA records and understanding of the PoA management system;
- Basic understanding of CDM gained either through prior experience or relevant training;

Records of arrangements for training and capacity development for personnel

The staff directly involved in the CDM development will receive appropriate CDM training and records of staff development activities will be kept.

Procedures for technical review of inclusion of CPAs

The technical review system will ensure that each CPA-DD is reviewed by at least one other competent person, beyond the document author. Before a new CPA-DD can be submitted for inclusion to a validating entity, the completed CPA-DD will be technically reviewed by either a member of the CDM team, another designated employee at the CME, or a competent third party to check that the information contained in the CPA is credible, accurate and consistent.

The aim of the technical review is to ensure the CPA meets all requirements and eligibility criteria as defined in the PoA-DD.

The technical reviewer will use the following tools to assist in the review:
- Applicable standards and guidelines related to PoAs;
- Generic CPAs included in the PoA–DD;
- Previously approved CPAs.

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)

Before a new CPA is to be included in the PoA, a check will be made against the UNFCCC project database to verify whether the project activity is not part of any:
- Standalone CDM project activity;
- Bundled CDM project activity;
- Another registered PoA.

Records and documentation control process for each CPA under the PoA

The CME will keep copies of the relevant PoA documents. All data and records will be stored for at least two years after the end of the crediting period of that particular CPA.

Measures for continuous improvements of the PoA management system

The PoA management system will be reviewed periodically in order to:
- Ensure the management system is implemented as designed, i.e. processes and procedures are functioning and effectively executed;
- Ensure the management system is achieving the expected results;
- Identify areas of recurring problems, corrective actions and improvement actions.

The findings from the review will be used to improve the management system.

Provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA

Tractebel Energia S.A. will be in charge for all CDM related issues at CPAs level and will guarantee the personnel operating the CPAs will be properly informed and agree that the power plant is part of the PoA and trained accordingly with regards to their responsibilities within the PoA management system.

SECTION D.   Duration of PoA

D.1.   Start date of PoA

05/05/2014, the date the CME notified the UNFCCC Secretariat and the Brazilian DNA of its intention to seek the CDM status for the PoA[48] according to the CDM Project Standard (version 09.0) paragraph 222.

D.2.   Duration of the PoA

28 years

SECTION E.   Environmental impacts

E.1.   Level at which environmental analysis is undertaken

Environmental Analysis is performed at CPA level.

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[48] http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html. Accessed on: 07/12/2014.

The PoA consists of individual renewable energy project activities implemented in different geographical regions within the boundary of the PoA, Brazil. Hence, local (site-specific) impacts of each project (depending on the technology, location and capacity, among others) may vary significantly for each CPA.

The Brazilian Federal Constitution and the environmental legislation in force require preliminary environmental studies and compulsory environmental licences for the execution of works and activities that have the potential to cause pollution or environmental degradation.

On a federal level, the National Environment Council (from the Portuguese "CONAMA – Conselho Nacional do Meio Ambiente") establishes standards, guidelines and the criteria for the licencing process for the previous studies. According to CONAMA Normative Deliberations 01/86 and 237/97 environmental impact assessments, which in Brazil can be either an Environmental Impact Study/Report on Environmental Impact (from the Portuguese "*EIA/RIMA – Estudo de Impacto Ambiental/Relatório de Impacto no Meio Ambiente*") or a Simplified Environmental Report (from the Portuguese "*RAS – Relatório Ambiental Simplificado*"), must be undertaken before the installation of new projects or before the expansion/modification of existing activities.

The construction and operation of these projects are not allowed until the issuance of environmental permits. According to Federal Regulation 9.433/1997, article 52nd, the State or Municipal environmental agencies are the authorities in charge of issuing Environmental Licenses within each Federative Unit (States or Municipalities), or by the Federal environment agency which is the Brazilian Environmental and Renewable Natural Resources Institute (from the Portuguese "IBAMA - *Instituto Brasileiro de Meio Ambiente e dos Recursos Naturais Renováveis*") depending on the scope, scale and boundaries of the activity.

According to the Federal Resolution CONAMA 001/86[49], Art. 2, electricity generation projects, independent of the energy source, with potential higher than 10 MW, shall elaborate and submit the corresponding EIA/RIMA for approval by the competent state agency.

Furthermore, in accordance with current legislation, the environmental licensing process consists of three main stages, which results in the issuance of the following environmental licenses: i) Preliminary License (Licença Prévia - LP); ii) Installation License (Licença de Instalação - LI); and iii) Operating License (Licença de Operação - LO).

The Environmental Impact Assessment assesses the environmental impacts of the CPA's and is required by the environmental agency for the Preliminary License (LP) granting. By means of the Preliminary Licensing, the environmental agency evaluates the project's localization and conception, attesting the environmental viability and establishing the basic requirements to the next phases of licensing.

The Installation License (LI) authorizes the beginning of the project's implementation, in accordance with the plans and projects approved, including the environmental control procedures and other constraints imposed by the environmental agency.

The Operating License (LO) authorizes the project's operation, after prior mandatory supervision by the environmental agency for verification of effective compliance with the terms of the Prior and Installation Licenses, such as environmental control measures and other constraints imposed by the environmental agency to the project's operation.

In conclusion, in order to obtain the necessary licenses, an Environmental Impact Assessment (EIA/RIMA) shall be conducted for each CPA with potential higher than 10 MW.

Therefore, according to the applicable environmental policies of Brazil, it is appropriate to undertake the environmental analysis at the time of inclusion of each CPA in the PoA.

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[49] Available at: http://www.mma.gov.br/port/conama/legiabre.cfm?codlegi=23. Accessed on: 07/12/2014.

E.2.   Analysis of the environmental impacts

Environmental Analysis is performed at CPA level.

E.3.   Environmental impact assessment

In line with the above mentioned, if an EIA/RIMA is required by the Brazilian environmental authorities for a specific project, it will be conducted at CPA level and the conclusion of the assessment and all related documentation will be referenced at each CPA-DD.

SECTION F.   Local stakeholder consultation

F.1.   Solicitation of comments from local stakeholders

Local stakeholders consultation is conducted at PoA level in line with the Brazilian DNA requirements to issue the Letter of Approval.

According to Resolution nr. 9, issued on 20 March 2009[50], the Brazilian Designated National Authority (*Comissão Interministerial de Mudanças Globais do Clima – CIMGC)* states that the PoA CME shall invite for comments at least the following entities in order to obtain the Letter of Approval for the Programme of Activities (PoA):

- Comissão Interministerial de Mudança Global do Clima – CIMGC (*the Executive Secretariat of the Interministerial Commission on Global Climate Change*);

- Fórum Brasileiro de ONGs e Movimentos Sociais para o Meio Ambiente e Desenvolvimento – FBOMS (Brazilian NGO Forum and Social Movements for the Environment and Development);

- Ministério Público Federal (Federal Public Attorney).

- Relevant national institutions whose work is directly or indirectly related to the proposed Programme of Activities. Therefore, the following entities were invited for comments:

- Fórum de Meio Ambiente do Setor Elétrico - FMASE (Electricity Sector Environment Forum). FMASE[51] consists of 19 national professional associations of the Brazilian Power Sector in the segments of power generation, transmission, distribution, marketing and consumption of energy, and it is recognized as the main interlocutor of the power sector concerning social and environmental issues in Brazil. The 19 associations represented by FMASE are:
  o Associação Brasileira de Companhias de Energia Elétrica – ABCE (*Brazilian Association of Electric Power Companies*)
  o Associação Brasileira de Carvão Mineral – ABCM (*Brazilian Association of Coal*)
  o Associação Brasileira de Energia Eólica – ABEEÓLICA (*Brazilian Wind Energy Association*)
  o Associação Brasileira das Empresas de Energia Renovável – ABEER (*Brazilian Association of Renewable Energy Companies*)
  o Associação Brasileira dos Investidores em Autoprodução de Energia – ABIAPE (*Brazilian Association of Producers of Energy for Self Consumption*)

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[50] Available at: http://www.mct.gov.br/upd_blob/0201/201258.pdf. Accessed on: 16/03/2015.

[51] Available at: http://www.fmase.com.br/.

- o Associação Brasileira de Grandes Consumidores Industriais de Energia e de Consumidores Livres – ABRACE (*Brazilian Association of Large Industrial Energy Consumers and Free Consumers*)
- o Associação Brasileira de Distribuidores de Energia Elétrica – ABRADEE (*Brazilian Association of Electricity Distributors*)
- o Associação Brasileira das Empresas Geradoras de Energia Elétrica – ABRAGE (*Brazilian Association of Electric Power Generation Companies*)
- o Associação Brasileira de Geração Flexível – ABRAGEF (*Brazilian Association of Flexible Generation*)
- o Associação Brasileira de Geração de Energia Limpa – ABRAGEL (*Brazilian Association of Clean Energy Generation*)
- o Associação Brasileira de Geradoras Termelétricas – ABRAGET (*Brazilian Association of Thermoelectric Generators*)
- o Associação Brasileira das Grandes Empresas de Transmissão de Energia Elétrica – ABRATE (*Brazilian Association of Large Electricity Transmission Companies*)
- o Associação Brasileira dos Produtores Independentes de Energia Elétrica – APINE (*Brazilian Association of Independent Power Producers*)
- o Associação Nacional dos Consumidores de Energia – ANACE (*National Association of Energy Consumers*)
- o Fundação Comitê de Gestão Empresarial – FUNCOGE (*Corporate Management Committee Foundation*)
- o Subcomitê de Meio Ambiente das Empresas Eletrobras – SCMA (*Environment Subcommittee of the Eletrobras Companies*)
- o Centro nacional de Referência em Pequenas Centrais Hidrelétricas – CERPC (*National Reference Center for Small Hydropower Plants*)
- o Associação Brasileira de Energia Solar Fotovoltaica - ABSOLAR (*Brazilian Association of Photovoltaic Solar Energy*)
- o Associação Brasileira de Fomento às Pequenas Centrais Hidroelétricas – ABRAPCH (*Brazilian Association of Development of Small Hydropower Plants*)

- Fórum Brasileiro de Mudanças Climáticas – FBMC[52] (*Brazilian Forum on Climate Change*). The FBMC consists of 12 ministers, the chief executive of the National Water Agency (*Agência Nacional de Águas – ANA*) and representatives of civil society with outstanding knowledge of the matter or agents with responsibility for climate change.

- Observatório do Clima – OC (*Climate Observatory*). The Climate Observatory is a network that brings together civil society organizations in order to discuss the climate change aspects in the Brazilian context.

Furthermore, Resolution N° 9 from the Brazilian DNA establishes that all requirements related to the approval process for CDM Project Activities shall be followed while seeking approval for the PoA. Therefore, according to Resolution N° 7, issued on 5 March 2008[53], at the time the invitation letters are sent, a version of the PDD in Portuguese and a declaration stating how the PoA contributes to the sustainable development of the country needs to be made available for the stakeholders invited to send their comments at least 15 days prior to the starting of the Global Stakeholder Process (GSP).

The Portuguese versions of the CDM-PoA-DD and CDM-CPA-DD (both the generic and the one developed considering a real case) were published at the Tractebel Energia website[54] on 20/10/2015 which is also the date when the invitation letters were sent to the stakeholders mentioned above.

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[52] Available at: http://www.forumclima.org.br/pt/o-forum/o-que-e.

[53] Available at:
http://www.mct.gov.br/index.php/content/view/14797/Resolucoes_da_Comissao_Interministerial_na_condicao_de_Autoridade_Nacional_Designada_do_Mecanismo_de_Desenvolvimento_Limpo.html#lista. Accessed on: 03/08/2015.

[54] http://www.tractebelenergia.com.br/

Copies of the letters and post office confirmation of receipt will be available upon request and will be submitted to the DOE during the validation of the PoA.

F.2.   Summary of comments received

Only one comment was received during the local stakeholder consultation process.
Mr. Alexei Macorin Vivan (President Director of ABCE (Brazilian Association of Electric Power Companies)) answered the invitation to receive comments sent by Tractebel Energia asking for further information about the local stakeholder consultation process and the reasons for its completion by FMASE or by ABCE.

F.3.   Report on consideration of comments received

On 20/10/2015 the project participant answered to Mr. Alexei Macorin Vivan that the local stakeholder consultation process for the Clean Development Mechanism (CDM) is a formality required by the United Nations Framework Convention on Climate Change (UNFCCC) and the Designated National Authority of Brazil which is represented the Interministerial Commission on Global Climate Change (CIMGC). Furthermore, that the Environment Forum of Power Sector (FMASE), representing 19 national professional associations of the Brazilian Electric Sector (SEB) had been identified as a prestigious and relevant organization for this purpose. It was also clarified that there is no obligation from FMASE, ABCE and/or any of its associated entities to respond or give an opinion on the submitted documents. However, any questions or comments on the documents, would be appreciated and considered by the project participants. No further comments were received.

SECTION G.   Approval and authorization

The Letter of Approval from the host Party (Brazil) for the Programme of Activities is not available at the time of submitting the PoA-DD to the validating DOE.

PART II.   Generic component project activity (CPA)

METHOD FOR WIND, SOLAR, WAVE AND TIDAL PROJECTS[55]

SECTION A.   General description of a generic CPA

A.1.   Purpose and general description of generic CPAs

The CPA will consist of the installation of a Greenfield wind, solar (photovoltaic (PV) and concentrated photovoltaic (CPV)), wave or tidal power plant located within Brazil and connected to the SIN grid.

The electricity delivered by the project activity to the grid would otherwise be generated by the operation of grid-connected power plants and by the addition of new generation sources. Thus, the project will generate greenhouse gases (GHG) emission reductions by displacing electricity that in the baseline would be produced by fossil fuel based power plants connected to the grid.

SECTION B. Application of a baseline and monitoring methodology and standardized baseline

B.1.   Reference of methodology(ies) and standardized baseline(s)

- ACM0002 – "Grid-connected electricity generation from renewable sources" (version 16.0)[56];
- "Tool for the demonstration and assessment of additionality" (version 07.0.0)[57];
- "Tool to calculate the emission factor for an electricity system" (version 05.0)[58].

B.2.   Applicability of methodology(ies) and standardized baseline(s)

The approved baseline methodology ACM0002 (version 16.0) applies to the proposed CPA, based on its applicability criteria, as follows:

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[55] According to the provisions established in paragraph 65 of ACM002 version 16.0: "The PoA may consist of one or several types of CPAs. CPAs are regarded to be of the same type if they are similar with regard to the demonstration of additionality, emission reduction calculations and monitoring." Furthermore, the CDM Project Standard (version 09.0), paragraph 207 and note 21 states: "For PoAs applying more than one technology/measure or more than one methodology, the coordinating/managing entity shall prepare a generic CPA for each technology/measure, each methodology and each combination thereof"…"However, separate generic CPA-DDs are not required to cover cases that do not differ in terms of emission reduction calculations". Based on the above criteria, three types of CPAs have been identified and developed in here: i) wind, solar, wave and tidal projects; ii) small hydropower plant projects with or without reservoir; and iii) geothermal projects.

