RINA

VALIDATION REPORT

"Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" in Brazil

REPORT NO. 2009-BQ-105-ME

REVISION NO. 0.4

RINA

VALIDATION REPORT

Project Name: "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)"	**Country:** Brazil		**Estimated CERs** (tCO_2e)**:** 192,864 over the years crediting period.
Client: Hidrelétrica Malagone S.A.	**Client contact:** Gabriel Wanderley		
Report title: "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" in Brazil	**Report No.:** 2009-BQ-105-ME	**Rev. No.** 0.4	**Date of this report:** 03/01/2010
Approved by: *(Final Report – DCI Director approval)*	**Organizational Unit:** DCI		**Date:** 21/01/2011

Methodology

Reference:	**Version:**	**Title:**	**Sectoral Scope:**
ACM0002	Version 11 of 26/02/2010	"Consolidated baseline methodology for grid-connected electricity generation from renewable sources"	1

RINA Services S.p.A. (RINA), commissioned by Hidrelétrica Malagone S.A., has performed the validation of the project activity "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" in Brazil, on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

In conclusion, it is RINA's opinion that the project activity "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" in Brazil, as described in the PDD version 3 of 07 July 2010, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 11 of 26/02/2010.

RINA thus requests the registration of the project as a CDM project activity.

Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.

Work carried out by:
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Work verified by: *(CRT Responsible approval)*

Keywords:

Abbreviations

ANEEL	"Agência Nacional de Energia Elétrica" - Brazilian Electricity Regulatory Agency
BOVESPA	"Bolsa de Valores de São Paulo" - São Paulo Stock Exchange
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER(s)	Certified Emission Reduction(s)
CCEE	"Camara de Comercialização de Energia Elétrica"- Electric Power Commercialization Chamber
CIMGC	"Comissão Interministerial de Mudança Global do Clima" - Interministerial Commission on Global Climate Change
CL	Request for Clarification
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COPAM	"Conselho Estadual de Política Ambiental" - State Council for Environmental Policy
DNA	Designated National Authority
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IGP-M	"Indice Geral de Preços - Mercado" - General Index of Market Prices
NTN-C	"Notas do Tesouro Nacional, série C" - National Treasury Notes**,** Series C
ODA	Official Development Assistance
ONS	"Operador Nacional do Sistema"- National Grid Operator
PDD	Project Design Document
PROINFA	"Programa de Incentivo às Fontes Alternativas de Energia Elétrica" - Programme of Incentives to the Alternative Sources of Electric Energy
PP	Project Participants
Ref.	Document Reference
RIMA	"Relatório de Impacto Ambiental" - Environmental Impact Report
RINA	RINA Services S.p.A.
SHP	Small Hydroelectric Plant (Pequena Central Hidroelétrica - PCH)
SIN	"Sistema Interconectado Nacional" - National Interconnected System
SS(s)	Sectoral Scope(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

VALIDATION REPORT

Table of Contents ***Page***

1 INTRODUCTION

Hidrelétrica Malagone S.A. has commissioned RINA to carry out the validation of the "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" project in Brazil.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The objective of the Validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the CDM as set out in decision 3/CMP.1, its annex and relevant decisions of the COP/MOP, on the basis of the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC requirements and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is to review the PDD against the UNFCCC criteria for CDM.

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

Validation is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

2 METHODOLOGY

Validation was conducted using RINA procedures in line with the requirements specified in the CDM M&P, the latest version of the CDM Validation and Verification Manual, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The validation consisted of the following three phases:

* Document review;
* Follow-up actions;
* The resolution of outstanding issues and the issuance of the final validation report.

The following sections outline each step in more detail.

2.1 Document Review

The PDD, version 3 of 07 July 2010 /1/, in particular the applicability of the methodology, the baseline determination, the additionality of the project activity, the starting date of the project, the monitoring plan, the emission reduction calculations provided in the form of a spreadsheet, "*CERs JUN1122_v2.xls"* version 2 of 10/05/2010 /2/, the financial analysis spreadsheet "IRR JUN1122 Malagone v2_1", version 2.1 of 07/07/2010 /3/ were assessed as part of the validation.

The following table lists the documentation that was reviewed during the validation. .

/1/ Hidrelétrica Malagone S.A. and Carbotrader Assessoria e Consultoria em Energia Ltda CDM-PDD for the project "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)", Version 3 of 07 July 2010 (Previous versions: Version 2 of 10 May 2010 and Version 1 of 8 July 2009).

/2/ Carbotrader Assessoria e Consultoria em Energia Ltda
"*CERs JUN1122_v2.xls*" version 2, 10/05/2010 (CERs spreadsheet-revised);
"*CERs JUN1122_v1.xls*", version 1, 08/07/2009 (CERs spreadsheet).

/3/ Carbotrader Assessoria e Consultoria em Energia Ltda
"IRR JUN1122 Malagone v2_1", version 2.1, dated 07/07/2010 (Financial analysis spreadsheet-latest version);
"*IRR JUN1122 Malagone v2.xls*", version 2, 10/05/2010 (Financial analysis spreadsheet-revised);
"*IRR JUN1122 Malagone v1.xls*", version 1, 08/07/2009 (Financial analysis spreadsheet).

/4/ CDM Executive Board CDM Validation and Verification Manual – Version 01.2, EB 55 annex 1 dated 30 July 2010.

/5/ CDM Executive Board ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Version 11 of 26/02/2010.

/6/ CDM Executive Board "Tool to calculate the emission factor for an electricity system" (version 2).

/7/ CDM Executive Board "Tool for the demonstration and assessment of additionality" (version 5.2).

/8/ MCT "Fatores de Emissão de CO_2 pela geração de energia elétrica no Sistema Interligado Nacional do Brasil - Ano Base 2008" (CO_2 emission factors from electric energy generation in Brazil's National Interconnected System – Baseline year 2008).
http://www.mct.gov.br/index.php/content/view/307492.html (Brazilian DNA web site) <accessed on 06/08/2010> Available in Portuguese and English.

/9/ ANEEL Resolution number 1,111, dated 13 November 2007 - authorizes Wanerg Energética Ltda to implement and explore Malagone SHP (amended by Authorization Resolution number 1.809).

/10/ ANEEL Resolution number 1,809, dated 10 February 2009 - transferring the authorization to implement and explore Malagone SHP (19 MW installed capacity) from Wanerg Energética Ltda to Hidrelétrica Malagone S.A.

/11/ ANEEL Decree number 10, dated 26 February 2008 - defines a 10.11 MW (average) assured energy for the Malagone SHP.

/12/ ANEEL Dispatch number 2,860, dated 11 September 2007 - mentions Malagone SHP coordinates and reservoir area.

/13/ COPAM (Conselho Estadual de Política Ambiental) Installation license (LI), nº 005/2008 for the SHP Malagone, dated 15/02/2008, valid until 15/02/2012.

/14/ Limiar Engenharia Ambiental RIMA for the Malagone Small Hydropower Plant, dated October 2005.

/15/ Energisa, technical proposal PRT 0027/08 R 4, dated 05 January 2008.

/16/ Contract between Wanerg Energética Ltda and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda, dated 27/02/2008 (*"Contrato de compra e venda de equipamentos e outras avenças"*).

/17/ Amendments to the contract (dated 27/02/2008) between Wanerg Energética Ltda and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda - assigns and transfers all rights and obligations from Wanerg to Hidrelétrica Malagone and confirms that Wanerg owns 99.7% of Hidrelétrica Malagone's shareholding, dated 13/08/2008.

/18/ Letters and ARs for the local stakeholder consultation.

/19/ Documents related to the CDM consideration:

* 31/08/2006: Wanerg minutes of meetings. Along with the minutes there is a description of preliminary studies of carbon credits for the project activity from a third part company ("Ata de reunião de cotistas");
* 20/11/2007: email from Mr Ronaldo (Wanerg) to Carbotrader;
* 28/07/2008: email between PP and Carbotrader;
* 29/07/2008: proposal from Carbotrader signed;
* 08/09/2008: letter to Brazilian DNA informing about the project activity;
* 05/12/2008: Brazilian DNA response;
* 21/04/2009: proposal for validation of the project activity.

/20/ PPA signed between Hidrelétrica Malagone and CEMIG Geração e Transmissão, dated 30 January 2009.

/21/ CDM Executive Board Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM), version 7 - EB 41 annex 12.

/22/ ANEEL website: Total of electricity generated in Brazil, checked on 01/04/2010. <http://www.aneel.gov.br/area.cfm?idArea=37&idPerfil=2 > accessed on 26/02/2010, available in Portuguese

/23/ CDM Executive Board Guidelines on the demonstration and assessment of prior consideration on the CDM, version 3, EB 49 annex 22.

/24/ CDM Executive Board Glossary of CDM terms, version 5 -19 August 2009.

/25/ ANEEL Resolution number 652, dated 09 December 2003, establishes the criteria for SHP in Brazil

/26/ ANEEL Dispatch number 783, dated 26 March 2010, authorizes the operation in test of the Malagone SHP

/27/ ANEEL Dispatch number 837, dated 31 March 2010, authorizes the commercial operation of the Malagone SHP

/28/ Voith Hydro Ltda letter "MALA-004-2010_Lifetime.pdf", dated 24/05/2010, mentions that the generators units of the project activity are projected to operate for 30 years to attend the concession period of the SHP Malagone

/29/ Carbotrader Assessoria e Consultoria em Energia Ltda
"*Government bond rates_benchmark_v2_1.xls*", version 2.1, dated 07 July 2010
"*Government bond rates_benchmark_v2.xls*", version 2, dated 10 May 2010
"*Government bond rates_benchmark_v1.xls*", version 1, dated 8 July 2009

/30/ Wanerg Energética Ltda. "*PLANILHA OPE 2.pdf*", reference date September, 2007.

/31/ Wanerg Energética Ltda. "*Details Investment_OPE.pdf*", reference date march 2008, received on 27.05.2010

/32/ Wanerg Energética Ltda. "*PCH_Malagone_Cron_Desemb.pdf*", received on 27.05.2010

/33/ Hidrelétrica Malagone S.A."*O&M estimatives_2008.pdf*", received on 27.05.2010

/34/ CDM Executive Board "Guidelines for the reporting and validation of plant load factors", EB 48 – annex 11 – version 1.

/35/ ANEEL Resolution number 169, dated 03/05/2001

/36/ EPE- Empresa de Pesquisa energética (Energy Research Company) release press, dated 18/06/2007 ("Preço Energia_135 Reais_Leilao fontes alternativas energia.pdf")

/37/ CCEE web site <http://www.ccee.org.br/cceeinterdsm/v/index.jsp?vgnextoid=6e6596f102913210VgnVCM1000005e01010aRCRD> accessed on 26/02/2010, available in Portuguese

/38/ ANEEL thematic book: Assured energy, available at the web site: http://www.aneel.gov.br/arquivos/pdf/caderno3capa.pdf <accessed on 28/07/2010> available in Portuguese.

2.2 Follow-up actions

On 11/02/2010, RINA visited the SHP Malagone to resolve questions and issues identified during the document review and to perform interviews with relevant stakeholders in the host country.

The key personnel interviewed and the main topics of the interviews are summarized in the table below.

	Date	Name and Role	Organization	Topic
/a/	11/02/2010	Luiz F. M. Serrano	Carbotrader Assessoria e Consultoria em Energia Ltda	- Clarifications on establishment of baseline, monitoring plan and emission reduction calculations - Resources, training needs and procedures for operation and maintenance - Monitoring Plan / Records (backups) - Maintenance program (calibration) - Project boundaries - Baseline and project emissions - Emissions reductions calculations - Environmental Licenses - Local stakeholders (invitations, confirmations)
/b/	11/02/2010	Gabriel Sousa Wanderley	Wanerg Energia	
/c/	11/02/2010	Fabio Garcia Dal Paggetto	Hidrelétrica Malagone S.A.	
/d/	11/02/2010	Dante Luiz do Nascimento	Hidrelétrica Malagone S.A.	

2.3 Resolution of outstanding issues

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

To guarantee transparency a validation protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of validation and the results from validating the identified criteria. The validation protocol consists of four tables; the different columns in these tables are described in the figure below (see Figure 1). The completed validation protocol is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

- The CDM requirements have not been met;
- There is a risk that the emission reductions cannot be monitored or calculate.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration. CARs, CLs and FARs identified are included in the validation protocol in Appendix A of this report.

Figure 1 Validation protocol tables

Validation Protocol, Table 1 - Mandatory requirement		
Requirement	**Reference**	**Conclusion**
The requirements the project must meet.	Makes reference to the documents where the answer to the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) if a requirement is not met. A request for clarification (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol, Table 2 - Requirement checklist					
Checklist Question	**Ref.**	**MoV**	**Comments**	**Draft Conclusion**	**Final Conclusion**
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in seven different sections.	Makes reference to documents where the answer to the checklist question or item is found.	Explain how conformance with the checklist question is investigated. Examples are document review (DR), interview or any other follow-up actions (I), cross checking (CC) with available information relating to projects, (N/A) means not applicable.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with checklist question so far.	OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. For CAR, CL and FAR see the definitions above.	OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements.

Validation Protocol, Table 3 - Resolution of Corrective Action Requests and Clarification			
Corrective action requests and/or clarification requests	**Reference to Table 2**	**Response by project participants**	**Validation Conclusion**
The CAR and/or CLs raised in table 2 are repeated here.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants to address the CARs and/or CLs.	The validation team's assessment and final conclusion of the CARs and/or CLs.

Validation Protocol, Table 4 - Forward Action Requests		
Forward action request	**Reference to Table 2**	**Response by project participants Validation Conclusion**
The FAR raised in table 2 is repeated here.	Reference to the checklist question number in Table 2 where the FAR is explained.	Response by the project participants on how forward action request will be addressed prior to first verification.

2.4 Internal quality control

All the revisions of the validation report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation activities had been completed according to the pertinent RINA instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for CDM validation and verification.

2.5 Validation team and the technical reviewer(s)

The validation team and the technical reviewers consist of the following personnel:

Role/Qualification	Last Name	First Name	Country
Team Leader CDM	Principe Branco Saettoni	Geisa Maria	Brazil
CDM Validator	De Lima Carvalho	Thaís	Brazil
CDM Validator	Poll Herrmann	Lilian Cristine	Brazil
CDM Validator	Miranda Dias	Cintia Mara	Brazil
Financial Expert	Mendonça de Oliveira	Tiago	Brazil
Technical Reviewer	Valoroso	Rita	Italy

2.6 Resolution of Clarification and Corrective Action Requests

The initial validation of the project identified some findings to be followed-up. These were presented to the project participant(s) through the interview process. The project participant's responses to RINA's preliminary findings, which also included the submission of the revised PDDs version 3 of 07 July 2010 and version 2 of 10 May 2010, addressed all preliminary findings to RINA's satisfaction.

To guarantee the transparency of the validation process, the concerns raised and responses given are summarized and documented in more detail in Table 3 of the validation protocol, in Appendix A.

3 VALIDATION FINDINGS

Where RINA identified issues that needed clarification or that could represent a risk to the fulfillment of the project objectives, Clarification or Corrective Action Requests, respectively, have been issued. The validation requirements, means of validation, reporting requirements and the results from validating the identified criteria are documented in more detail in the Validation Protocol in Appendix A.

The validation findings relate to the project design, as documented and described in the PDD version 3 of 07 July 2010 /1/.

3.1 Approval and Participation

The project's host Party, Brazil, fulfills the requirements to participate in the CDM. No Annex I party has yet been identified.