[56] Available at: http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83 (Accessed on 25/01/2016)

[57] Available at: http://cdm.unfccc.int/Reference/tools/index.html (Accessed on 25/01/2016)

[58] Available at: http://cdm.unfccc.int/Reference/tools/index.html (Accessed on 25/01/2016)

ACM0002 (version 16.0) applicability criteria	ACM0002 (version 16.0) applicability to the CPA	Documentation that has been used as a basis of justification
1. This methodology is applicable to grid-connected renewable energy power generation project activities that: a) Install a Greenfield power plant; b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plants/units; d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or e) Involve a replacement of (an) existing plant(s)/unit(s).	The CPA consists of a grid-connected renewable energy power generation project activity that installs a Greenfield power plant.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design; engineering studies, etc.
2. The methodology is applicable under the following conditions: b) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; c) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects), the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The CPA includes renewable energy power plant/unit of one of the following types: - Wind power plant/unit; - Solar power plant/unit; - Wave power plant/unit; - Tidal power plant/unit.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design, engineering studies, etc.
3. In case of hydro power plants, one of the following conditions shall apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m^2; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m^2; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m^2, all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m^2; (ii) Water flow between reservoirs is not used by	Not applicable. The CPA consists of a grid-connected wind, solar, wave or tidal power plant.	Not applicable.

ACM0002 (version 16.0) applicability criteria	ACM0002 (version 16.0) applicability to the CPA	Documentation that has been used as a basis of justification
any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.		
4. In the case of integrated hydro power projects, project proponent shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	Not applicable. The CPA consists of a grid-connected wind, solar, wave or tidal power plant.	Not applicable.
5. The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants/units.	The CPA does not consist of: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; or b) Biomass fired power plants/units.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design; engineering studies, etc.
6. In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	Not applicable. The CPA consists of a grid-connected renewable energy Greenfield power plant.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design; engineering studies, etc.

ACM0002 (version 16.0) applicability criteria	ACM0002 (version 16.0) applicability to the CPA	Documentation that has been used as a basis of justification
7. In addition, the applicability conditions included in the tools referred in the methodology.	The tools referred to in the methodology and applicable to the CPA are the ones mentioned in section B.1 above. Their particular applicability conditions are described below.	- See below.

Tool for the demonstration and assessment of additionality (version 07.0.0) applicability criteria	Additionality tool applicability to the CPA	Documentation that has been used as a basis of justification
The use of the "Tool for the demonstration and assessment of additionality" is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.	Not applicable. The CPA applies the approved methodology ACM0002 (version 16.0).	CPA-DD
Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	The CPA will demonstrate and assess additionality using this tool and the provisions contained in ACM0002 (version 16.0).	CPA-DD

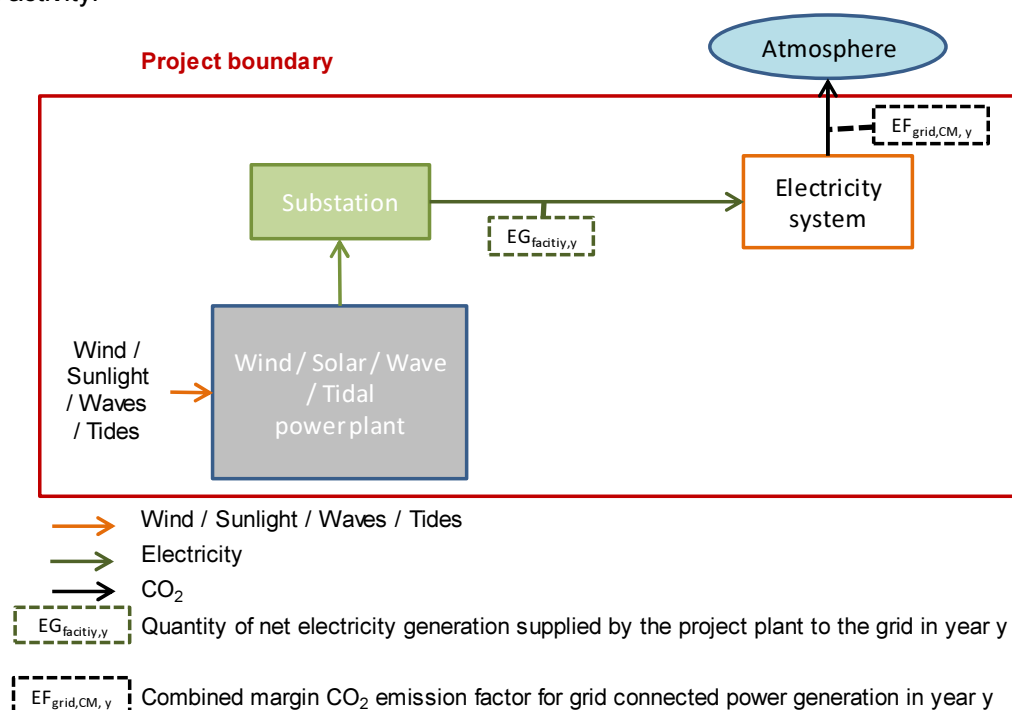| Tool to calculate the emission factor for an electricity system (version 05.0) applicability criteria	Grid emission factor tool applicability to the CPA	Documentation that has been used as a basis of justification
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The CPA substitutes grid electricity by supplying clean and renewable electricity to the SIN grid.	Documents may include: EIA/RIMA, Project Design, connection permits or other relevant documents.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants.	The emission factor for the CPA electricity system will be calculated for grid power plants only.	Brazilian DNA grid emission factor calculations[59].
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The CPA electricity system (SIN) is located exclusively in Brazil.	Brazilian DNA grid emission factor calculations[59].

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[59] In case the Brazilian DNA discontinues the publication of these data during the monitoring period, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Tool to calculate the emission factor for an electricity system (version 05.0) applicability criteria	Grid emission factor tool applicability to the CPA	Documentation that has been used as a basis of justification
Under this tool, the value applied to the CO_2 emission factor of biofuels is zero.	A value of zero will be applied to the CO_2 emission factor of biofuels power plants if connected to the SIN.	Brazilian DNA grid emission factor calculations[59].

B.3. Sources and GHGs

The diagram below includes emissions sources and GHGs included in the project boundary of the project activity.

Wind / Sunlight / Waves / Tides

Electricity

CO_2

$EG_{facitiy,y}$ Quantity of net electricity generation supplied by the project plant to the grid in year y

$EF_{grid,CM,y}$ Combined margin CO_2 emission factor for grid connected power generation in year y

The greenhouse gases and emission sources included in or excluded from the project boundary are shown below.

	Source	Gas	Included	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
Project activity	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	Not applicable. The CPA consists of a wind, solar, wave or tidal power plant.
		CH_4	No	Not applicable. The CPA consists of a wind, solar, wave or tidal power plant.
		N_2O	No	Not applicable. The CPA consists of a wind, solar, wave or tidal power plant.
	CO_2 emissions from combustion of fossil fuels for electricity generation	CO_2	No	Not applicable. The CPA consists of a wind, solar, wave or tidal power plant that does not combust fossil fuel for electricity generation.

Source	Gas	Included	Justification/Explanation
in solar thermal power plants and geothermal power plants	CH_4	No	Not applicable. The CPA consists of a wind, solar, wave or tidal power plant that does not combust fossil fuel for electricity generation.
	N_2O	No	Not applicable. The CPA consists of a wind, solar, wave or tidal power plant that does not combust fossil fuel for electricity generation.
For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Not applicable. The CPA consists of a wind, solar, wave or tidal power plant.
	CH_4	No	Not applicable. The CPA consists of a wind, solar, wave or tidal power plant.
	N_2O	No	Not applicable. The CPA consists of a wind, solar, wave or tidal power plant.

B.4. Description of baseline scenario

The CPA consists of the installation of a Greenfield grid-connected wind or solar or wave or tidal power plant. Therefore, the baseline scenario is defined in accordance with the methodology ACM0002 (version 16.0), as follows:

"If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

B.5. Demonstration of eligibility for a generic CPA

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
(a) The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA;	All installations in the CPA shall take place within the geographical boundaries of Brazil and shall be connected to the SIN system.	Project description and geographical coordinates of the CPA as per one of following documents: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: engineering studies, etc.
(b) Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo);	The Coordinating and Managing Entity (CME), which is Tractebel Energia S.A., shall demonstrate that each CPA does not lead to double counting of emission reduction by confirming that each CPA is not part of any of the below categories: (1) Standalone CDM project activity; (2) Bundled CDM project activity; (3) Another registered PoA.	Confirmation of the unique geographical co-ordinates of the CPA according to criterion (a) above. Before including the CPA in the PoA, the CME will conduct a thorough search in the UFCCC registry and other GHG programs (e.g. VCS, etc.) to check that the CPA is not part of a standalone project or bundled project or PoA under any CDM or other GHG programs process stage (i.e.: validation, requesting registration

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
		or registered).
(c) The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;	The CPA shall consist of a Greenfield grid-connected renewable energy power generation project of one of the following types: - Solar power plant/unit; - Wind power plant/unit; ;- Wave power plant/unit; - Tidal power plant/unit. All CPAs will be required to conform to national standards where available.	Confirmation of the technology/measure (wind, solar, wave or tidal), level and type of service, performance specifications including compliance with testing/certifications as per the following documents: - Quotation from technology provider; - Purchase order; - EPC; or - Any other similar documentation assessed or evaluated by a third party.
(d) Conditions to check the start date of the CPA through documentary evidence;	The CPA start date shall not be on or before the start date of PoA: 05/05/2014, date which the Prior Consideration of the CDM has been published in the UNFCCC website. The CPA start date should be the earliest date at which either the implementation or construction or real action of a project activity begins in line with "Glossary of CDM terms". Documentary evidence of the CPA start date shall be provided by the time of inclusion of each CPA in the PoA.	Start date confirmation through one of the following documents: - Contract between the project developer and a third party related to the implementation or construction of the CPA (EPC, etc.); - Purchase order(s) of equipment /technology or any other significant expenditure; - Any other relevant document, e.g.: order or notice to proceed.
(e) Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs;	The CPA must comply with the requirements as per the provisions established in ACM0002 (version 16.0).	CPA compliance with ACM0002 (version 16.0) requirements is described in section B.2 above. Compliance with these requirements is proved by: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: engineering studies, etc.
(f) The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in section 4.1 of the standard "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities" (version 04.0);	The CPA shall demonstrate additionality by conducting an additionality assessment as per the stepwise procedure contained in the "Tool for the demonstration and assessment of additionality" (version 7.0.0). Step 0: Demonstration whether the proposed project activity is the first-of-its-kind; Step 1: Identification of alternatives to the project activity; Step 2: Investment analysis;	Additionality is demonstrated by conducting an additionality assessment at each CPA-DD according to the "Tool for the demonstration and assessment of additionality" (version 7.0.0) and providing the required documentation to back-up the assessment. i.e., if additionality is demonstrated by an investment analysis, documentation to support the values of input parameters, e.g.: quotations, contracts, purchase orders, spot energy

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
	Step 3: Barriers analysis; and Step 4: Common practice analysis. Alternatively, the project proponents have also the option to apply the "simplified procedure to demonstrate additionality", as per the provisions contained in section 5.3.1. of the methodology ACM0002 (version 16.0).	price, etc. Alternatively, as per the provisions contained in section "5.3.1. Simplified procedure to demonstrate additionality" of the methodology ACM0002 (version 16.0), specific technologies mentioned in the positive list[60] can be defined as *automatically additional* if any of the following conditions is met: (a) The percentage share of total installed capacity of the specific technology in the total installed grid connected power generation capacity in the host country is equal to or less than two per cent; or (b) The total installed capacity of the technology in the host country is less than or equal to 50 MW. In the case of Brazil, ANEEL publicly available database shall be used for this purpose[61].
(g) The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis;	- Environmental impact analysis shall be conducted at CPA level for all CPAs with installed capacity higher than 10 MW, according to the applicable environmental laws and regulations. - Local stakeholder consultation is conducted at the PoA level according to the Brazilian DNA requirements to issue the Letter of Approval. The CME does not stipulate any specific requirement for local stakeholder consultations at CPA level.	If applicable, environmental impact analysis evidenced by: - EIA/RIMA and/or Environmental License(s).
(h) Conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance (ODA);	The financing for the CPA will be confirmed to be consistent with the PoA financing described in the PoA-DD. A written confirmation will be required that no funding is coming from Annex I parties, or if it does, that this is not a diversion of ODA.	Written confirmation that no ODA was diverted at the CPA-DD.
(i) Where applicable, target group (e.g. domestic/commercial/industrial,	The CPA shall correspond with the target group: Greenfield grid-connected (SIN) renewable energy	Confirmation by one of the following documents:

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[60] As per the paragraph 29 of the methodology ACM0002 (version 16.0), the simplified procedure to demonstrate additionality is applicable to the following grid connected electricity generation technologies (positive list): (a) Solar photovoltaic technologies; (b) Solar thermal electricity generation including concentrating Solar Power (CSP); (c) Off-shore wind technologies; (d) Marine wave technologies; (e) Marine tidal technologies.

[61] Available at: http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.cfm. Accessed on: 03/08/2015

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation);	power projects such as wind, solar, wave or tidal. The projects are not expected to have any distribution mechanisms.	- EIA/RIMA and/or Environmental License(s); - Other documents, e.g.: engineering studies, etc.
(j) 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";	Not applicable. All the CPAs included in the PoA shall be monitored individually.	Not applicable.
(k) Where applicable, the conditions that ensure that every CPA in aggregate meets the small-scale or micro-scale threshold criteria and remains within those thresholds throughout the crediting period of the CPA;	Not applicable. Large scale consolidated methodology ACM0002 (version 16.0) is applied to this CDM-PoA. Thus, even if a CPA total installed capacity is equal or below 15 MW, it must comply with the conditions/criteria established by ACM0002 (version 16.0).	Not applicable.
(l) Where applicable, the requirements for the de-bundling check, in case CPAs belong to small-scale (SSC) or micro-scale project categories.	Not applicable. Large scale consolidated methodology ACM0002 (version 16.0) is applied, so no de-bundling check is applicable.	Not applicable.

B.6. Estimation of emission reductions of a generic CPA

B.6.1. Explanation of methodological choices

The procedures to determine the emission reductions attributable to the project activity are described below, according to the selected approved methodology ACM0002 (version 16.0) "*Grid-connected electricity generation from renewable sources*".