Brazil ratified the Kyoto Protocol on 23/08/2002 and established, as its Brazilian Designated National Authority for the CDM, the "Comissão Interministerial de Mudança Global do Clima" (CIMGC).

The project participant(s) are Hidrelétrica Malagone S.A. and Carbotrader Assessoria e Consultoria em Energia Ltda from Brazil and all participants are private entities. The project participants are correctly listed in table A.3 of the PDD and the information is consistent with the contact details provided in Annex 1 of the PDD /1/.

The proposed project does not involve any public funding from an Annex I Party, and the validation did not reveal any information that indicated that the project could be seen as a diversion of official development assistance (ODA) funding towards the host country.

Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.

3.2 Project design document

The PDD for the project activity "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" in Brazil, version 3 of 07 July 2010; version 2 of 10 May 2010; version 1 of 18 July 2009 submitted by Hidrelétrica Malagone S.A. and Carbotrader Assessoria e Consultoria em Energia Ltda have been the basis for the validation process.

RINA confirms that the above PDD is based on the currently valid PDD template and is completed in accordance with the applicable guidance document *"Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)*", version 7 /21/.

The main differences between the PDD published for global stakeholder consultation and the version 3 are related to the revision of the diagram of the project boundary, revision of the table 3 (Sources and Gases included in the Project Limits) to exclude the CH_4 emission, revision of the crediting period, revision of the benchmark to consider a longer period and exclusion of the risk premium, revision of the IRR spreadsheet to consider taxes/inflation, revision of the sensitivity analisis to include the O&M and analisis of the breakeven point, revision of the commissioning and operation dates, revision of the monitoring plan to include the parameters A_{PJ} and Cap_{PJ}, update the methodology to version 11.

3.3 Project Design

The "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" is located in Uberlândia, Minas Gerais state, Brazil in the following Geographical Coordinates: 18º 40' 50´´ S and 48º 29´ 57´´ W. The Geographical Coordinates were confirmed through the ANEEL documents.

The project activity falls under category: "Grid-connected electricity generation from renewable sources" and Sectoral Scope 1- Energy industries (renewable/non-renewable sources).

The project is a renewable electricity generation project activity using hydro resource displacing grid electricity that is partly generated based on fossil fuels, with electricity generated from renewable sources and thus resulting in the reduction of emissions of greenhouse gases in the energy sector.

The Malagone SHP has an installed capacity of 19 MW and it is a project classified as Small Hydro Power Plant according to the ANEEL Resolution number 652, dated 09/12/2003 /25/, that establishes that in Brazil, to be classified as a SHP, the reservoir area must be less than 3 Km^2 (300 ha) and the total installed capacity must be between 1 MW to 30 MW; the project activity has a total installed capacity of 19 MW and 1.27 Km^2 of reservoir area, confirmed through ANEEL Resolution number 1,809 /10/ and ANEEL Dispatch number 2,860 /12/, respectively. At the time of the site visit, the project activity was being implemented and the following equipments were confirmed, through the equipments' plates:

Equipments listed in the PDD	List of equipments checked at site inspection
2 turbines Francis: Power 9,800 kW each Flow rate (m^3/s) 26.36 / 400 rpm	2 turbines Francis, Voith Siemens, serial nº 19602 and 19603 Power 9,800kW each Flow rate (m^3/s) 26.36 / 400 rpm Manufactured in 2009 in São Paulo, Brazil.
2 Generators: Nominal Power (kVA) 10,560 each Effective Power (MW): 9.5 each Voltage (kV): 6.9 Power factor: 0.9 Frequency (Hz): 60	2 GE Motors, serial nº 227001612 and 227001613. Nominal Power (kVA) 10,560 each Effective Power (MW): 9.5 each Voltage (kV): 6.9 Power factor: 0.9 Frequency (Hz): 60 Manufactured in 2009, Brazil.

Thus, the PDD listed correctly the equipments which comprise the proposed project activity.

The SHP Malagone will dispatch generated energy to the National Interconnected Grid (SIN – Sistema Interligado Nacional) through the Uberlândia SE Substation – 1 (CEMIG SE-1).

The project design engineering reflects current good practice, as verified during the site visit, equipments are new and the technology is used in other projects in Brazil.

The starting date of the project activity is 27/02/2008. It has been verified by RINA that the starting date is supported by a contract (dated 27/02/2008) /16/ for the purchase of the main equipments signed between Wanerg Energética Ltda. and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda. Furthermore, an amendment to the contract (dated 27/02/2008) between Wanerg Energética Ltda and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda, dated 13/08/2008, which assigns and transfers all rights and obligations from Wanerg to Hidrelétrica Malagone and confirms that Wanerg owns 99.7% of Hidrelétrica Malagone's shareholding was also provided and assessed /17/. In light of the provided evidences, the earliest date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity is confirmed to be 27/02/2008, as per Glossary of CDM terms, version 5 /24/.

The operation in test of the SHP was authorized by the ANEEL Dispatch number 783, dated 26 March 2010 /26/ and the commercial operation was authorized by the ANEEL Dispatch number 837, dated 31 March 2010 /27/. Thus, the commercial operation has started on 01 April 2010.

The expected operational lifetime of the project activity is 30 years (0 months), the same period for which the ANEEL's Authorization Resolution number 1.111, issued on 13 November 2007, is valid /9/. PPs provided evidence of the operational lifetime of the equipments of the project activity. It has been confirmed in the letter dated 24/05/2010 /28/, issued by Voith Hydro Ltda that the generators units are projected to operate for 30 years to attend the concession period of the SHP Malagone. Therefore, the operational lifetime of the project activity of 30 years is correctly defined in the PDD.

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Being a renewable electricity project, the project activity will generate GHG emission reductions by avoiding CO_2 emissions from electricity generation by fossil fule power plant and will contribute to create the opportunity for employment in rural areas and to better conditions of the local economy. A renewable crediting period of 7 years has been chosen for the project, starting from 01/01/2011, or the date in which occurs the UNFCCC registration, the one that occurs later. The total GHG emission reductions from the "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" are estimated to be 192,864 tCO_2e during the first renewable 7 years crediting period, resulting in an annual average emission reductions of 27,552 tCO_2e / year .

The total installed capacity of the project activity is 19 MW. It is expected that the proposed project activity will operate 8760 hours per year thereby will have an average annual electricity generation of 88.564 MWh/year. The project plant has an Assured Energy equal to 10.11 MW, (resulting in a Plant Load Factor of 53.2 % = 10.11 MW / 19 MW) that was confirmed in the ANEEL Decree number 10, dated 26 February 2008 /11/. It is important to highlight that the plant load factor is issued by ANEEL (Brazilian Electric Energy Agency), and the calculations were established in the Resolution nº 169, of 3rd May 2001 /35/. Historical data is used in the calculus and the plant load factor is specific for each power plant.

The Assured Energy of a hydroelectric plant is issued by ANEEL (Brazilian Electric Energy Agency) is specific for the each power plant and serves essentially two purposes /38/:

(i) to establish an upper limit for energy supply contracts (PPAs), and

(ii) to define the share of each generating plant on the total amount of energy generated in the system by hydro plants.

The Assured Energy of the Brazilian electric system is defined as the maximum energy production that can be delivered almost continuously by hydroelectric plants throughout the years, simulating the occurrence of each one of the thousands of possibilities of statistically created flow sequences, admitting certain risk of not attendance to the load, that is, in determined percentile of the simulated years some rationing is allowed up to a limit considered acceptable by the system. The determination of the Assured Energy is associated to the conditions in the long term that each plant can supply to the system assuming an specific risk criteria of non-attendance to the market (risk of deficit), considering mainly the hydrologic variability to which the plant is submitted.

RINA was able to verify all the documented evidence listed above during the validation process and can confirm that data and considerations are complete and accurate.