Project emissions

According to the methodology project emissions (PE_y) for wind, solar, wave or tidal projects that do not use fossil fuels for electricity generation are zero.

Therefore:

$$PE_y = 0$$

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

BE_y	=	Baseline emissions in year y (tCO$_2$/yr)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EF_{grid,CM,y}$	=	Combined margin CO$_2$ emission factor for grid connected power generation in year y calculated using the latest version of the "*Tool to calculate the emission factor for an electricity system*" (tCO$_2$/MWh)

Calculation of EG$_{PJ,y}$

As the project activity is the installation of a Greenfield power plant, then:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EG_{facility,y}$	=	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

Calculation of the combined margin CO$_2$ emission factor for grid connected power generation in year y (EF$_{grid,CM,y}$)

The procedure described below is applicable to all CPAs to be included in the present PoA.

The Combined Margin (CM) emission factor is calculated from the generation record of all plants connected to the National Interconnected System (SIN) and centrally dispatched by the National Interconnected Power System Operator (Operador Nacional do Sistema - ONS). Based on this generation data as provided by the ONS, the Brazilian Designed National Authority (DNA) calculates the SIN operating margin and build margin emission factors by the dispatch analysis method according to the "*Tool to calculate the emission factor for an electricity system*" and makes them available to the public.[62]

Therefore, to calculate EF$_{grid, CM, y}$ the publicly available data on the SIN operating margin and build margin emission factors provided by the Brazilian DNA will be used.

Depending on the type of technology implemented in a specific CPA, the combined margin will be calculated as a weighted average as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where:

$EF_{grid,BM,y}$	=	Build margin CO$_2$ emission factor in year y (tCO$_2$/MWh)
$EF_{grid,OM,y}$	=	Operating margin CO$_2$ emission factor in year y (tCO$_2$/MWh)
w_{OM}	=	Weighting of operating margin emissions factor (%)
w_{BM}	=	Weighting of build margin emissions factor (%)

According to the tool, the following default values should be used for w_{OM} and w_{BM}:

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[62] Available at: http://www.mct.gov.br/index.php/content/view/74689.html. Accessed on: 03/08/2015

Weighting factor	Wind and solar power generation projects	All other projects
w_{OM}	0.75	0.5
w_{BM}	0.25	0.5
Clarifications	Above values are applicable for the first and subsequent crediting period.	Above values are applicable for the first crediting period. For the second and third crediting period: w_{OM} = 0.25 and w_{BM} = 0.75 unless otherwise specified in the approved methodology which refers to the Tool to calculate the emission factor for an electricity system.

Still according to the "Tool to calculate the emission factor for an electricity system" (version 05.0), the following is required when applying this tool for a Programme of Activities (PoA):

"The choice of which option to use (i.e. ex ante or ex post, options used for determining the OM and BM) shall be determined and documented in the CDM-PoA-DD, and the selected options shall be consistently applied to all CPAs connected to a given electricity system. The CME may however select different options for different electricity systems in the case of a PoA covering more than one electricity systems."

Firstly, it is important to mention that the Brazilian DNA is the entity responsible for calculating the OM and BM emission factors in Brazil.

For calculating the Operating Margin (OM) emission factor, the Brazilian DNA uses the method (c) Dispatch data analysis OM. For the dispatch data analysis OM ($EF_{grid,OM-DD,y}$), it is necessary to use the year in which the project activity (in this case, the CPA) displaces grid electricity and to update the emission factor annually during monitoring. For verification purposes, the OM emission factor will be calculated *ex-post* and will be annually updated.

For calculating the Build Margin (BM) emission factor, the "Tool to calculate the emission factor for an electricity system" (version 05.0) allows to choose between one of the following two options: Option 1 (ex-ante) or Option 2 (ex-post). For the calculation and verification purposes of the BM emission factor, the Option 1 (ex-ante) is chosen in this PoA and it shall be consistently applied to all CPAs connected to the National Interconnected System (SIN). In terms of data vintage, the Build Margin emission factor for 2014, as published by the Brazilian DNA[63], will be used for an ex-ante estimation of CERs that will be generated as a result of PoA implementation. Therefore, the BM is fixed for the first crediting period of all CPAs. The 2014 data vintage was adopted for the build margin calculation as it is the latest data available until the beginning of the validation process.

Although the Build Margin (BM) is determined as fixed (ex-ante) for the first crediting period of each CPA, the Operating Margin (OM) and the resulting Combined Margin (CM) shall be updated annually based on data and calculations provided by the Brazilian DNA.

In case the Brazilian DNA discontinues the publication of these data during the monitoring period, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Leakage

According to the ACM0002 (version 16.0), the following is stated:

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[63] Brazilian DNA: Build Margin emission factor for the year 2014 ($EF_{grid,BM,2014}$ = 0.2963 tCO$_2$/MWh). Available at: http://www.mct.gov.br/index.php/content/view/354731.html#ancora.

"*No leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport) are neglected*".

Therefore,

$L_y = 0$

Emission reductions

Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

Where:
ER_y = Emission reductions in year y (tCO$_2$e/yr);
BE_y = Baseline emissions in year y (tCO$_2$e/yr);
PE_y = Project emissions in year y (tCO$_2$e/yr).

As no project emissions (PE_y) were identified for wind, solar, wave or tidal project, then $ER_y = BE_y$.

Therefore,

$ER_y = EG_{facility,y} \times EF_{grid,CM,y}$

B.6.2. Data and parameters fixed ex-ante

Data / Parameter:	$EF_{grid,BM,2014}$
Data unit:	tCO$_2$/MWh
Description:	Build margin CO$_2$ emission factor for the project electricity system in year y
Source of data:	Brazilian DNA[64]
Value(s) applied:	0.2963
Choice of data or Measurement methods and procedures:	The build margin emission factor of the Brazilian electricity grid system is calculated by the Brazilian DNA by applying all steps, data and variables required by the latest version of the "Tool to calculate the emission factor for an electricity system". This data will be archived electronically and according to internal procedures, until 2 years after the end of the crediting period.
Purpose of data	To define the Build Margin emission factor as ex-ante. This data/information will be used for the emission reductions calculation.
Additional comment:	This value shall be used for the first crediting period for all CPAs. The build margin emission factor is based on data from the year 2014 and it has been defined as ex-ante by the project participants.

B.6.3. Ex-ante calculations of emission reductions

The project activity is the installation of a Greenfield wind, solar, wave or tidal (without combustion of fossil fuel for electricity generation) power plant. Thus, no project emissions (PE_y) are identified.

Therefore,

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[64] Brazilian DNA: Build Margin emission factor for the year 2014 ($EF_{grid,BM,2014}$ = 0.2963 tCO$_2$/MWh). Available at: http://www.mct.gov.br/index.php/content/view/354731.html#ancora.

$$ER_y = EG_{facility,y} \times EF_{grid,CM,y}$$

Where:

ER_y	=	Emission reductions in year y (tCO$_2$/yr)
$EG_{facility,y}$	=	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)
$EF_{grid,CM,y}$	=	Combined margin CO$_2$ emission factor for grid connected power generation in year y (tCO$_2$/MWh)

$EG_{facility,y}$ will be estimated based on figures and parameters (e.g.: power plant net installed capacity, plant load factor, etc.) of each CPA.

$EF_{grid,CM,y}$ value estimated based on data provided by the Brazilian DNA as stated in table from section B.7.1 below.

B.7. Application of the monitoring methodology and description of the monitoring plan

B.7.1. Data and parameters to be monitored by each generic CPA

Data / Parameter:	$EF_{grid,OM,y}$
Data unit:	tCO$_2$/MWh
Description:	Operation margin emission factor in year y
Source of data:	Brazilian DNA or ONS.
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	Calculation as per the "Tool to calculate the emission factor for an electricity system" (version 05.0).
Monitoring frequency:	Yearly.
QA/QC procedures:	To guarantee that official data from the sources above mentioned is utilized and that calculations are conducted according to the applicable tool.
Purpose of data	Calculation of baseline emissions
Additional comment:	In case the Brazilian DNA discontinues the publication of the $EF_{grid,OM,y}$ during the crediting periods, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Data / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO$_2$/MWh
Description:	Combined margin CO$_2$ emission factor for grid connected power generation in year y calculated using the latest version of the "*Tool to calculate the emission factor for an electricity system*".
Source of data:	Brazilian DNA or ONS
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	Calculation as per the "Tool to calculate the emission factor for an electricity system" (version 05.0).
Monitoring frequency:	Yearly
QA/QC procedures:	To guarantee that official data from the sources above mentioned is utilized and that calculations are conducted according to the applicable tool.
Purpose of data	Calculation of baseline emissions

Additional comment:	In case the Brazilian DNA discontinues the publication of the $EF_{grid,OM,y}$ during the crediting periods, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Data / Parameter:	$EG_{facility,y}$ (or $EG_{PJ,y}$)
Data unit:	MWh/yr
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data:	Electricity meter(s)
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	This parameter should be either monitored using a bi-directional energy meter or calculated as the difference between (a) the quantity of electricity supplied by the project plant/unit to the grid; and (b) the quantity of electricity delivered to the project plant/unit from the grid. In case it is calculated then the following parameters shall be measured: (a) The quantity of electricity supplied by the project plant/unit to the grid; and (b) The quantity of electricity delivered to the project plant/unit from the grid. Where the electricity meters to be installed in the component project activity are the "bidirectional" type, then, these will be able to continuously and automatically measure both electricity supplied by the project plant/unit to the grid and the electricity delivered to the project plant/unit from the grid. In this case, it is expected to occur that the "bi-directional" power meters would directly deliver data already considering the net amount of electricity supplied by the project plant/unit to the grid and without distinction between (a) and (b) as described above, i.e. by automatically discounting eventual electricity consumptions from the grid from the amount of electricity dispatched to the grid. Class 0.2S power meters will be used in accordance with the established Grid Procedures defined by the National Electric System Operator (ONS)[65] and Commercialization Procedures by the CCEE (Chamber of Electrical Energy Commercialization)[66].
Monitoring frequency:	Continuous measurements and monthly recording.

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[65] Installation of measurement system for billing (Submodule 12.2); ONS; v1.0; 17/06/2009; http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.2_Rev_1.0.pdf. Accessed on: 03/08/2015.

[66] http://www.ccee.org.br/portal/faces/pages_publico/o-que-fazemos?_adf.ctrl-state=97nwq4566_45&_afrLoop=307374146798100. Accessed on: 03/08/2015.

QA/QC procedures:	The quantity of net electricity generation supplied by the project plant/unit to the grid needs to be checked through the CCEE (Electric Power Commercialization Chamber) database, which is the official and the most credible source of information for this purpose. Sales receipts for sold electricity cannot be used for cross-checking purposes as the sales receipts will only indicate the monetary amount to be paid and not the amount of electricity sold to the grid. Nevertheless, this will not affect the monitoring of this parameter or compromise the quality of data, as the purpose of CCEE is to carry out the wholesale transactions and commercialization of electric power within the National Interconnected System, for both Regulated and Free Contracting Environments and for the spot market. In addition, CCEE is in charge of financial settlement for the spot market transactions. These activities form the Energy Accounting and Financial Settlement Process, which is entirely audited by outside auditors, pursuant ANEEL's Normative Resolution nº 109, dated 26 October 2004 (Electric Power Commercialization Convention). The Commercialization Rules and Procedures that govern the activities performed by CCEE are defined and approved by ANEEL[67]. Meter calibrations will be performed according to the ONS Grid Procedures[68]. Data collected from the project meter has low uncertainty levels and to guarantee its accuracy it can be confronted with information of generation provided by CCEE. In case of failure of the main meter, a back-up energy meter will be utilized.
Purpose of data	Calculation of baseline emissions.
Additional comment:	Data will be archived at least for two years after crediting period.

B.7.2. Description of the monitoring plan for a generic CPA

Monitoring tasks are to be implemented according to the monitoring plan in order to ensure that the real, measurable and long-term greenhouse gas (GHG) emission reductions for the proposed CPA are monitored and reported.

- *Management Structure and Responsibilities*

Overall responsibility for the monitoring activities of the Measurement System for Invoicing Purposes (MSIP) ("*Sistema de Medição para Faturamento - SMF*") will lie within the Tractebel Energia's Production Operation Department ("*Departamento de Operação da Produção - DOP*") and Tractebel's Technical Team.

The team will be involved with CPAs daily operation, supervision of the collection, storage, review and reporting of measured project data and other monitoring activities, such as maintenance and follow-up of calibration procedures. The main duties and responsibilities of the staff allocated for conducting monitoring activities will be:

- *Data Collection*: measurements of the electricity generated and dispatched to the grid will be made in accordance with national procedures and standards and will be electronically monitored through the use of appropriate metering equipment, which could be available on-

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[67] Available at: http://www.ccee.org.br/portal/faces/pages_publico/quem-somos/estrutura_e_pessoas/governanca?_afrLoop=59916351702582#%40%3F_afrLoop%3D59916351702582%26_adf.ctrl-state%3Dvxwcite57_82. Assessed on 03/08/2015.

[68] By the time of completion of this document, the applicable procedure is established in the procedure "Maintenance of the measurement system for billing" (Submodule 12.3); ONS; v1.0; 17/06/2009; http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.3_Rev_1.0.pdf. Accessed on: 03/08/2015. In case of any changes/updates occurred in the ONS Grid Procedures, the project developer shall follow the rules from the relevant sector organizations (e.g. ONS, ANEEL, CCEE) applicable by that time.

site or in the substation, for instance. The Production Operation Department (DOP) will continuously monitor the electricity supplied to the grid ($EG_{facility}$) by following up and automatically storing data from the main and backup meters. Data stored on the meters will be also collected by the Energy Data Collection System (*Sistema de Coleta de Dados de Energia – SCDE*) of CCEE (the Electric Power Commercialization Chamber), remotely and automatically through direct access to the computer servers of the project developer[69]. These collected data are processed in SCDE for electricity accounting by CCEE and are available to all energy market participants. In addition, by accessing the CCEE database, it is possible to obtain different kinds of electricity generation reports. However, these reports will be derived from the same, unique source (CCEE database). The purpose of CCEE is to carry out the wholesale transactions and commercialization of electric power within the National Interconnected System, for both Regulated and Free Contracting Environments and for the spot market. Moreover, CCEE is in charge of financial settlement for the spot market transactions. These activities form the Energy Accounting and Financial Settlement Process, which is entirely audited by outside auditors, pursuant ANEEL's Normative Resolution nº 109, dated 26 October 2004 (Electric Power Commercialization Convention). The Commercialization Rules and Procedures that govern the activities performed by CCEE are defined and approved by ANEEL[70]. Therefore, the quantity of net electricity generation supplied by the project plant/unit to the grid shall be checked through the CCEE (Electric Power Commercialization Chamber) database, which is the official and the most credible source of information for this purpose.