RINA confirms that the description of the proposed CDM project activity, as contained in the PDD sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity.

3.4 Application of selected baseline and monitoring methodology

The project activity correctly applies the approved baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 11 of 26/02/2010 /5/.

The project activity is applying the following tools:

- "Tool to calculate the emission factor for an electricity system" (version 2);
- "Tool for the demonstration and assessment of additionality" (version 5.2).

The proposed project activity meets criteria expected in the baseline methodology and it ensures that:

- proposed project is a new power plant of 19 MW capacity, installed in a site where no renewable power plant was operated prior to the project implementation and thus does not involve capacity additions, a retrofit of an existing plant or a replacement of existing plant. This information was confirmed at site assessment and through environmental licenses and ANEEL documents;

- the proposed project activity results in new reservoirs and the power density of the power plant is 14.96 W/m^2 (greater than 4 W/m^2): Power density = 19,000,000 W / 1,270,000m^2 = 14.96 W/m^2. Thus, the power density of the power plant is greater than 10 W/m^2. Reservoir area and installed capacity were confirmed through ANEEL Dispatch number 2,860 /12/ and ANEEL Resolution number 1,809 /10/, respectively;

- as verified during the site visit the proposed activity is a Greenfield project, thus it does not involve switching from fossil fuels to renewable energy at the project site.

- the proposed project activity substitutes grid electricity thus the OM, BM and CM is estimated applying the methodological tool to calculate the emission factor of an electricity system when calculating the baseline emissions.

The project is connected to the national electricity system, Brazilian Integrated Grid System (SIN); the delineation of the project electricity system and connected electricity systems are clearly identified and information on the characteristics of the grid is made available by the Brazilian DNA /8/.

Emission sources which are not addressed by the applied methodology and which are expected to contribute more than 1% of the overall expected average annual emissions reduction have not been identified.

RINA hereby confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the project, which complies with all the applicability conditions therein.

3.5 Project boundary and baseline identification

3.5.1 Project boundary

According to the approved baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 11 of 26/02/2010 /5/ the proposed project's boundaries (spatial extent) encompass the project power plant and all power plants physically connected to the national electricity system (SIN-National Interconnected System) that the proposed project activity is connected to. The diagram of the project boundary presented in the PDD, includes the project power plant and all the power plants connected physically to SIN, and describes the gases included in the project boundary and monitoring variables. The defined project boundary is in line with the approved methodology AMC0002 version 11. RINA assessed the physical delineation of the project activity through ANEEL documents, environmental licenses and site assessment.

The following emissions sources were included in the project boundary:

	GHGs involved	Description
Baseline emissions	CO_2	Emissions from electricity generation in fossil fuel power plants connected to the national grid that are displaced due to the project activity
Project emissions	NA	Since the power density of the project activity is 14.96 W/m2, greater than 10 W/m2, project emission is regarded zero according to the approved methodology ACM0002
Leakage	NA	There is no leakage that needs to be considered in applying this methodology.

By assessing the above information and the project site, RINA can confirm that the project boundary and emission sources described in the PDD are accurate and complete, and also that the selected sources and gases are justified for the proposed project activity.

3.5.2 Baseline identification

According to the approved baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 11 of 26/02/2010 /6/, the project activity is the installation of a new grid-connected renewable power plant/unit, hence, the baseline scenario is the following: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants (mostly large hydro and thermal power plants) and by the addition of new generating sources, as reflected in the combined margin (CM) from "Tool to calculate the emission factor for an electricity system".

The Baseline Emissions were estimated *ex-ante* using the latest available (PDD published on 10/12/2009) emission factor of the Brazilian grid system for 2008 (= 0.3111 tCO_2/MWh, conservatively rounded down from 0.3111899 - average OM=0.4766 tCO_2/MWh and BM=0.1458 tCO_2/MWh) provided by the Brazilian DNA, and considering all four regions connected (North, Northeast, South and Southeast-Midwest). The grid emission factor will be updated *ex-post* during the verification process.

All data used to calculate the emission factor provided in the PDD was cross-checked with credible sources provided by Brazilian DNA. Therefore, the identified baseline scenario presented in the PDD is correctly applied, in accordance with the approved methodology ACM0002, Version 11 of 26/02/2010 /5/.

RINA can confirm that the application of the baseline methodology is transparent and reasonable.

3.6 Additionality

According to the approved baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 11 of 26/02/2010 /5/, the additionality of the project has been established applying the tool "Tool for the demonstration and assessment of additionality", version 5.2 /7/.

RINA's opinion regarding the additionality of the proposed project is further explained in the following steps.

3.6.1 Prior consideration of the clean development mechanism

The proposed project starting date is 27/02/2008 when the contract for the purchase of the main equipments was signed between Wanerg Energética Ltda. and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda. It is the earliest date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity as per the "Glossary of CDM Terms" /24/.

Since the Project is an existing project activity (project activity with a start date before 02/08/2008) and the identified start date is prior to the date that the PDD was published for global stakeholder consultation (10/12/2009), the PP have demonstrated that the CDM was seriously considered in the decision to implement the project activity, that the benefits of CDM were a decisive factor in the decision to proceed with the project and that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation.

The timeline of implementation of the project illustrated bellow has been reviewed and considered to be valid and realistic.

Date	Activity	Evidence
13/11/2007*	ANEEL Resolution number 1,111, authorizes Wanerg Energética Ltda to implement and explore Malagone SHP (amended by ANEEL Resolution 1,809, dated 10/02/2009. ("ANEEL Resolução 1,111.pdf").	ANEEL Resolution number 1,111 and amended by ANEEL Resolution 1,809, dated 10/02/2009 /9/.
15/02/2008	Environmental Installation license gives permission to implement the Malagone SHP.	Installation license (LI), nº 005/2008 issued by COPAM. ("Licença de instalação" /13/)
27/02/2008	Signed contract for the purchase of the main equipments (**project start date**).	Contract for the purchasing of the main equipments was signed between Wanerg Energética Ltda. and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda. (*"Contrato de compra e venda de equipamentos e outras avenças"* /16/).
26/03/2010	Operation in test of the power plant (commissioning)	ANEEL Dispatch 783 /26/
31/03/2010	Commecial operation	ANEEL Dispatch 837 /27/

**ANEEL grants a permission for a project to be built, but the authorization alone is no guarantee that a project will be actually built).*

Thus, the proposed project starting date is 27/02/2008 when the contract for the purchase of the main equipments was signed between Wanerg Energética Ltda. and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda. It is

the earliest date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity as per the "Glossary of CDM Terms" /24/.

RINA has assessed and verified the evidences related to the timeline for serious CDM consideration and real and continuing actions to attain CDM status of the project activity in line with. according to EB49 Annex 22 /23/ as follows:

Date	Event/ issue	Evidence
Supporting the CDM Consideration		
28/08/2006	Initial feasibility study showing that Malagone SHP could be implemented under CDM programme.	Initial feasibility study report, made by Plan Engenharia**.**
31/08/2006	Board of directors: Wanerg minutes of meetings presents that the CDM incentives are necessary to implement the project activity. Rina verified that the Meeting Notes is signed by the board of directors and registered by Registry Office.	Wanerg minutes of meetings, issued by WANERG Energética Ltda..

Evidence that the incentive from the CDM was seriously considered in an early stage was confirmed through the Wanerg minutes of meetings dated 31/08/2006. The mentioned document , discuss that the benefits of the carbon credits for the SHP Malagone are necessary to the project development, showing that carbon credits was seriously considered for the project implementation. Along with the minutes there is a description of preliminary studies of carbon credits for the project activity from a third part company /19/. The document presents that the Malagone project can be developed under the CDM and describes the returns that the project can obtain with the carbon credits revenues. As previously mentioned, Wanerg owns 99.7% of Hidrelétrica Malagone's shareholding, and that explains why some evidences are in the name of Wanerg. After the CDM consideration, PP started to seek to obtain the environmental and energy licenses for the project activity. In parallel, there are communications between PP and CDM consultant to develop the Malagone SHP as a CDM project.