Thus, for the emission reductions calculation purposes, data from CCEE will be used as the main source of information for determining the net amount of electricity dispatched to the grid by the component project activity (CPA). Electricity invoices and/or sales receipts are not suitable for cross-checking purposes, as these documents may refer to the values established in the electricity supply contracts or PPAs (Power Purchase Agreements), with a fiscal balance or correction that usually happens after the end of each year as a matter of compensate possible divergences or differences between the amount of electricity contracted and the effective amount of electricity delivered. Hence, the electricity invoices and/or sales receipts will not reflect as accurately the amount of electricity dispatched to the grid by the component project activity (CPA) as data from CCEE.

All these data and information will be stored by the project owner and kept at least for two years after the crediting period.

- *Calibration:* Calibration of energy meters is regulated by the National Interconnected Power System Operator (ONS) and shall be conducted by a qualified organization in compliance with national standards and industrial regulations to ensure accuracy. By the time of completion of this document, ONS procedure "Maintenance of the measurement system for billing" (Sub-module 12.3) v1.0 from 17/06/2009[71], establishes that the frequency of calibration is a maximum of two years. In case of any change occurred in the ONS Grid Procedures, the project developer will follow the rules from the relevant sector organizations (e.g. ONS, ANEEL, CCEE).

- *Data Report:* Internally, data recorded will be consolidated on a monthly basis and will be checked for quality control purposes by the appointed staff in the project developer's head

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[69] Although CCEE has direct access to all meters, the data is not collected directly from them. This direct access is used only for auditing purposes. Tractebel is responsible for collecting the information and storing it. By the end of the day CCEE system (SCDE) collects data remotely and automatically form Tractebel's computer servers.

[70] Available at: http://www.ccee.org.br/portal/faces/pages_publico/quem-somos/estrutura_e_pessoas/governanca?_afrLoop=59916351702582#%40%3F_afrLoop%3D59916351702582%26_adf.ctrl-state%3Dvxwcite57_82. Assessed on 03/08/2015.

[71] Procedure "Maintenance of the measurement system for billing" (Sub-module 12.3); ONS; v1.0; 17/06/2009; http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.3_Rev_1.0.pdf. Accessed on: 03/08/2015.

office. The consolidated data will be sent to the CME CDM team member(s) of the PoA or any other person indicated as responsible for assessing the correct monitoring of the CPA.

- *Data Archives:* Generation data will be electronically stored by the Production Operation Department (DOP) in Tractebel Energia's corporative database. In order to assure that relevant generation is appropriately and secularly stored, the Information Technology Area will conduct an insurance *backup* for all company`s data through a Data Server *backup.* Following these procedures, the CME (Tractebel Energia S.A.) will assure that all relevant data is kept at least 2 years after the end of the crediting period or the last issuance of CERs, whichever occurs later.

- *Quality Assurance and Quality Control*

As mentioned above, the meters used for determining the energy supplied to the grid will be high accuracy measurement devices in accordance with national procedures and standards.

Procedures for maintenance of the monitoring equipment will also be conducted in accordance with national procedures and standards.

In addition, the accuracy of the field measurements will be assured by coordination between the project developer and the CCEE. In this regard, the generation data collected and recorded by the project developer will be cross-checked monthly with the energy readings performed by the CCEE. Reports from CCEE provide information of "gross electricity", losses until the delivery point and net electricity supplied to the grid.

Readings of the electricity generated by the plant are remotely obtained by Tractebel via telemetering. If any problem with data transmission occurs, electricity generation data can be sent when the system is re-established. If the system does not work, a technical professional will be sent to the site and data will be obtained directly from the meters.

- *Training of Monitoring Personnel*

Designated people that participate in the monitoring process will receive proper training, in order to assure the correct application of the monitoring plan of the project.

- *CPA monitoring diagram*

Each CPA will provide information about its particular monitoring diagram.

PART II.   Generic component project activity (CPA)

METHOD FOR SMALL HYDROPOWER PLANT PROJECTS WITH OR WITHOUT RESERVOIR[72]

SECTION A.   General description of a generic CPA

A.1.   Purpose and general description of generic CPAs

The CPA will consist of the installation of a Greenfield hydropower plant with or without reservoir located within Brazil and connected to the SIN grid.

The electricity delivered by the project activity to the grid would otherwise be generated by the operation of grid-connected power plants and by the addition of new generation sources. Thus, the project will generate greenhouse gases (GHG) emission reductions by displacing electricity that in the baseline would be produced by fossil fuel based power plants connected to the grid.

SECTION B. Application of a baseline and monitoring methodology and standardized baseline

B.1.   Reference of methodology(ies) and standardized baseline(s)

- ACM0002 "Grid-connected electricity generation from renewable sources" (version 16.0)[73];
- "Tool for the demonstration and assessment of additionality" (version 07.0.0)[74];
- "Tool to calculate the emission factor for an electricity system" (version 05.0)[75].

B.2.   Applicability of methodology(ies) and standardized baseline(s)

The approved baseline methodology ACM0002 (version16.0) applies to the proposed CPA, based on its applicability criteria, as follows:

ACM0002 (version 16.0) applicability criteria	ACM0002 (version 16.0) applicability to the CPA	Documentation that has been used as a basis of justification
1. This methodology is applicable to grid-connected renewable energy power generation project activities that: a) Install a Greenfield power plant;	The CPA consists of a grid-connected renewable energy power generation project activity that installs a	Documents may include: - EIA/RIMA and/or Environmental Licenses;

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[72] PCH are hydro power plants with an installed capacity between 1 MW and 30 MW defined by the Brazilian Regulatory Agency ("ANEEL" from the Portuguese Agência Nacional de Energia Elétrica) Resolution N° 394; 04/12/1998. Available at: http://www.portalpch.com.br/pdfs/Resolucoes/ANEEL_Resolu%C3%A7%C3%A3o-n_394_de_04.12.98.pdf. Accessed on: 16/03/2015.

[73] http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83 (Accessed on 25/01/2016)

[74] Available at: http://cdm.unfccc.int/Reference/tools/index.html (Accessed on 25/01/2016)

[75] Available at: http://cdm.unfccc.int/Reference/tools/index.html (Accessed on 25/01/2016)

ACM0002 (version 16.0) applicability criteria	ACM0002 (version 16.0) applicability to the CPA	Documentation that has been used as a basis of justification
b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plants/units; d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or e) Involve a replacement of (an) existing plant(s)/unit(s).	Greenfield power plant.	- Other documents, e.g.: project design; engineering studies, etc.
2. The methodology is applicable under the following conditions: a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects), the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The CPA include renewable energy power plant/unit of the following type: - Small hydro power plant/unit with or without reservoir (currently defined by ANEEL[76] as between 1 MW and 30 MW),	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design, engineering studies, etc.
3. In case of hydro power plants, one of the following conditions shall apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m^2; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m^2; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m^2, all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m^2;	The CPA consists of a grid-connected hydropower plant with or without reservoir. Thus, the conditions (a) to (d) shall be applied.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design; engineering studies, etc.

[76] ANEEL Resolution N° 394; 04/12/1998. Available at: http://www.portalpch.com.br/pdfs/Resolucoes/ANEEL_Resolu%C3%A7%C3%A3o-n_394_de_04.12.98.pdf. Accessed on: 03/08/2015. In case ANEEL's definition for the range of the installed capacity of small hydropower plants (PCHs) changes (increase or decrease) in the future, this shall be taken into consideration and applied for those future/new CPAs to be included in the PoA.

ACM0002 (version 16.0) applicability criteria	ACM0002 (version 16.0) applicability to the CPA	Documentation that has been used as a basis of justification

(ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;
 	
(iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be:
   a. Lower than or equal to 15 MW; and
   b. Less than 10 per cent of the total installed capacity of integrated hydro power project.		

4. In the case of integrated hydro power projects, project proponent shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	The CPA consists of a grid-connected hydropower plant with or without reservoir. Thus, the conditions (a) and (b) shall be applied only in the case of integrated hydro power projects.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Water balance; - Other documents, e.g.: project design; engineering studies, etc.
5. The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants/units.	The CPA does not consist in: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; or b) Biomass fired power plants/units.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design; engineering studies, etc.
6. In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	Not applicable. The CPA consists of a grid-connected renewable energy Greenfield power plant.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design;

ACM0002 (version 16.0) applicability criteria	ACM0002 (version 16.0) applicability to the CPA	Documentation that has been used as a basis of justification
		engineering studies, etc.
7. In addition, the applicability conditions included in the tools referred in the methodology.	The tools referred in the methodology and applicable to the CPA are the ones mentioned in section B.1 above. Their particular applicability conditions are described below.	- See below.

| Tool for the demonstration and assessment of additionality (version 07.0.0) applicability criteria	Additionality tool applicability to the CPA	Documentation that has been used as a basis of justification
The use of the "Tool for the demonstration and assessment of additionality" is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.	Not applicable. The CPA applies the approved methodology ACM0002 (version 16.0).	CPA-DD
Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	The CPA will demonstrate and assess additionality using this tool and the provisions contained in ACM0002 (version 16.0).	CPA-DD

Tool to calculate the emission factor for an electricity system (version 05.0) applicability criteria	Grid emission factor tool applicability to the CPA	Documentation that has been used as a basis of justification
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The CPA substitutes grid electricity by supplying electricity to the SIN grid.	Documents may include: EIA/RIMA, Project Design, connection permits or other relevant documents.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants.	The emission factor for the CPA electricity system will be calculated for grid power plants only.	Brazilian DNA grid emission factor calculations[77].
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an	The CPA electricity system (SIN) is located	Brazilian DNA grid emission factor

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[77] In case the Brazilian DNA discontinues the publication of these data during the monitoring period, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Tool to calculate the emission factor for an electricity system (version 05.0) applicability criteria	Grid emission factor tool applicability to the CPA	Documentation that has been used as a basis of justification
Annex I country.	exclusively in Brazil.	calculations[77].
Under this tool, the value applied to the CO_2 emission factor of biofuels is zero.	A value of zero will be applied to the CO_2 emission factor of biofuels power plants if connected to the SIN.	Brazilian DNA grid emission factor calculations[77].

B.3.   Sources and GHGs

The diagram below includes emissions sources and GHGs included in the project boundary of the project activity.
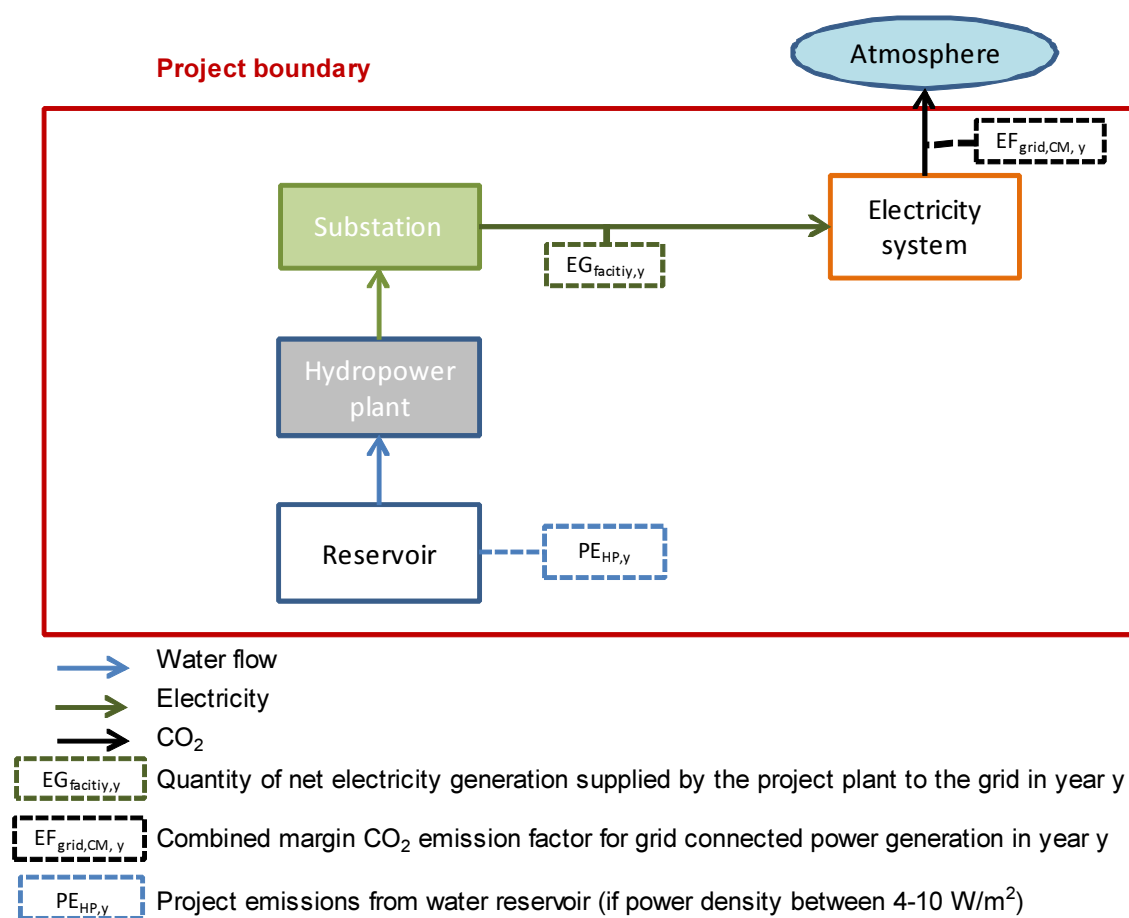
Note: In the cases of CPAs that consist of hydropower plants without reservoir, the reservoir and project emissions from water reservoir should be excluded and disregarded from the diagram above.

The greenhouse gases and emission sources included in or excluded from the project boundary are shown below.

	Source	Gas	Included	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
Project activity	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	Not applicable. The CPA consists of a hydropower plant with or without reservoir.
		CH_4	No	Not applicable. The CPA consists of a hydropower plant with or without reservoir.
		N_2O	No	Not applicable. The CPA consists of a hydropower plant with or without reservoir.
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	Not applicable. The CPA consists of a hydropower plant with or without reservoir.
		CH_4	No	Not applicable. The CPA consists of a hydropower plant with or without reservoir.
		N_2O	No	Not applicable. The CPA consists of a hydropower plant with or without reservoir.
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Minor emission source.
		CH_4	Yes	Main emission source.
		N_2O	No	Minor emission source.

B.4. Description of baseline scenario

The CPA consists of the installation of a Greenfield grid-connected hydropower plant with or without reservoir. Therefore, the baseline scenario is defined in accordance with the methodology ACM0002 (version 16.0), as follows:

"*If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system*".

B.5. Demonstration of eligibility for a generic CPA

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
(a) The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA;	All installations in the CPA shall take place within the geographical boundaries of Brazil and shall be connected to the SIN system.	Project description and geographical coordinates of the CPA as per one of following documents: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: engineering studies, etc.
(b) Conditions that avoid double counting of emission reductions like unique identifications of	The Coordinating and Managing Entity (CME), which is Tractebel Energia S.A., shall demonstrate	Confirmation of the unique geographical co-ordinates of the CPA according to criterion (a)

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
product and end-user locations (e.g. programme logo);	that each CPA does not lead to double counting of emission reduction by confirming that each CPA is not part of any of the below categories: (1) Standalone CDM project activity, (2) Bundled CDM project activity, (3) Another registered PoA.	above. Before including the CPA in the PoA, the CME will conduct a thorough search in the UFCCC registry and other GHG programs (VCS, etc.) to check that the CPA is not part of a standalone project or bundled project or PoA under any CDM or other GHG programs process stage (i.e.: validation, requesting registration or registered).
(c) The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;	The CPA shall consist in a Greenfield grid-connected renewable energy power generation project of the following type: - Hydro power plant/unit with or without reservoir (currently defined by ANEEL[78] as between 1 MW and 30 MW), All CPAs will be required to conform to national standards where available.	Confirmation of the technology/measure (hydropower plant with or without reservoir), level and type of service, performance specifications including compliance with testing/certifications as per the following documents: - Quotation from technology provider; - Purchase order; - EPC; or - Any other similar documentation assessed or evaluated by a third party.
(d) Conditions to check the start date of the CPA through documentary evidence;	The CPA start date shall not be on or before the start date of PoA: 05/05/2014, date which the Prior Consideration of the CDM has been published in the UNFCCC website. The CPA start date should be the earliest date at which either the implementation or construction or real action of a project activity begins in line with "Glossary of CDM terms". Documentary evidence of the CPA start date shall be provided by the time of inclusion of each CPA in the PoA.	Start date confirmation through one of the following documents: - Contract between the project developer and a third party related to the implementation or construction of the CPA (EPC, etc.); - Purchase order(s) of equipment /technology or any other significant expenditure; - Any other relevant document, e.g.: order or notice to proceed.
(e) Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs;	The CPA must comply with the requirements as per the provisions established in ACM0002 (version 16.0).	CPA compliance with ACM0002 (version 16.0) requirements is described in section B.2 above. Compliance with these requirements is proved by: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.:

[78] ANEEL Resolution N° 394; 04/12/1998. Available at: http://www.portalpch.com.br/pdfs/Resolucoes/ANEEL_Resolu%C3%A7%C3%A3o-n_394_de_04.12.98.pdf. Accessed on: 03/08/2015.

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
		engineering studies, etc.
(f) The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in section 4.1 of the standard "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities" (version 04.0);	The CPA shall demonstrate additionality by conducting an additionality assessment as per the stepwise procedure contained in the "Tool for the demonstration and assessment of additionality" (version 7.0.0). Step 0: Demonstration whether the proposed project activity is the first-of-its-kind; Step 1: Identification of alternatives to the project activity; Step 2: Investment analysis; Step 3: Barriers analysis; and Step 4: Common practice analysis. Alternatively, the project proponents have also the option to apply the "simplified procedure to demonstrate additionality", as per the provisions contained in section 5.3.1. of the methodology ACM0002 (version 16.0).	Additionality is demonstrated by conducting an additionality assessment at each CPA-DD according to the "Tool for the demonstration and assessment of additionality" (version 7.0.0) and providing the required documentation to back-up the assessment. I.e., if additionality is demonstrated by an investment analysis, documentation to support the values of input parameters, e.g.: quotations, contracts, purchase orders, spot energy price, etc. Alternatively, as per the provisions contained in section "5.3.1. Simplified procedure to demonstrate additionality" of the methodology ACM0002 (version 16.0), specific technologies mentioned in the positive list[79] can be defined as *automatically additional* if any of the following conditions is met: (a) The percentage share of total installed capacity of the specific technology in the total installed grid connected power generation capacity in the host country is equal to or less than two per cent; or (b) The total installed capacity of the technology in the host country is less than or equal to 50 MW. In the case of Brazil, ANEEL publicly available database shall be used for this purpose[80].
(g)The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis;	- Environmental impact analysis shall be conducted at CPA level for all CPAs with installed capacity higher than 10 MW, according to the applicable environmental laws and regulations. - Local stakeholder consultation is conducted at the PoA level according to the Brazilian DNA requirements to issue the Letter of	If applicable, environmental impact analysis evidenced by: - EIA/RIMA and/or Environmental License(s).

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[79] As per the paragraph 29 of the methodology ACM0002 (version 16.0), the simplified procedure to demonstrate additionality is applicable to the following grid connected electricity generation technologies (positive list): (a) Solar photovoltaic technologies; (b) Solar thermal electricity generation including concentrating Solar Power (CSP); (c) Off-shore wind technologies; (d) Marine wave technologies; (e) Marine tidal technologies.

[80] Available at: http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.cfm . Accessed on: 03/08/2015.

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
	Approval. The CME does not stipulate any specific requirement for local stakeholder consultations at CPA level.	
(h) Conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance (ODA);	The financing for the CPA will be confirmed to be consistent with the PoA financing described in the PoA- DD. A written confirmation will be required that no funding is coming from Annex I parties, or if it does, that this is not a diversion of ODA.	Written confirmation that no ODA was diverted at the CPA-DD.
(i) Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation);	The CPA shall correspond with the target group: Greenfield grid-connected (SIN) renewable energy power project such as hydro with or without reservoir. The projects are not expected to have any distribution mechanisms.	Confirmation by one of the following documents: - EIA/RIMA and/or Environmental License(s); - Other documents, e.g.: engineering studies, etc.
(j) 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";	Not applicable. All the CPAs included in the PoA shall be monitored individually.	Not applicable.
(k) Where applicable, the conditions that ensure that every CPA in aggregate meets the small-scale or microscale threshold criteria and remains within those thresholds throughout the crediting period of the CPA;	Not applicable. Large scale consolidated methodology ACM0002 (version 16.0) is applied to this CDM-PoA. Thus, even if a CPA total installed capacity is equal or below 15 MW, it must comply with the conditions/criteria established by ACM0002 (version 16.0).	Not applicable.
(l) Where applicable, the requirements for the de-bundling check, in case CPAs belong to small-scale (SSC) or micro-scale project categories.	Not applicable. Large scale consolidated methodology ACM0002 (version 16.0) is applied, so no de-bundling check is applicable.	Not applicable.

B.6. Estimation of emission reductions of a generic CPA

B.6.1. Explanation of methodological choices

The procedures to determine the emission reductions attributable to the project activity are described below, according to the selected approved methodology ACM0002 (version16.0) "*Grid-connected electricity generation from renewable sources*".

Project emissions

According to the methodology project emissions (PE_y) for hydropower plants without reservoir are zero.

Meanwhile, PE_y for hydropower plants with reservoir are calculated as follow:

$$PE_y = PE_{HP,y}$$

$PE_{HP,y}$ $\qquad$ = $\qquad$ Project emissions from water reservoirs of hydro power plants in year y (tCO_2e/yr)

Emissions from water reservoirs of hydro power plants ($PE_{HP,y}$)

The power density (PD) of the project activity is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \qquad \text{(a)}$$

Where:
PD $\qquad$ = $\qquad$ Power density of the project activity (W/m^2)
Cap_{PJ} $\qquad$ = $\qquad$ Installed capacity of the hydro power plant after the implementation of the project activity (W)
Cap_{BL} $\qquad$ = $\qquad$ Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero
A_{PJ} $\qquad$ = $\qquad$ Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m^2)
A_{BL} $\qquad$ = $\qquad$ Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2).

The rule to calculate the Power Density as a basis for the definition of Project Emissions was established in EB 23 and defined in Annex 5[81] of the meeting. The decision defines Power Density as _"installed power generation capacity divided by the flooded surface area"_. The fact that the surface of the natural river is not to be considered _"flooded surface area"_ was later reinforced by the response to the request for clarification AM_CLA_0049[82] which makes reference to the definition of _"flooded surface area"_ and requests to know if it is equivalent to the reservoir area without the original river surface. The answer to this request was clear by defining that the real issue to be considered is _"whether or not new areas are flooded because of the implementation of the project hydro power plant"_. Based on this principle, the response to the request for clarification was clear by determining that the calculation of the Power Density should be calculated on the basis of the: _"increased flooded area measured in the water surface"_. Therefore, the Project Participants understand that the Reservoir Area for the calculation of the Power Density should be net of the original river bed as this does not represent _"flooded surface area"_.

In addition, as the Data / Parameters Cap_{PJ} and A_{PJ} are to be monitored (ex-post) and _"after the implementation of the project activity"_, as clearly stated in their description, the Power Density (PD) should only be calculated just once the projects have been fully implemented and construction completed, at least in terms of total installed capacity (i.e. turbines + generators) and taking into consideration the existence of single or multiple reservoirs (hydropower plants with or without reservoirs).

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[81] Available at http://cdm.unfccc.int/EB/023/eb23_repan5.pdf.

[82] Available at:
http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_T74PW4LBX5ZQRSRV57CR6RIKBALHHE.

For hydro power project activities that result in new single or multiple reservoirs and hydro power project activities that result in the increase of single or multiple existing reservoirs, project proponents shall account for CH_4 and CO_2 emissions from the reservoirs, estimated as follows:

For integrated hydro power project PD of the entire project is calculated as follows:

$$PD = \frac{\sum Cap_{PJ,i}}{\sum A_{PJ,j}} \qquad \text{(b)}$$

Where:

$Cap_{PJ,i}$	=	Individual power plants included in integrated hydro power project
$A_{PJ,j}$	=	Individual reservoirs included in integrated hydro power project

If the power density of the project activity using equation (a) or in case of integrated hydro power project using equation (b) is greater than 4 W/m^2 and less than or equal to 10 W/m^2:

$$PE_{HP,y} = \frac{EF_{Res} \times TEG_y}{1000}$$

Where:

$PE_{HP,y}$	=	Project emissions from water reservoirs (t CO_2e/yr)
EF_{Res}	=	Default emission factor for emissions from reservoirs of hydro power plants (kg CO_2e/MWh)
TEG_y	=	Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (MWh)

If the power density of the project activity is greater than 10 W/m^2:

$$PE_{HP,y} = 0$$

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

BE_y	=	Baseline emissions in year y (tCO_2/yr)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EF_{grid,CM,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "*Tool to calculate the emission factor for an electricity system*" (tCO_2/MWh)

Calculation of $EG_{PJ,y}$

As the project activity is the installation of a Greenfield power plant, then:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

Calculation of the combined margin CO_2 emission factor for grid connected power generation in year y ($EF_{grid,CM,y}$)

Please refer to the same procedures and results described in the generic CPA for wind, solar, wave or tidal power plants.

Leakage

According to the ACM0002 (version 16.0), the following is stated:

"*No leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport) are neglected*".

Therefore,

$L_y = 0$

Emission reductions

Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

Where:

ER_y = Emission reductions in year y (tCO$_2$e/yr);
BE_y = Baseline emissions in year y (tCO$_2$e/yr);
PE_y = Project emissions in year y (tCO$_2$e/yr).

B.6.2. Data and parameters fixed ex-ante

Data / Parameter:	$EF_{grid,BM,2014}$
Data unit:	tCO$_2$/MWh
Description:	Build margin CO_2 emission factor for the project electricity system in year y
Source of data:	Brazilian DNA[83]
Value(s) applied:	0.2963
Choice of data or Measurement methods and procedures:	The build margin emission factor of the Brazilian electricity grid system is calculated by the Brazilian DNA by applying all steps, data and variables required by the latest version of the "Tool to calculate the emission factor for an electricity system". This data will be archived electronically and according to internal procedures, until 2 years after the end of the crediting period.

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[83] Brazilian DNA: Build Margin emission factor for the year 2014 ($EF_{grid,BM,2014}$ = 0.2963 tCO$_2$/MWh). Available at: http://www.mct.gov.br/index.php/content/view/354731.html#ancora.

Purpose of data	To define the Build Margin emission factor as ex-ante. This data/information will be used for the emission reductions calculation.
Additional comment:	This value shall be used for the first crediting period for all CPAs. The build margin emission factor is based on data from the year 2014 and it has been defined as ex-ante by the project participants.

Data / Parameter:	EF_{Res}
Data unit:	$kgCO_2e/MWh$
Description:	Default emission factor for emissions from reservoirs
Source of data:	Decision by EB 23
Value(s) applied:	90
Choice of data or Measurement methods and procedures:	ACM002 (version 16.0)
Purpose of data	Calculation of project emissions.
Additional comment:	-

Data / Parameter:	Cap_{BL}
Data unit:	W
Description:	Installed capacity of the hydro power plant before the implementation of the project activity.
Source of data:	Project site
Value(s) applied:	0 (new hydro power plant)
Choice of data or Measurement methods and procedures:	ACM0002 (version 16.0)
Purpose of data	Calculation of project emissions
Additional comment:	-

Data / Parameter:	A_{BL}
Data unit:	m^2
Description:	Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2).
Source of data:	Project site
Value(s) applied:	-
Choice of data or Measurement methods and procedures:	According to ACM002 (version 16.0): To be measured from topographical surveys, maps, satellite pictures, etc., prior to the implementation of the component project activity.
Purpose of data	Calculation of project emissions
Additional comment:	In accordance with the Clarification from the Meth Panel AM_CLA_0049[84], submitted on 7 June 2007, *"the correct equation will be the increased power capacity divided by the increased flooded area measured in the water surface"*, thus the project participants will consider the area of the river as A_{BL}.

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[84] Available at:
http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_T74PW4LBX5ZQRSRV57CR6RIKBALHHE.

B.6.3. Ex-ante calculations of emission reductions

Project emissions

- Hydropower plants without reservoir:

$$PE_y = 0$$

- Hydropower plants with reservoir:

$$PE_y = PE_{HP,y}$$

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (tCO$_2$e/yr)

Emissions from water reservoirs of hydro power plants (PE$_{HP,y}$)

The power density (PD) of the project activity is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \qquad \text{(a)}$$

Where:
PD = Power density of the project activity (W/m^2)
Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W)
Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero
A_{PJ} = Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoirs full (m^2)
A_{BL} = Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2).