CDM was therefore seriously considered in the decision to proceed with the project activity in compliance with EB 49 annex 22 /23/.

The commencement of the validation (date of publication of the PDD for stakeholders) was 10/12/2009. From the date of the investment decision and the date of the commencement of the validation process the following actions have been taken to secure the CDM status in parallel with the physical implementation:

Date	Event/ issue	Evidence
Evidence of the real action		
28/07/2008	Email between PP and Carbotrader. Carbotrader explain the steps of CDM	Email between PP and Carbotrader
29/07/2008	Proposal from Carbotrader signed. Carbotrader and Malagone signed the contract to develop the CDM project	Contract to develop the PDD with Consultant (/19/).
08/09/2008	Letter to Brazilian DNA informing about the project activity	Letter to Brazilian DNA, issued by WANERG Energética. (/19/)
05/12/2008	Brazilian DNA response	Letter from Brazilian DNA, issued by Comissão Interministerial de

		Mudança Global do Clima (/19/).
21/04/2009	Proposal for validation of the project activity	Proposal from DOE (/19/)
September/2009	Local stakeholder consultation (letters sent to the local stakeholders)	Letter sent by PP to the local stakeholders /18/.
10/12/2009	PDD made publicly available through the CDM website for the global stakeholder consultation	UNFCCC website

RINA was able to check the above documents and considers satisfactory actions were undertaken to secure CDM status in parallel with the physical implementation of the project activity according to EB49 Annex 22.

To confirm the real and continuing action, RINA reviewed contracts with consultants for CDM PDD services, correspondences with the Brazilian DNA, proposal with DOE to validation services and correspondence with the local stakeholders.

In conclusion, in accordance with the requirements of the "Guidelines on the demonstration and assessment of prior consideration of the CDM" /23/ and VVM (paragraph 98 to 103) /4/ , RINA can confirm that the CDM was seriously considered in the decision to implement the project activity.

3.6.2 Identification of alternatives

According to the VVM v.1.2 para. 105 *"The PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required."*

Based on this information, the selected baseline scenario to the project activity as per the ACM0002 is defined as "*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". Therefore, no additional analysis is required for identification of alternatives.*

The selected baseline scenario complies with the National requirements of ANEEL (Brazilian Electricity Regulatory Agency), ONS (National Grid Operator) and FEAM (Minas Gerais environmental agency).

RINA can confirm that the baseline scenario identified in the PDD is credible and complete.

3.6.3 Investment analysis

The investment analysis has been used to demonstrate the additionality of the proposed project activity.

3.6.3.1 Choice of approach

The benchmark analysis was done in accordance with the "Tool for demonstration and assessment of additionality" (version 5.2). Among the three options available for investment analysis as discussed in the "Tool for the demonstration and assessment of additionality", project participants have chosen the benchmark analysis since the other two are not applicable. The simple cost analysis is not applicable because the project will generate financial and economic benefits (from electricity sales) other than CDM related income. The investment comparison analysis is not applicable either because the only alternative to the project activity is the supply of electricity from a grid, which is not to be considered a similar investment project.

3.6.3.2 Benchmark selection

In Brazil there is not a widely accepted benchmark for SHP projects nor does the Government require a minimum profitability in projects of this kind. The project IRR (internal rate of return) was compared with the yield on Government Bonds. Project participants have chosen a Brazilian Government Bond named National Treasury Notes, Series C (NTN-C), with maturity for April 1st, 2021. It is placed on the market by the Brazilian National Treasury by a Public Offering and its profitability is linked to Inflation by the

IGP-M Index. The brazilian government bonds presented by project participants as the project benchmark is a popular and publicly investment option and it is defined by international rating agencies as Investment Grade Bond. It is considered as low risk investment if it is compared to an investment in a hydro power plant. Furthermore this bond profitability is linked to the IGP-M (General Index of Market Prices) that is the main inflation index for industrial costs in Brazil. Therefore, the benchmark is in accordance with the "tool for the demonstration and assessment of additionality", "paragraph 6" of "sub-step 2b" and VVM v.1.2 para.112.

In the PDD version 1, NTN-C average yield of 2006 and 2007 was calculated resulting in an average yield of 20.24% per year. PPs were requested to consider a longer period for the calculation of yield average, taking into account that Brazil does not have a fully stabilized economy and some inflation index, like IGP-M (that is linked to the profitability of the NTN-C), had a non-linear behavior in the last ten years The PDD version 2 was revised to consider a longer period for the NTN-C calculation and an average yield over five years was then used to calculate the benchmark (from January 2003 to December 2007), and the government bond NTN-C with maturity for April 1st 2021 was considered. The performed calculation resulted in an average yield of 22.22% per year. Rina has cross-checked all evidences stated in the spreadsheet "*Government bond rates_benchmark_v2.xls*" /29/ and confirms that benchmark applied is in line with para 112 of VVM v.1.2.

In the PDD version 1, PPs also considered a Market Risk Premium. The Market Risk Premium chosen for the benchmark was based in the study *"Uma Análise de Risco do Segmento de Energia Elétrica"* – A risk analysis of the Electricity segment, which was presented in the Administration Seminars at the School of Economics, Business and Accounting at the University of São Paulo (USP). The PPs considered a value of 1.27%, that is the average return of investment on the Electrical Segment Index versus IBOVESPA index (main index of BOVESPA – São Paulo Stock Exchange). RINA considered that the risk premium used was not appropriate to the project activity because it was calculated in a different base from the benchmark. In the PDD version 2, the risk premium was revised to 1.3% and it derived from the BNDES article "*O Papel do BNDES na Expansão do Setor Elétrico Nacional e o Mecanismo de Project Finance*", from March 2009 (available at: http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/conhecimento/bnset/Set2901.pdf). RINA addressed that the document presented in the PDD version 2 is more recent than the investment decision date of the project and also that the article did not present the methodology and the assumptions of Risk Premium calculation. Thus, in the PDD version 3 /1/ calculations, IRR spreadsheet version 2.1 ("*IRR JUN1122 Malagone v2_1*") /3/ and spreadsheet "*Government bond rates_benchmark_v2_1.xls*" /29/, the risk premium was conservatively not longer considered.

The summary of the values of the benchmark applied through the different versions of the PDD is presented in the table below:

PDD version	NTN-C	Risk Premium	Value of the benchmark	Related Documents
1 of 18 July 2009	20.24 %	1,27%	21.51%	a) "*Government bond rates_benchmark_v1.xls*" b) "*IRR JUN1122 Malagone v1.xls*"
2 of 10 May 2010	22.22 %	1.3%	23.52%	a) "*Government bond rates_benchmark_v2.xls*" b) "*IRR JUN1122 Malagone v2.xls*"
3 of 07 July 2010	22.22%	--	22.22%	a) *"Government bond rates_benchmark_v2_1.xls"* b) *"IRR JUN1122 Malagone v2_1.xls"*

3.6.3.3 Input parameters

The following steps have been followed to assess the investment analysis:

a) Assessment of the sources used for input parameters. All input parameters used in the financial analysis are taken from third-party or publicly sources available as described in the following paragraphs and were available at the time of the investment decision taken;

b) Confirmation that the values used in the investment analysis are fully consistent with the third-party or publicly sources used. RINA compared the input parameters for the financial analysis included in the IRR spreadsheet calculation and was able to confirm that the values applied are consistent with the values stated in the documents stated below;

c) cross check of the mains input parameters used in the financial analysis: the input parameters used in the financial analysis were cross-checked and all the data sources used to cross-check were checked during the validation process.

Energy Generation

The estimated net electricity generation supplied by the project plant to the grid was calculated based on the assured energy (10.11 MW average) provided by ANEEL (ANEEL Decree number 10, dated 26 February 2008) /11/.