For hydro power project activities that result in new single or multiple reservoirs and hydro power project activities that result in the increase of single or multiple existing reservoirs, project proponents shall account for CH$_4$ and CO$_2$ emissions from the reservoirs, estimated as follows:

For integrated hydro power project PD of the entire project is calculated as follows:

$$PD = \frac{\sum Cap_{PJi}}{\sum A_{PJj}} \qquad \text{(b)}$$

Where:
$Cap_{PJ,i}$ = Individual power plants included in integrated hydro power project
$A_{PJ,j}$ = Individual reservoirs included in integrated hydro power project

If the power density of the project activity using equation (a) or in case of integrated hydro power project using equation (b) is greater than 4 W/m^2 and less than or equal to 10 W/m^2:

$$PE_{HP,y} = \frac{EF_{Res} \times TEG_y}{1000}$$

Where:

PE$_{HP,y}$ = Project emissions from water reservoirs (tCO$_2$e/yr)

EF$_{Res}$ = Default emission factor for emissions from reservoirs of hydro power plants (kgCO$_2$e/MWh)

TEG$_y$ = Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (MWh)

If the power density of the project activity is greater than 10 W/m^2:

$$PE_{HP,y} = 0$$

Baseline emissions

Since the hydropower plant with or without reservoir is a Greenfield power plant:

$$BE_y = EG_{faciity,y} \times EF_{grid,CM,y}$$

Where:

BE$_y$ = Baseline emissions in year *y* (tCO$_2$/yr)

EG$_{facility,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh/yr)

EF$_{grid,CM,y}$ = Combined margin CO$_2$ emission factor for grid connected power generation in year *y* (tCO$_2$/MWh)

EG$_{facility,y}$ will be estimated based on figures and parameters (e.g.: power plant net installed capacity, plant load factor, etc.) of each CPA.

EF$_{grid,CM, y}$ value estimated based on data provided by the Brazilian DNA as stated in table from section B.7.1 below.

Emission reductions

Emission reductions will be calculated as follows:

ER$_y$ = BE$_y$ − PE$_y$

Where:

ER$_y$ = Emission reductions in year *y* (tCO$_2$e/yr);

BE$_y$ = Baseline emissions in year *y* (tCO$_2$e/yr);

PE$_y$ = Project emissions in year *y* (tCO$_2$e/yr).

B.7. Application of the monitoring methodology and description of the monitoring plan

B.7.1. Data and parameters to be monitored by each generic CPA

Data / Parameter:	EF$_{grid, OM,,y}$
Data unit:	tCO$_2$/MWh
Description:	Operation margin emission factor in year y
Source of data:	Brazilian DNA or ONS.
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	Calculation as per the "Tool to calculate the emission factor for an electricity system" (version 05.0).
Monitoring frequency:	Yearly

QA/QC procedures:	To guarantee that official data from the sources above mentioned is utilized and that calculations are conducted according to the applicable tool.
Purpose of data	Calculation of baseline emissions
Additional comment:	In case the Brazilian DNA discontinues the publication of the $EF_{grid,OM,y}$ during the crediting periods, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Data / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO_2/MWh
Description:	Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "*Tool to calculate the emission factor for an electricity system*".
Source of data:	Brazilian DNA or ONS
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	Calculation as per the "Tool to calculate the emission factor for an electricity system" (version 05.0).
Monitoring frequency:	Yearly
QA/QC procedures:	To guarantee that official data from the sources above mentioned is utilized and that calculations are conducted according to the applicable tool.
Purpose of data	Calculation of baseline emissions
Additional comment:	In case the Brazilian DNA discontinues the publication of the OM emission factor during the crediting periods, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Data / Parameter:	$EG_{facility,y}$ (or $EG_{PJ,y}$)
Data unit:	MWh/yr
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*
Source of data:	Electricity meter(s)
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	This parameter should be either monitored using bi-directional energy meter or calculated as difference between (a) the quantity of electricity supplied by the project plant/unit to the grid; and (b) the quantity of electricity delivered to the project plant/unit from the grid. In case it is calculated then the following parameters shall be measured: (a) The quantity of electricity supplied by the project plant/unit to the grid; and (b) The quantity of electricity delivered to the project plant/unit from the grid. Where the electricity meters to be installed in the component project activity are the "bidirectional" type, then, these will be able to continuously and automatically measure both electricity supplied by the project plant/unit to the grid and the electricity delivered to the project plant/unit from the grid. In this case, it is expected to occur that the "bi-directional" power meters would directly deliver data already considering the net amount of electricity supplied by the project plant/unit to the grid and without distinction between (a) and (b) as described above, i.e. by automatically discounting eventual electricity consumptions from the grid from the amount of electricity dispatched to the grid. Class 0.2S power meters will be used in accordance with the established Grid Procedures defined by the National Electric System Operator (ONS) [85] and

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[85] Installation of measurement system for billing (Sub-module 12.2); ONS; v1.0; 17/06/2009; http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.2_Rev_1.0.pdf. Accessed on: 03/08/2015.

	Commercialization Procedures by the CCEE (Chamber of Electrical Energy Commercialization)[86].
Monitoring frequency:	Continuous measurements and monthly recording.
QA/QC procedures:	The quantity of net electricity generation supplied by the project plant/unit to the grid needs to be checked through the CCEE (Electric Power Commercialization Chamber) database, which is the official and the most credible source of information for this purpose.
	Sales receipts for sold electricity cannot be used for cross-checking purposes as the sales receipts will only indicate the monetary amount to be paid and not the amount of electricity sold to the grid.
	Nevertheless, this will not affect the monitoring of this parameter or compromise the quality of data, as the purpose of CCEE is to carry out the wholesale transactions and commercialization of electric power within the National Interconnected System, for both Regulated and Free Contracting Environments and for the spot market. In addition, CCEE is in charge of financial settlement for the spot market transactions. These activities form the Energy Accounting and Financial Settlement Process, which is entirely audited by outside auditors, pursuant ANEEL's Normative Resolution nº 109, dated 26 October 2004 (Electric Power Commercialization Convention). The Commercialization Rules and Procedures that govern the activities performed by CCEE are defined and approved by ANEEL[87].
	Meters calibration will be performed according to the ONS Grid Procedures[88].
	Data collected from the project meter has low uncertainty levels and to guarantee its accuracy it can be confronted with information of generation provided by CCEE.
	In case of failure of the main meter, a back-up energy meter will be utilized.
Purpose of data	Calculation of baseline emissions.
Additional comment:	Data will be archived at least for two years after crediting period.

Data / Parameter:	Cap_{PJ}
Data unit:	W
Description:	Installed capacity of the hydro power plant after the implementation of the project activity
Source of data:	Project site
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	Determine the installed capacity based on manufacturer's specifications or commissioning data or recognized standards
Monitoring frequency:	Once at the beginning of each crediting period
QA/QC procedures:	-
Purpose of data	Calculation of project emissions
Additional comment:	-

Data / Parameter:	A_{PJ}
Data unit:	m^2

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[86] http://www.ccee.org.br/portal/faces/pages_publico/o-que-fazemos?_adf.ctrl-state=97nwq4566_45&_afrLoop=307374146798100. Accessed on: 03/08/2015.

[87] Available at: http://www.ccee.org.br/portal/faces/pages_publico/quem-somos/estrutura_e_pessoas/governanca?_afrLoop=59916351702582#%40%3F_afrLoop%3D59916351702582%26_adf.ctrl-state%3Dvxwcite57_82. Assessed on 03/08/2015.

[88] By the time of completion of this document, the applicable procedure is established in the procedure "Maintenance of the measurement system for billing" (Sub-module 12.3); ONS; v1.0; 17/06/2009; http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.3_Rev_1.0.pdf. Accessed on: 16/03/2015. In case of any changes/updates occurred in the ONS Grid Procedures, the project developer shall follow the rules from the relevant sector organizations (e.g. ONS, ANEEL, CCEE) applicable by that time.

Description:	Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full
Source of data:	Project site
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	Measured from topographical surveys, maps, satellite pictures, etc.
Monitoring frequency:	Once at the beginning of each crediting period.
QA/QC procedures:	-
Purpose of data	Calculation of project emissions.
Additional comment:	When applicable, measures that accounts for the water level in the reservoir will be undertaken in accordance with national requirements defined by the ANA (the National Water Resources Agency) and/or ANEEL (the National Electric Energy Agency) and/or ONS (the Electric System National Operator). Although it is not expected, if at any time the power density should fall below the minimum level of 10 W/m², the appropriate calculation and consideration of Project Emissions ($PE_{HP,y}$) shall be taken into account for number of days in which the power density (PD) is in between 10 W/m^2 and 4 W/m^2 within the correspondent monitoring period. For the avoidance of doubt, the parameter A_{PJ} should be applicable and monitored only after the conclusion of the project construction.

Data / Parameter:	TEG_y
Data unit:	MWh/yr
Description:	Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y
Source of data:	Project activity site
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	Electricity meters
Monitoring frequency:	Continuous measurement and at least monthly recording
QA/QC procedures:	-
Purpose of data	Calculation of project emissions.
Additional comment:	This value shall be applied in the project emissions' equation for calculating the emission from reservoirs of hydro power plant ($PE_{HP,y}$) just in case project emissions occur, i.e. if power density of the project activity (PD) is between 4 W/m^2 and 10 W/m^2. Applicable to hydro power project activities with a power density greater than 4 W/m^2 and less than or equal to 10 W/m^2

B.7.2. Description of the monitoring plan for a generic CPA

Please refer to section B.7.2 of the generic CPA for wind, solar, wave and tidal power plants.

PART II. Generic component project activity (CPA)

METHOD FOR GEOTHERMAL PROJECTS

SECTION A. General description of a generic CPA

A.1. Purpose and general description of generic CPAs

The CPA will consist of the installation of a Greenfield geothermal power plant located within Brazil and connected to the SIN grid.

The electricity delivered by the project activity to the grid would otherwise be generated by the operation of grid-connected power plants and by the addition of new generation sources. Thus, the project will generate greenhouse gases (GHG) emission reductions by displacing electricity that in the baseline would be produced by fossil fuel based power plants connected to the grid.

SECTION B. Application of a baseline and monitoring methodology and standardized baseline

B.1. Reference of methodology(ies) and standardized baseline(s)

- ACM0002 – "Grid-connected electricity generation from renewable sources" (version 16.0)[89];
- "Tool for the demonstration and assessment of additionality" (version 07.0.0)[90];
- "Tool to calculate the emission factor for an electricity system" (version 05.0)[91].

B.2. Applicability of methodology(ies) and standardized baseline(s)

The approved baseline methodology ACM0002 (version 16.0) applies to the proposed CPA, based on its applicability criteria, as follows:

ACM0002 version 16.0 applicability criteria	ACM0002 version 16.0 applicability to the CPA	Documentation that has been used as a basis of justification
1. This methodology is applicable to grid-connected renewable energy power generation project activities that: a) Install a Greenfield power plant; b) Involve a capacity addition to (an) existing plant(s); c) Involve a retrofit of (an) existing operating plants/units; d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or e) Involve a replacement of (an) existing plant(s)/unit(s).	The CPA consists of a grid-connected renewable energy power generation project activity that installs a Greenfield power plant.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design; engineering studies, etc.

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[89] http://cdm.unfccc.int/methodologies/DB/EY2CL7RTEHRC9V6YQHLAR6MJ6VEU83 (Accessed on 25/01/2016)

[90] Available at: http://cdm.unfccc.int/Reference/tools/index.html (Accessed on 25/01/2016)

[91] Available at: http://cdm.unfccc.int/Reference/tools/index.html (Accessed on 25/01/2016)

ACM0002 version 16.0 applicability criteria	ACM0002 version 16.0 applicability to the CPA	Documentation that has been used as a basis of justification
2. The methodology is applicable under the following conditions: a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects), the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	The CPA include renewable energy power plant/unit of the following type: - Geothermal power plant/unit.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design; engineering studies, etc.
3. In case of hydro power plants, one of the following conditions shall apply: (e) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (f) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m^2; or (g) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m^2; or (h) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m^2, all of the following conditions shall apply: (iv) The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m^2; (v) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (vi) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	Not applicable. The CPA consists of a grid-connected geothermal power plant.	Not applicable.
4. In the case of integrated hydro power projects, project proponent shall: (a) Demonstrate that water flow from upstream power	Not applicable. The CPA consists of a grid-connected	Not applicable.

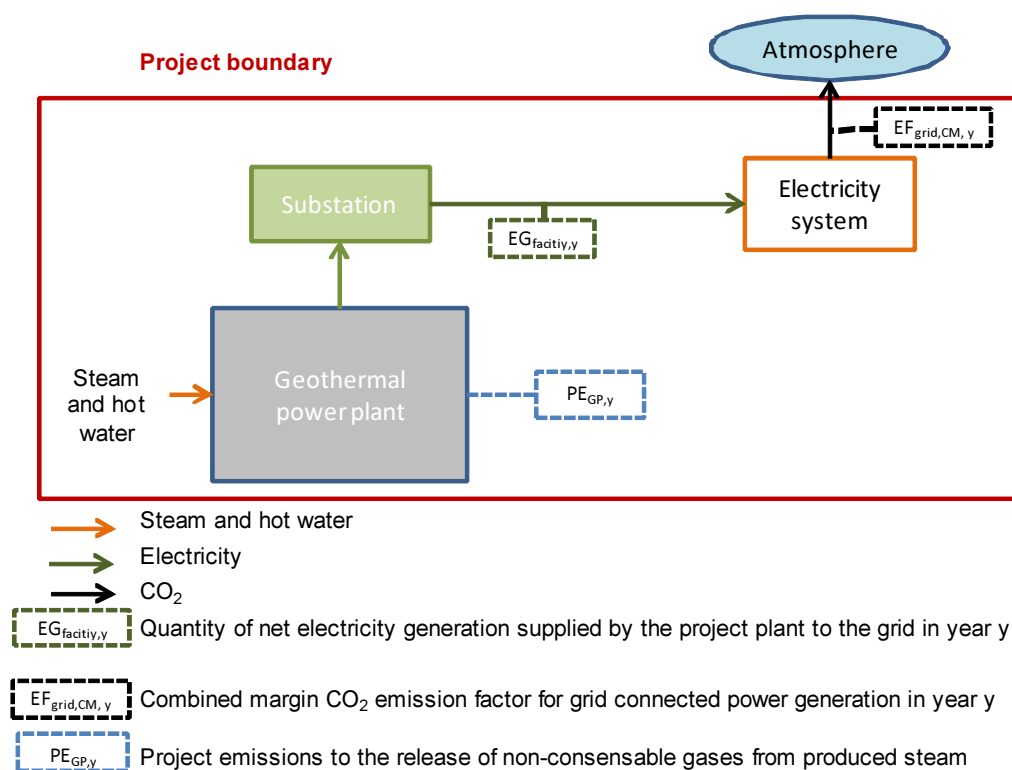| ACM0002 version 16.0 applicability criteria	ACM0002 version 16.0 applicability to the CPA	Documentation that has been used as a basis of justification
plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	geothermal power plant.	
5. The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants/units.	The CPA does not consist in: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; or b) Biomass fired power plants/units.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design; engineering studies, etc.
6. In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	Not applicable. The CPA consists of a grid-connected renewable energy Greenfield power plant.	Documents may include: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: project design; engineering studies, etc.
7. In addition, the applicability conditions included in the tools referred in the methodology.	The tools referred in the methodology and applicable to the CPA are the ones mentioned in section B.1 above. Their particular applicability conditions are described below.	- See below.

Tool for the demonstration and assessment of additionality, version 07.0.0, applicability criteria	Additionality tool applicability to the CPA	Documentation that has been used as a basis of justification
The use of the "Tool for the demonstration and assessment of additionality" version 7.0.0 is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.	Not applicable. The CPA applies the approved methodology ACM0002 (version 16.0).	CPA-DD
Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	The CPA will demonstrate and assess additionality using this tool and the provisions contained in ACM0002 (version 16.0).	CPA-DD

Tool to calculate the emission factor for an electricity system, version 05.0, applicability criteria	Grid emission factor tool applicability to the CPA	Documentation that has been used as a basis of justification
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The CPA substitutes grid electricity by supplying electricity to a grid (SIN)	Documents may include: EIA/RIMA, Project Design, connection permits or other relevant documents.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants.	The emission factor for the CPA electricity system will be calculated for grid power plants only.	Brazilian DNA grid emission factor calculations[92].
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The CPA electricity system (SIN) is located exclusively in Brazil.	Brazilian DNA grid emission factor calculations[92].
Under this tool, the value applied to the CO_2 emission factor of biofuels is zero.	A value of zero will be applied to the CO_2 emission factor of biofuels power plants if connected to the SIN.	Brazilian DNA grid emission factor calculations[92].

B.3.   Sources and GHGs

The diagram below includes emissions sources and GHGs included in the project boundary of the project activity.

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[92] In case the Brazilian DNA discontinues the publication of these data during the monitoring period, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Project boundary

Atmosphere

$EF_{grid,CM, y}$

Substation

Electricity system

$EG_{facitiy,y}$

Steam and hot water

Geothermal power plant

$PE_{GP,y}$

→ Steam and hot water

→ Electricity

→ CO_2

$EG_{facitiy,y}$ Quantity of net electricity generation supplied by the project plant to the grid in year y

$EF_{grid,CM, y}$ Combined margin CO_2 emission factor for grid connected power generation in year y

$PE_{GP,y}$ Project emissions to the release of non-consensable gases from produced steam

The greenhouse gases and emission sources included in or excluded from the project boundary are shown below.

	Source	Gas	Included	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
Project activity	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	Yes	Main emission source.
		CH_4	Yes	Main emission source.
		N_2O	No	Minor emission source.
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	The geothermal power plant will not use fossil fuels for electricity generation.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	Not applicable. The CPA consists of a geothermal power plant.
		CH_4	No	Not applicable. The CPA consists of a geothermal power plant.
		N_2O	No	Not applicable. The CPA consists of a geothermal power plant.

B.4. Description of baseline scenario

The CPA consists of the installation of a Greenfield grid-connected geothermal power plant. Therefore, the baseline scenario is defined in accordance with ACM0002 (version 16.0), as follows:

"*If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system*".

B.5. Demonstration of eligibility for a generic CPA

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
(a) The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA;	All installations in the CPA shall take place within the geographical boundaries of Brazil and shall be connected to the SIN system.	Project description and geographical coordinates of the CPA as per one of following documents: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: engineering studies, etc.
(b) Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo);	The Coordinating and Managing Entity (CME), which is Tractebel Energia S.A., shall demonstrate that each CPA does not lead to double counting of emission reduction by confirming that each CPA is not part of any of the below categories: (1) Standalone CDM project activity, (2) Bundled CDM project activity, (3) Another registered PoA.	Confirmation of the unique geographical co-ordinates of the CPA according to criterion (a) above. Before including the CPA in the PoA, the CME will conduct a thorough search in the UFCCC website and other GHG programs (VCS, etc.) to check that the CPA is not part of a standalone project or bundled project or PoA under any CDM or other GHG programs process stage (i.e.: validation, requesting registration or registered).
(c) The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;	The CPA shall consist in a Greenfield grid-connected renewable energy power generation project of one of the following types: - Geothermal power plant/unit; All CPAs will be required to conform to national standards where available.	Confirmation of the technology/measure (geothermal power plant), level and type of service, performance specifications including compliance with testing/certifications as per the following documents: - Quotation from technology provider, - Purchase order, - EPC, or - Any other similar documentation assessed or evaluated by a third party.
(d) Conditions to check the start date of the CPA through documentary evidence;	The CPA start date shall not be on or before the start date of PoA: 05/05/2014, date which the Prior Consideration of the CDM has been published in the UNFCCC website.	Start date confirmation through one of the following documents: - Contract between the project developer and a third party related to the implementation or construction of the CPA (EPC,

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
	The CPA start date should be the earliest date at which either the implementation or construction or real action of a project activity begins in line with "Glossary of CDM terms". Documentary evidence of the CPA start date shall be provided by the time of inclusion of each CPA in the PoA.	etc.); - Purchase order(s) of equipment /technology or any other significant expenditure; - Any other relevant document, e.g.: order or notice to proceed.
(e) Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs;	The CPA must comply with the requirements as per the provisions established in ACM0002 (version 16.0).	CPA compliance with ACM0002 (version 16.0) requirements is described in section B.2 above. Compliance with these requirements is proved by: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: engineering studies, etc.
(f) The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in section 4.1 of the standard "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities" (version 4.0)	The CPA shall demonstrate additionality by conducting an additionality assessment as per the stepwise procedure contained in the "Tool for the demonstration and assessment of additionality" (version 7.0.0): Step 0 Demonstration whether the proposed project activity is the first-of-its-kind; Step 1: Identification of alternatives to the project activity; Step 2: Investment analysis; Step 3: Barriers analysis; and Step 4: Common practice analysis. Alternatively, the project proponents have also the option to apply the "simplified procedure to demonstrate additionality", as per the provisions contained in section 5.3.1. of the methodology ACM0002 (version 16.0).	Additionality is demonstrated by conducting an additionality assessment at each CPA-DD according to the "Tool for the demonstration and assessment of additionality" (version 7.0.0) and providing the required documentation to back-up the assessment. I.e., if additionality is demonstrated by an investment analysis, documentation to support the values of input parameters, e.g.: quotations, contracts, purchase orders, spot energy price, etc. Alternatively, as per the provisions contained in section "5.3.1. Simplified procedure to demonstrate additionality" of the methodology ACM0002 (version 16.0), specific technologies mentioned in the positive list[93] can be defined as *automatically additional* if any of the following conditions is met: (a) The percentage share of total installed capacity of the specific technology in the total installed grid connected power generation capacity in the host country is equal to or less than two per cent; or

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[93] As per the paragraph 29 of the methodology ACM0002 (version 16.0), the simplified procedure to demonstrate additionality is applicable to the following grid connected electricity generation technologies (positive list): (a) Solar photovoltaic technologies; (b) Solar thermal electricity generation including concentrating Solar Power (CSP); (c) Off-shore wind technologies; (d) Marine wave technologies; (e) Marine tidal technologies.

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
		(b) The total installed capacity of the technology in the host country is less than or equal to 50 MW. In the case of Brazil, ANEEL publicly available database shall be used for this purpose[94].
(g)The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis;	- Environmental impact analysis shall be conducted at CPA level for all CPAs with installed capacity higher than 10 MW, according to the applicable environmental laws and regulations. - Local stakeholder consultation is conducted at the PoA level according to the Brazilian DNA requirements to issue the Letter of Approval. The CME does not stipulate any specific requirement for local stakeholder consultations at CPA level.	If applicable, environmental impact analysis evidenced by: - EIA/RIMA and/or Environmental License(s);
(h) Conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance (ODA);	The financing for the CPA will be confirmed to be consistent with the PoA financing described in the PoA-DD. A written confirmation will be required that no funding is coming from Annex I parties, or if it does, that this is not a diversion of ODA.	Written confirmation that no ODA was diverted at the CPA-DD.
(i)Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation);	The CPA shall correspond with the target group: Greenfield grid-connected (SIN) renewable energy power project such as geothermal. The projects are not expected to have any distribution mechanisms.	Confirmation by one of the following documents: - EIA/RIMA and/or Environmental Licenses; - Other documents, e.g.: engineering studies, etc.
(j) 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";	Not applicable. All the CPAs included in the PoA shall be monitored individually.	Not applicable.
(k) Where applicable, the conditions that ensure that every CPA in aggregate meets the small-scale or micro-scale threshold criteria and remains within those thresholds throughout the crediting period of the CPA;	Not applicable. Large scale consolidated methodology ACM0002 (version 16.0) is applied to this CDM-PoA. Thus, even if a CPA total installed capacity is equal or below 15 MW, it must comply with the conditions/criteria established by ACM0002 (version 16.0).	Not applicable.

[94] Available at: http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.cfm . Accessed on: 03/08/2015.

Eligibility criteria as per the standard	Eligibility criteria for CPA inclusion in the PoA	CPA demonstration of compliance with eligibility criteria
(I) Where applicable, the requirements for the de-bundling check, in case CPAs belong to small-scale (SSC) or micro-scale project categories.	Not applicable. Large scale consolidated methodology ACM0002 (version 16.0) is applied, so no de-bundling check is applicable.	Not applicable.

B.6. Estimation of emission reductions of a generic CPA

B.6.1. Explanation of methodological choices

The procedures to determine the emission reductions attributable to the project activity are described below, according to the selected approved methodology ACM0002 (version16.0) "*Grid-connected electricity generation from renewable sources*".

Project emissions

According to ACM0002 (version 16.0), project emissions from geothermal projects are as follow:

$PE_y = PE_{GP,y}$

$PE_{GP,y}$ =   Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO$_2$e/yr)

Emissions of non-condensable gases from the operation of geothermal power plants (PE$_{GP,y}$)

For geothermal project activities, project participants shall account fugitive emissions of CO_2 and CH_4 due to release of non-condensable gases from produced steam. Non-condensable gases in geothermal reservoirs usually consist mainly of CO_2 and H_2S. They also contain a small quantity of hydrocarbons, including predominantly CH_4. In geothermal power projects, non-condensable gases flow with the steam into the power plant. A small proportion of the CO_2 is converted to carbonate/bicarbonate in the cooling water circuit. In addition, parts of the non-condensable gases are re-injected into the geothermal reservoir. However, as a conservative approach, this methodology assumes that all non-condensable gases entering the power plant are discharged to atmosphere via the cooling tower. Fugitive CO_2 and CH_4 emissions due to well testing and well bleeding are not considered, as they are negligible.

PE$_{GP,y}$ is calculated as follows:

$$PE_{GP,y} = \left(w_{steam,CO2,y} + w_{steam,CH4,y} \times GWP_{CH4} \right) \times M_{steam,y}$$

Where:
$PE_{GP,y}$ =   Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO$_2$e/yr)

$w_{steam,CO2,y}$ =   Average mass fraction of CO_2 in the produced steam in year y (tCO$_2$/t steam)

$w_{steam,CH4,y}$ =   Average mass fraction of CH_4 in the produced steam in year y (tCH$_4$/t steam)

GWP_{CH4} =   Global warming potential of CH_4 valid for the relevant commitment period (t CO$_2$e/t CH$_4$)

$M_{steam,y}$ =   Quantity of steam produced in year y (t steam/yr)

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

BE_y	=	Baseline emissions in year y (tCO$_2$/yr)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EF_{grid,CM,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "*Tool to calculate the emission factor for an electricity system*" (tCO$_2$/MWh)

Calculation of $EG_{PJ,y}$

The project activity is the installation of a Greenfield power plant, then:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EG_{facility,y}$	=	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

Calculation of the combined margin CO_2 emission factor for grid connected power generation in year y ($EF_{grid,CM,y}$)

Please refer to the procedure and results described in the generic CPA for wind, solar, hydro run-of-river, wave and tidal power plants.

Leakage

According to the ACM0002 (version 16.0.0), the following is stated:

"*No leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport) are neglected*".

Therefore,

$L_y = 0$

Emission reductions

Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

Where:
ER$_y$ = Emission reductions in year y (tCO$_2$e/yr);
BE$_y$ = Baseline emissions in year y (tCO$_2$e/yr);
PE$_y$ = Project emissions in year y (tCO$_2$e/yr).

B.6.2. Data and parameters fixed ex-ante

Data / Parameter:	EF$_{grid,BM,2014}$
Data unit:	tCO$_2$/MWh
Description:	Build margin CO$_2$ emission factor for the project electricity system in year y
Source of data:	Brazilian DNA[95]
Value(s) applied:	0.2963
Choice of data or Measurement methods and procedures:	The build margin emission factor of the Brazilian electricity grid system is calculated by the Brazilian DNA by applying all steps, data and variables required by the latest version of the "Tool to calculate the emission factor for an electricity system". This data will be archived electronically and according to internal procedures, until 2 years after the end of the crediting period.
Purpose of data	To define the Build Margin emission factor as ex-ante. This data/information will be used for the emission reductions calculation.
Additional comment:	This value shall be used for the first crediting period for all CPAs. The build margin emission factor is based on data from the year 2014 and it has been defined as ex-ante by the project participants.

Data / Parameter:	GWP$_{CH4}$
Data unit:	tCO$_2$e/tCH$_4$
Description:	Global warming potential of methane-valid for the relevant commitment period
Source of data:	IPCC
Value(s) applied:	For the first commitment period: 21 tCO$_2$e/tCH$_4$ For the second commitment period: 25 tCO$_2$e/tCH$_4$
Choice of data or Measurement methods and procedures:	ACM0002 (version 16.0).
Purpose of data	Calculation of project emissions.
Additional comment:	-

B.6.3. Ex-ante calculations of emission reductions

Project emissions

PE$_y$ = PE$_{GP,y}$

$PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (t CO$_2$e/yr)

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[95] Brazilian DNA: Build Margin emission factor for the year 2014 (EF$_{grid,BM,2014}$ = 0.2963 tCO$_2$/MWh). Available at: http://www.mct.gov.br/index.php/content/view/354731.html#ancora.