The "Guidelines for the reporting and validation of plant load factors" parag. 3 (a) states: *The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval* /34/. As already commented (report item 3.3), the Assured Energy of an hydroelectric plant is issued for each plant by ANEEL (Brazilian Electric Energy Agency), and serves essentially two purposes: (i) to establish an upper limit for energy supply contracts (PPAs), and (ii) to define the share of each generating plant on the total amount of energy generated in the system by hydro plants.

The Assured Energy of the Brazilian electric system is defined as the maximum energy production that can be delivered almost continuously by hydroelectric plants throughout the years, simulating the occurrence of each one of the thousands of possibilities of statistically created flow sequences, admitting certain risk of not attendance to the load, that is, in determined percentile of the simulated years some rationing is allowed up to a limit considered acceptable by the system. The determination of the Assured Energy is associated to the conditions in the long term that each plant can supply to the system assuming an specific risk criteria of non-attendance to the market (risk of deficit), considering mainly the hydrologic variability to which the plant is submitted /38/ .The project has an Assured Energy equal to 10.11 MW, oficialyzed/approved in the ANEEL Decree number 10, dated 26 February 2008 /11/, the resulting Plant Load Factor is equal to 53.2 % (= 10.11 MW / 19 MW) or, if rounded down, 53%. It important to highlight that the methodological calculations for the assured energy was established by the ANEEL Resolution nº 169, of 3rd May 2001 /35/.

Revenues (Electricity Tariff)

The value of energy price was confirmed in the PPA signed between CEMIG and Hidrelétrica Malagone (signed on 30/01/2009) as R$ 169.10/ MWh. The PPA contracted 9.9 MW average and the additional energy will be sold in the free market /20/. For conservativeness, PP considered in the spreadsheet the value of R$ 169.10/MWh for all energy produced (88.564 MWh/year). The energy price available at the time of the investment decision was the price/s practiced in the Auction of Alternative Energy that occurred in June 2007, which was, in average, equal to R$ 135.00/MWh for Small Hydro Power plants, and that was confirmed in a press release issued by the Energy Research Company (Empresa de Pesquisa Energética - EPE) /36/. Nevertheless, as a conservative measure looking for a more consistent *benchmark*

analysis, the energy price finally used in the financial spreadsheet was the price from the Power Purchase Agreement which the company has signed (R$ 169.10/MWh), considering that it is an intrinsic data of the project and also it is higher than the prices practiced in the mentioned auction. Regarding the energy price (sold) in the free market, the use of the PPA is also conservative as the prices are usually lower than prices negotiated in the PPA. For, example, the average of the prices in the period of 2003 until February 2008 is R$ 58.45/ MWh (information available at the CCEE web site /37/) The short-term market reflects the operation optimization in the National Interconnected System, through the relation between the moment benefit of using this water from the reservoirs contained in the large hydroelectric plants and the future benefit of its storage; as the prevailing practice in Brazil, there are a preponderance of large hydro power plants interconnected to the system, so the oscillation of reservoirs level, energy demand, fuel prices, among others, directly influence those prices.

Investment costs

The total investment presented in the financial analysis was based on the Eletrobrás Standard Budget – OPE (from the portuguese "Orçamento Padrão Eletrobrás") presented to ANEEL : R$ 92,137,019. /30/.

In the first version of the financial analysis spreadsheet, "*IRR JUN1122 Malagone v1.xls*", 100% of the investment was considered in the first year of the Financial Analysis. Project participants were requested to provide the details (components) of the investment and the distribution of the investment over the years. The details of the investment (the description of the components of investment) and the distribution of the value over the years were included in the revised "*IRR JUN1122 Malagone v2.xls*" spreadsheet. The components presented represent the structure of the budget presented to ANEEL ("Eletrobrás Standard Budget" from the portuguese "Orçamento Padrão Eletrobrás"), described in the document "*Details Investment_OPE.pdf*"/31/ and "*PLANILHA OPE 2.pdf"* /30/. The total investment considers the following items: lands, relocations and other social and environmental actions; structures and other improvements; aqueducts and dam; turbines and generators; electrical equipment accessories; miscellaneous plant equipment; highways and "iron highways", and bridges; indirect costs; interest during construction; bay of connection to CEMIG; transmission line of 138 kV.

Regarding the distribution of investment over years, the version 2 of the IRR spreadsheet, presents disbursement of approximately 43% of investment in 2008 and approximately 57% in 2009, considering the distribution forecasted in the financial disbursement schedule (evidence: "*PCH_Malagone_Cron_Desemb.pdf*" /32/).

The total initial amount of R$92,137,019 is very reasonable considering the magnitude of such investments (average of R$ 4,849,316/kW installed is in line with the average of similar projects) which is reinforced by the expected trend in construction material prices. The Brazilian construction materials industry reported a 33% revenues growth in 2008 compared to 2007 and for 2009 ABRAMAT (The Brazilian Association of the Construction Material Industry)[1] had forecasted revenues growth of 6%, showing that demand for construction materials continues to trend upwards, pushing up prices. The investment costs were also compared to the average construction costs of SHPs in Brazil, and the project activity has a proper and conservative correspondence with the R$ 5 million/ installed kW to R$ 5.5 million/ installed kW found in the literature[2].

Operational Costs

[1] www.abramat.org.br

[2] http://www.portalpch.com.br/index.php?option=com_content&view=article&id=2749:08092009-crescimento-do-pre-sal-nao-reduzira-o-papel-das-fontes-alternativas-de-energia-afirma-mauricio-tolmasquim&catid=1:ultimas-noticias&Itemid=98 OR http://www.olade.org/electricidad/Documents/ponencias/Dia%2026%20de%20mayo/Sesion%203/PCH%20Diagnostico_TFilho.pdf

It was verified that part of the O&M costs were based on the proposal of Energisa for the operation of the Malagone SHP /15/, but the evidences for the other part of the O&M composition were requested to PPs. PP provided the composition of the value of R$ 97,401.70 per month (R$ 13,20/MWh) used in the financial analysis spreadsheet as described in the document "*O&M estimatives_2008.pdf*"/33/. The following costs are described in the document /33/:

- Administrative costs and spare parts (from the Portuguese "*Gerenciamento da usina e reposição de peças*"), where estimated value is R$ 58,111.08/month, including 3 engineers, 3 financial and 3 administrative personnel;

- Operation and Maintenance costs, where the average value is R$ 36,083.97/month as per Energisa's proposal;

- Plant surveillance costs, with an estimated value of R$ 3,206.55 per month, including 4 employees.

The evidences presented are considered suitable to the project activity.

Taxes

The Brazilian law 10.637 from 30 December 2002 and the law 9.718 from 27 November 1998 defined that companys with Gross revenue less than R$ 48 million can aplicate the Brazilian System of tax "Presumed tax profit". So, the following taxes are applied in the gross revenue:

· COFINS (Contribuição para o Financiamento da Seguridade Social) – 3% over the Profit

· PIS/PASEP (Programa de Integração Social/ Programa de Formação de Patrimônio do Servidor Público) – 0,65% over the Profit

· Income tax – 25% over 8% of the Gross revenue;

· Social contribution – 9% over 12% of the Gross revenue.

3.6.3.4 Calculation and conclusion

Regarding the prices and costs evolution over the years presented in the version 1 of the IRR spreadsheet, Project Participants had presented flat values for all years. RINA addressed to PPs the necessity to demonstrate in P&L and Cash Flow the evolution for all lines, in accordance with contracts or the most appropriate inflation index. This evolution can be different for any line and this can represent a significant impact on the EBITDA evolution. The inflation on prices and costs has to be considered because in the benchmark chosen the return of the investment includes the inflation. Also related to the indexes, inflation, interest rates and also foreign exchange rates, PPs were requested to demonstrate the sources of the information, prioritizing the sources of the Brazilian Government or some large financial institutions, as normally those institutions provide a forecast for next few years.