PE$_{GP,y}$ is calculated as follows:

$$PE_{GP,y} = \left(w_{steam,CO2,y} + w_{steam,CH4,y} \times GWP_{CH4}\right) \times M_{steam,y}$$

Where:

$PE_{GP,y}$	=	Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO$_2$e/yr)
$w_{steam,CO2,y}$	=	Average mass fraction of CO$_2$ in the produced steam in year y (tCO$_2$/t steam)
$w_{steam,CH4,y}$	=	Average mass fraction of CH$_4$ in the produced steam in year y (tCH$_4$/t steam)
GWP_{CH4}	=	Global warming potential of CH$_4$ valid for the relevant commitment period (t CO$_2$e/t CH$_4$)
$M_{steam,y}$	=	Quantity of steam produced in year y (t steam/yr)

Baseline emissions

Given that the CPA consists of a Greenfield power plant, baseline emissions are calculated as:

$$BE_y = EG_{facility,y} \times EF_{grid,CM,y}$$

Where:

BE_y	=	Baseline emissions in year *y* (tCO$_2$/yr)
$EG_{facility,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh/yr)
$EF_{grid,CM,y}$	=	Combined margin CO$_2$ emission factor for grid connected power generation in year *y* (tCO$_2$/MWh)

EG$_{facility,y}$ will be estimated based on figures and parameters (e.g.: power plant net installed capacity, plant load factor, etc.) of each CPA.

EF$_{grid,CM,y}$ value estimated based on data provided by the Brazilian DNA as stated in table from section B.7.1 below.

Emission reductions

Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$

Where:

ER$_y$ = Emission reductions in year *y* (tCO$_2$e/yr);
BE$_y$ = Baseline emissions in year y (tCO$_2$e/yr);
PE$_y$ = Project emissions in year *y* (tCO$_2$e/yr).

B.7.   Application of the monitoring methodology and description of the monitoring plan

B.7.1. Data and parameters to be monitored by each generic CPA

Data / Parameter:	EF$_{grid, OM,,y}$
Data unit:	tCO$_2$/MWh
Description:	Operation margin emission factor in year y
Source of data:	Brazilian DNA or ONS.

Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	Calculation as per the "Tool to calculate the emission factor for an electricity system" (version 05.0).
Monitoring frequency:	Yearly
QA/QC procedures:	To guarantee that official data from the sources above mentioned is utilized and that calculations are conducted according to the applicable tool.
Purpose of data	Calculation of baseline emissions
Additional comment:	In case the Brazilian DNA discontinues the publication of the $EF_{grid,OM,y}$ during the crediting periods, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Data / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO_2/MWh
Description:	Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "*Tool to calculate the emission factor for an electricity system*".
Source of data:	Brazilian DNA or ONS
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	Calculation as per the "Tool to calculate the emission factor for an electricity system" (version 05.0).
Monitoring frequency:	Yearly
QA/QC procedures:	To guarantee that official data from the sources above mentioned is utilized and that calculations are conducted according to the applicable tool.
Purpose of data	Calculation of baseline emissions
Additional comment:	In case the Brazilian DNA discontinues the publication of the OM emission factor during the crediting periods, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Data / Parameter:	$EG_{facility,y}$ (or $EG_{PJ,y}$)
Data unit:	MWh/yr
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*
Source of data:	Electricity meter(s)
Value(s) applied	Not applicable. Will be estimated ex post.

Measurement methods and procedures:	This parameter should be either monitored using bi-directional energy meter or calculated as difference between (a) the quantity of electricity supplied by the project plant/unit to the grid; and (b) the quantity of electricity delivered to the project plant/unit from the grid.
	 In case it is calculated then the following parameters shall be measured:
	     (a) The quantity of electricity supplied by the project plant/unit to the grid; and
	     (b) The quantity of electricity delivered to the project plant/unit from the grid.
	 Where the electricity meters to be installed in the component project activity are the "bidirectional" type, then, these will be able to continuously and automatically measure both electricity supplied by the project plant/unit to the grid and the electricity delivered to the project plant/unit from the grid. In this case, it is expected to occur that the "bi-directional" power meters would directly deliver data already considering the net amount of electricity supplied by the project plant/unit to the grid and without distinction between (a) and (b) as described above, i.e. by automatically discounting eventual electricity consumptions from the grid from the amount of electricity dispatched to the grid. Class 0.2S power meters will be used in accordance with the established Grid

	Procedures defined by the National Electric System Operator (ONS)[96] and Commercialization Procedures by the CCEE (Chamber of Electrical Energy Commercialization)[97].
Monitoring frequency:	Continuous measurements and monthly recording.
QA/QC procedures:	The quantity of net electricity generation supplied by the project plant/unit to the grid needs to be checked through the CCEE (Electric Power Commercialization Chamber) database, which is the official and the most credible source of information for this purpose. Sales receipts for sold electricity cannot be used for cross-checking purposes as the sales receipts will only indicate the monetary amount to be paid and not the amount of electricity sold to the grid. Nevertheless, this will not affect the monitoring of this parameter or compromise the quality of data, as the purpose of CCEE is to carry out the wholesale transactions and commercialization of electric power within the National Interconnected System, for both Regulated and Free Contracting Environments and for the spot market. In addition, CCEE is in charge of financial settlement for the spot market transactions. These activities form the Energy Accounting and Financial Settlement Process, which is entirely audited by outside auditors, pursuant ANEEL's Normative Resolution nº 109, dated 26 October 2004 (Electric Power Commercialization Convention). The Commercialization Rules and Procedures that govern the activities performed by CCEE are defined and approved by ANEEL[98]. Meters calibration will be performed according to the ONS Grid Procedures[99]. Data collected from the project meter has low uncertainty levels and to guarantee its accuracy it can be confronted with information of generation provided by CCEE. In case of failure of the main meter, a back-up energy meter will be utilized.
Purpose of data	Calculation of baseline emissions.
Additional comment:	Data will be archived at least for two years after crediting period.

Data / Parameter:	$w_{steam,CO2,y}$
Data unit:	t CO_2/t steam
Description:	Average mass fraction of carbon dioxide in the produced steam in year y
Source of data:	Project activity site
Value(s) applied	Not applicable. Will be estimated ex post.

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[96] Installation of measurement system for billing (Submodule 12.2); ONS; v1.0; 17/06/2009; http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.2_Rev_1.0.pdf. Accessed on: 03/08/2015.

[97] http://www.ccee.org.br/portal/faces/pages_publico/o-que-fazemos?_adf.ctrl-state=97nwq4566_45&_afrLoop=307374146798100. Accessed on: 03/08/2015.

[98] Available at: http://www.ccee.org.br/portal/faces/pages_publico/quem-somos/estrutura_e_pessoas/governanca?_afrLoop=59916351702582#%40%3F_afrLoop%3D59916351702582%26_adf.ctrl-state%3Dvxwcite57_82. Assessed on 03/08/2015.

[99] By the time of completion of this document, the applicable procedure is established in the procedure "Maintenance of the measurement system for billing" (Submodule 12.3); ONS; v1.0; 17/06/2009; http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.3_Rev_1.0.pdf. Accessed on: 03/08/2015. In case of any changes/updates occurred in the ONS Grid Procedures, the project developer shall follow the rules from the relevant sector organizations (e.g. ONS, ANEEL, CCEE) applicable by that time.

Measurement methods and procedures:	Non-condensable gases sampling should be carried out in production wells and/or at the steam field-power plant interface using ASTM Standard Practice E1675 for Sampling 2-Phase Geothermal Fluid for Purposes of Chemical Analysis (as applicable to sampling single phase steam only). The CO_2 and CH_4 sampling and analysis procedure consists of collecting non-condensable gases samples from the main steam line with glass flasks, filled with sodium hydroxide solution and additional chemicals to prevent oxidation. H_2S and CO_2 dissolve in the solvent while the residual compounds remain in their gaseous phase. The gas portion is then analyzed using gas chromatography to determine the content of the residuals including CH_4. All alkanes concentrations are reported in terms of methane.
Monitoring frequency:	At least every three months and more frequently, if necessary
QA/QC procedures:	-
Purpose of data	Calculation of project emissions.
Additional comment:	Applicable to geothermal power projects.

Data / Parameter:	$w_{steam,CH4,y}$
Data unit:	t CH_4/t steam
Description:	Average mass fraction of methane in the produced steam in year y
Source of data:	Project activity site
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	As per the procedures outlined for $w_{steam,CO2,y}$.
Monitoring frequency:	As per the procedures outlined for $w_{steam,CO2,y}$.
QA/QC procedures:	-
Purpose of data	Calculation of project emissions.
Additional comment:	Applicable to geothermal power projects.

Data / Parameter:	$M_{steam,y}$
Data unit:	t steam/yr
Description:	Quantity of steam produced in year y
Source of data:	Project activity site
Value(s) applied	Not applicable. Will be estimated ex post.
Measurement methods and procedures:	The steam quantity discharged from the geothermal wells should be measured with a venture flow meter (or other equipment with at least the same accuracy). Measurement of temperature and pressure upstream of the venture meter is required to define the steam properties. The calculation of steam quantities should be conducted on a continuous basis and should be based on international standards. The measurement results should be summarized transparently in regular production reports
Monitoring frequency:	Daily
QA/QC procedures:	-
Purpose of data	Calculation of project emissions.
Additional comment:	Applicable to geothermal power projects.

B.7.2. Description of the monitoring plan for a generic CPA

Please refer to section B.7.2 of the generic CPA for wind, solar, wave and tidal power plants.

Appendix 1. Contact information of coordinating/managing entity and responsible person(s)/ entity(ies)

CME and/or responsible person/ entity	☒ CME ☐ Responsible person/entity for application of the selected methodology(ies) and, where applicable, the selected standardized baseline(s) to the PoA
Organization	Tractebel Energia S. A.
Street/P.O. Box	Rua Paschoal Apóstolo Pítsica, 5064
Building	
City	Florianopolis
State/Region	Santa Catarina
Postcode	88025-255
Country	Brazil
Telephone	+55 48 3221 7072
Fax	+55 48 3221 7073
E-mail	guilherme.ferrari@engie.com
Website	http://www.tractebelenergia.com.br/
Contact person	Guilherme Slovinski Ferrari
Title	Business Development Manager
Salutation	Mr.
Last name	Ferrari
Middle name	Slovinski

CME and/or responsible person/ entity	☐ CME ☒ Responsible person/ entity for application of the selected methodology(ies) and, where applicable, the selected standardized baseline(s) to the PoA
Organization	ENGIE Brasil
Street/P.O. Box	Av Almirante Barroso, 52, 14º floor
Building	
City	Rio de Janeiro
State/Region	Rio de Janeiro
Postcode	20031-000
Country	Brazil
Telephone	+55 21 3974 5400
Fax	
E-mail	carbonmarkets@engie.com
Website	http://www.engie.com/
Contact person	Philipp Daniel Hauser
Title	Vice President Carbon Markets
Salutation	Mr.
Last name	Hauser
Middle name	Daniel

CME and/or responsible person/ entity	☐ CME ☒ Responsible person/entity for application of the selected methodology(ies) and, where applicable, the selected standardized baseline(s) to the PoA
Organization	Climate Link Limited
Street/P.O. Box	115 Magdalen Road
Building	-
City	Oxford
State/Region	-
Postcode	OX4 1RQ
Country	England
Telephone	+44 (0) 1865 600903
Fax	-
E-mail	rodrigo@climate-link.com
Website	http://climate-link.com/
Contact person	Rodrigo Bezerra
Title	Director
Salutation	Mr.
Last name	Bezerra
Middle name	Rodrigo

Appendix 2.   Affirmation regarding public funding

At this stage, no public funding from Annex 1 parties to the United Nations Framework Convention on Climate Change (UNFCCC) is envisaged for this PoA or any CPA under this PoA. In case such funding will be used, a statement will be provided to demonstrate "that such funding does not result in a diversion of official development assistance, is separate from, and is not counted towards the financial obligations" of any Annex I Party, as defined by paragraph 34 of the CDM Project Standard (version 09.0)

Appendix 3.   Applicability of methodology(ies) and standardized baseline(s)

All the information related to the methodologies applied is presented in the PoA-DD.

Appendix 4. Further background information on ex ante calculation of emission reductions

BASELINE INFORMATION

Emission Factor (tCO$_2$/MWh)		
Build Margin (2014)		**0.2963**
Operating Margin (2014)	January	0.6155
	February	0.5989
	March	0.5699
	April	0.5772
	May	0.5605
	June	0.5678
	July	0.5674
	August	0.5862
	September	0.5994
	October	0.5901
	November	0.5885
	December	0.5825
	Average 2014	**0.5837**
1st Crediting Period		
Weighting factor	Wind and solar projects	All other projects
w_{OM}	0.75	0.5
w_{BM}	0.25	0.5
Combined Margin (2014)	**0.5118**	**0.4400**

Information about the Brazilian Interconnected Grid System Emission Factor (base year 2014)[100].

Ex ante calculation of emission reduction is described above. Details of the calculations can be found in the Excel file attached to the CPA-DD.

Build Margin emission factor for 2014, as published by the Brazilian DNA, will be used for an ex-ante estimation of CERs that will be generated as a result of project's implementation. Therefore, the BM is fixed for the first crediting period. The 2014 data vintage was adopted for build margin calculation as it is the latest data available until the beginning of the validation process.

The Combined Margin emission factors (0.5118 tCO$_2$e/MWh for wind and solar projects; and 0.4400 tCO$_2$e/MWh for all other projects, respectively) are estimated numbers with the purpose of calculating the emission reductions estimates for each component project activity (CPA). Although the Build Margin (BM) is determined as fixed (ex-ante) for the first crediting period, the Operating

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[100] Available at:http://www.mct.gov.br/index.php/content/view/354444.html#ancora , accessed on 03/08/2015.

Margin (OM) and the resulting Combined Margin (CM) are to be yearly updated based on data and calculations provided by the Brazilian DNA.

In case the Brazilian DNA discontinues the publication of these data during the current and/or future crediting periods, Tractebel Energia may choose, for each monitoring period to be verified, the option between: a) to make use of the latest available official data and information as calculated and published by the Brazilian DNA; or b) to conduct the calculations based on data from ONS.

Appendix 5. Further background information on the monitoring plan

The monitoring plan is described in section B.7.3.

Appendix 6. Summary of post registration changes

Not applicable.

Appendix 7. Further considerations from the CME concerning the PoA

Please note that all internet links used as references in this PoA have been duly accessed during the PoA elaboration as well as during the validation process. In addition, all these internet links used as references in this PoA have been printed by the Coordinating and Managing Entity (CME), which is Tractebel Energia S.A., and made available for the DOE during the validation process. The CME has no control and cannot be responsible for the access to the internet links used as references in this PoA if those become no longer available or inaccessible. In case of one or more internet links used as references in this PoA become no longer public available, the original printed information can be accessed upon formal request to the CME through the contact information of the CME made available in Appendix 1 of this PoA.

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