PP provided to RINA the financial analysis spreadsheet version 2, "*IRR JUN1122 Malagone v2.xls*", considering the adjustment by the inflation in the Energy price, O&M and Insurance and guarantees. PPs

applied the inflation forecast provided by the Focus Report of the Brazilian Central Bank, dated 08/01/2010.

PPs were requested to provide the forecasted value at the time of the investment decision. Moreover, regarding the version 2 of the financial analysis spreadsheet, PPs were also requested to verify the inflation correction until the first year of the Financial Analysis (Focal Point: 2010), because some items (values) were defined in 2009 (Energy Price) or 2008 (O&M), and therefore, these values should be corrected to 2010.

PP provided a revised spreadsheet, *"IRR JUN1122 Malagone v2_1.xls"* /3/, with the source of inflation forecast based in the "Inflation Report" from the Central Bank of Brazil, issued on March 2008, available at: <http://www.bcb.gov.br/htms/relinf/port/2008/03/ri200803P.pdf>.

It was then verified that the energy price was adjusted by the inflation index IGP-M, considering that this index is mentioned in the Power Purchase Agreement /20/ . The O&M costs were also adjusted by the IGP-M index as mentioned in the Energisa's proposal /15/. The IGP-M index was used to adjust the others components of the O&M costs, in a conservative manner.

The summary of the values of the IRR calculation presented in the different versions of the PDD is presented in the table below:

PDD version	IRR	Related Documents
1 of 18 July 2009	11.91 %	"*IRR JUN1122 Malagone v1.xls*"
2 of 10 May 2010	15.86 %	"*IRR JUN1122 Malagone v2.xls*"
3 of 07 July 2010	16.58 %	*"IRR JUN1122 Malagone v2_1.xls"*

The difference among the versions is due mainly by the correction of financial analysis to consider the inflation, in order to be coherent with the chosen benchmark that also considers inflation.

3.6.3.5 Sensitivity analysis

A sensitivity analysis has been carried out for parameters contribution more than 20% revenues and costs to demonstrate the robustness of the financial analysis. Reasonable variations of the : (i) Energy Price; (ii) Investment and (iii) Plant Load Factor and the (iv) Operational Costs as it is the main cash out value over the years, after the investment.

Sensitivity analysis was limited to variations of +/- 10% in the four parameters listed above. The results of the sensitivity analysis are presented below:

	Energy Price (R$/MWh)	Investment (R$)	Plant Load Factor (MW)	O&M (R$/MWh)
-10 %	15.11 %	17.97 %	15.25 %	16.70 %
0 %	16.58 %	16.58 %	16.58 %	16.58 %
+10 %	17.99 %	15.40 %	17.86 %	16.46 %

In none of the cases the IRR passed the benchmark. In addition, projects participants calculated how large should these variations be to make the projects' NPV equal zero or, in other words, to make their IRR equal the benchmark (breakeven point). Their results are shown below.

	Energy Price (R$/MWh)	Investment (R$)	Plant Load Factor (MW)	O&M (R$/MWh)
% of deviation	41.58%	-32.15%	45.86%	-496.17%

As can been seen, for all parameters it was necessary a high value of deviation to achieve the break even point. For instance, the Plant Load Factor can not increase (it is limited by the defined ANEEL's Assured Energy /11/); the energy price was already defined in the PPA /20/and it is not likely to increase 41.58%; the investment was based on Eletrobrás Standard Budget /30//31/, which considers reliable source of data and it is not likely to decrease 32.15% and for the O&M costs, project would continue to be additional even if these costs are neglected. In all scenarios, the project's IRR is unlikely to reach the benchmark.

3.6.4 Barrier analysis

Not applicable.

3.6.5 Common practice analysis

Sub-step 4a: Analyze other activities similar to the proposed project activity

In the PDD version 1, PPs presented the common practice analysis (comparing others activities that are operational and that are similar to the proposed project activity) considering the SHPs located in Brazil (geographical area) with installed capacity between 15MW to 30MW (upper limit for SHPs in Brazil). RINA extended the analysis, considering that it is appropriate to compare the proposed project activity to "similar" projects assuming a capacity range of +/- 50%, i.e. 9.0 – 30 MW. The proposed project activity has been compared with similar projects that have become operational between 2005 (when Kyoto Protocol was taken in force) and 2008 (project start date) (projects that have been implemented in a comparative environment on the point of view of regulations). .

Other CDM projects activities (registered and published on UNFCCC website) were not included in the analysis, as well as similar SHPs that received other type of incentives, like PROINFA - *Programa de Incentivo às Fontes Alternativas de Energia Elétrica*.

During the first analysis RINA found that the 2 SHPs (Porto Góes-SP and Graça Bernnand-MT) that did not receive any incentive, however PPs provided the evidences that Porto Góes SHP is an expansion project (Resolution n° 255, dated 06/05/2003) and Graça Bernand SHP is a CDM project (http://cdm.unfccc.int/Projects/Validation/DB/N68XFRKNR58M29GRSJGR81NCMFT7KJ/view.html), therefore, they can not be compared to the project activity. Based on that analysis, it was found out the following similar projects in 2005 – 2008:

N° of SHPs with capacity between 9 – 30 MW	N° of SHPs with CDM incentives	N° of SHPs with Proinfa incentives	SHP expansion of the installed capacity
60	20	39	1
%	33.33%	65%	1.64%

It can be concluded that similar activities are not diffused in the Host country all similar plants to the project activity (excluding Porto Góes that is an expansion) considered some kind of incentives (CDM and/or PROINFA).

The common practice in Brazil is the installation and operation of large power plants, such as large Hydropower and Natural Gas Thermo Power plants that represent the majority (95%) of present Brazil's installed capacity, and thus the "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" project activity is not the business-as-usual type scenario in Brazil, where large Hydropower and Natural Gas Thermo Power plants represent the majority (95%) of present installed capacity.

3.6.6 Conclusion

RINA can confirm that all data, rationales, assumptions, justifications and documentation provided by the project participants to support demonstration of additionality are credible and reliable.

By assessing the evidences presented and cross-checking the available/accessible information, RINA considers that the reasoning for the proposed project additionality demonstration is credible and reasonable, i.e. the proposed project activity has the ability to reduce anthropogenic emissions of greenhouse gases by sources below those that would have occurred in the absence of the proposed CDM project activity and thus the project is additional.

3.7 Monitoring Plan

The approved baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 11 of 26/02/2010 /5/ has been correctly applied.

The monitoring plan is in accordance with the monitoring methodology and will give opportunity for real measurement of achieved emission reductions.

The energy meters were verified during site visit: Schneider Electric, power logic ION 8600, serial numbers PT-0902A505-01 (Principal/Main) and PT-0902A177-01 (Backup/Rearguard).

RINA has checked all the parameters presented in the monitoring plan against the requirements of the methodology and no deviations relevant to the project activity have been found.

RINA confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported *ex post* and verified.

3.7.1 Parameters determined ex-ante

The following parameters are available at validation (not monitored):

* A_{BL} - Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full;

* Cap_{BL} - Installed capacity of the hydro power plant before the implementation of the project.

As per ACM0002, A_{BL} and Cap_{BL} for new hydro power plants are considered 0.

The PDD version 1, presented in the section B.6.2 the parameter Default emission factor for emissions from reservoirs (EF_{Res}), however, as power density is greater than 10 W/m^2, this parameter was excluded in the PDD version 2.

3.7.2 Parameters monitored ex-post

* $EG_{facility,y}$ - Net Electricity supplied by the SHP to the grid in hour *h*;

* $EF_{grid,CM,y}$ - Brazilian grid emission factor;

* $EF_{grid,OM-DD,y}$ - CO_2 Operating Margin emission factor of the grid, in a year *y*;

* $EF_{grid,BM,y}$ - CO_2 Build Margin emission factor of the grid, in a year *y*;

* Cap_{PJ} - Installed capacity of the hydro power plant after the implementation of the project activity;

* A_{PJ} - Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.

3.7.3 Management system and quality assurance

The energy delivered to the grid will be measured and recorded continuously (hourly reading and recorded monthly) through electricity meters that complies with national standards. The National Grid Operator (ONS) and Electric Power Commercialization Chamber (CCEE) are responsible for the definition of the technical requirements of energy measurements for billing. The indicated QA/QC procedures are in line with the applied methodology. The electricity supplied to the grid will be monitored by electronic calibrated and inviolable (sealed) energy meters. The data from the energy meters will be cross checked with the invoices of energy sales or with the CCEE databank.

Meters' calibration procedures (frequency) will follow the ONS "*Grid Procedures*": Module 12, Sub-module12.3. The project owners shall always follow the rules of the relevant bodies (e.g. ONS and CCEE), in the case of changes in calibration procedures.

Cap_{PJ} will be monitored through the technical specifications of the installed equipments, installed plaques in the equipments and factsheets. Moreover the authorizations of the regulatory agency will be checked. A_{PJ} will be determined through topographical surveys, maps, satellite pictures, etc. Moreover, as the SHP Malagone has to monitor the level of the reservoir due to National requirements, data used for this purpose can be used to determine the reservoir area and will be also a measurement procedure to be considered to the project activity.

The combined margin emission factor ($EF_{grid,CM,y}$) will be calculated *ex-post* using the CO_2 emission factors for the build margin and the operational margin that are provided by the Brazilian DNA. CO_2 emission factors for the build margin and the operational margin for electricity generation in Brazil's National Interconnected System (SIN) are calculated, according to the dispatch analysis, from generation records of plants dispatched in a centralized manner by the National Electric System Operator (ONS).

Monitoring plan establishes that all data will be stored during the crediting period plus two years.

Regarding the responsibilities, the Hidrelétrica Malagone S.A is responsible for the maintenance and calibration of the monitoring equipments, compliance to operational requirements and corrective actions related to the functionality of the project activity. Moreover, the PP has authority and responsibility for registration, monitoring, and measurement as well as managing the project, organizing staff training to use appropriated techniques in those procedures. Carbotrader Assessoria e Consultoria em Energia Ltda is responsible to report the results of the baseline, project emissions (if applicable) and emissions reductions calculations.

3.8 Estimation of GHG emissions

The formulas and factors used in the project's emissions calculations are in accordance to the approved baseline and monitoring methodology ACM0002 - "Consolidated baseline methodology for grid-

connected electricity generation from renewable sources", Version 11 of 26/02/2010. Neither project's emissions nor leakage are applicable to the project activity.

All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD and supporting files submitted for registration, and the mentioned data sources have been verified by RINA.

***Ex-ante* calculation of emission reductions**

The estimated net electricity generation supplied by the project plant to the grid was calculated based on the assured energy (10.11 MW) provided by ANEEL (ANEEL Decree number 10, dated 26 February 2008) /11/. Moreover, the *ex-ante* estimative for the emission factor was calculated using the latest available (PDD published on 10/12/2009) emission factor of the Brazilian grid system for 2008 (= 0.3111 tCO_2/MWh, conservatively rounded down from 0.3111899 - average OM=0.4766 tCO_2/MWh and BM=0.1458 tCO_2/MWh) provided by the Brazilian DNA, and considering all four regions connected (North, Northeast, South and Southeast-Midwest) - calculated according to the Tool to calculate the emission factor for an electricity system /8/. The emission factor will be updated *ex post*. Moreover, in the PDD version 2, the crediting period starting date changed from 01/07/2010 to 01/01/2011 and so the emissions reductions are estimated considering the period 01/01/2011- 31/21/2017.

***Ex-post* calculation of emission reductions**

The combined margin emissions factor ($EF_{grid,CM,y}$) will be calculated *ex-post* using the CO_2 emission factors for the build margin and the operational margin that are provided by the Brazilian DNA. CO_2 emission factors for the build margin and the operational margin for electricity generation in Brazil's National Interconnected System (SIN) are calculated, according to the dispatch analysis, from generation records of plants dispatched in a centralized manner by the National Electric System Operator (ONS).

3.9 Environmental Impacts

The project complies with all applicable laws and regulations. The environmental aspects of the project activity were analyzed by the environmental agency (COPAM). An Environmental Impact Assessment - EIA (which results in a RIMA- Environmental Impact Report) is requested by the environmental agency to issue the licenses. The RIMA for the Malagone Small hydropower plant, issued by Limiar Engenharia and dated October 2005, was provided and assessed by RINA /14/.

The project obtained the following environmental license, assessed by RINA:

-Installation license (LI), nº 005/2008 issued by COPAM on 15/02/2008 valid until 15/02/2012 /13/.

No transboundary impacts are foreseen.

Moreover, the following ANEEL (Brazilian Electricity Regulatory Energy Agency) documents were assessed:

- ANEEL Resolution number 1,111, dated 13 November 2007 - authorizes Wanerg Energética Ltda to implement and explore Malagone SHP (amended by Authorization Resolution number 1.809) and mentions also installed capacity and coordinates /9/;
- ANEEL Resolution number 1,809, dated 10 February 2009 - transferring the authorization to implement and explore Malagone SHP (19 MW installed capacity) from Wanerg Energética Ltda to Hidrelétrica Malagone S.A. /10/;
- ANEEL Decree number 10, dated 26 February 2008 - defines a 10.11 MW (average) assured energy for the Malagone SHP /11/;
- ANEEL Dispatch number 2,860, dated 11 September 2007 - mentions Malagone SHP coordinates and reservoir area /12/;

- ANEEL Dispatch number 783, dated 26 March 2010, authorizes the operation in test of the Malagone SHP /26/;
- ANEEL Dispatch number 837, dated 31 March 2010, authorizes the commercial operation of the Malagone SHP /27/.

3.10 Local stakeholders consultation

Prior to the publication of the PDD on the UNFCCC website, from 10 December 2009 to 08 January 2010, the Project owner performed the local stakeholder consultation as per required by the Interministerial Commission on Global Climate Change (CIMGC) and in accordance to the Resolution 7 of the Brazilian DNA (05 March 2008). The project participants sent letters, inviting for comments, to the following stakeholders/City authorities:

- Uberlândia city hall;
- Uberlândia city council;
- Minas Gerais environmental agency - COPAM;
- Uberlândia Environmental Secretary;
- Brazilian Fórum of NGOs (FBOMS - *Fórum Brasileiro de ONGs e Movimentos Sociais*);
- District Attorneys' Office of Minas Gerais State (Ministério Público do Estado de Minas Gerais);
- Minas Gerais State Attorneys' Office (Procuradoria da República no Estado de Minas Gerais);
- Community association from Uberlândia (Instituição Cristã de Assistência Social de Uberlândia - ICASU;
- Community association from Martinésia – Uberlândia.

Excluding the FBOMS letter receival confirmation, AR (Aviso de Recebimento = "Receiving acknowledgment receipt") dated 09/09/2009, all others stakeholders received the letters on 08/09/2009 /18/.

It was verified that the letters sent to the stakeholders followed the Brazilian DNA Resolution nº 7. Letters were sent in Portuguese and PDD was made publicly available, in Portuguese, in the following web link: http://www.carbotrader.com/jun1122dcp.pdf. Letters are dated 02/09/2009. No comments were received.

RINA can confirm that the process is adequate and credible for local stakeholder consultation and in compliance with the Brazilian requirements in place for the local stakeholder consultation.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD version 1 of 8 July 2009 was made publicly available on the CDM UNFCCC website (http://cdm.unfccc.int/Projects/Validation/DB/6HXNSSNH17UCTOB9UJ7HU5T63UTHFZ/view.html) and Parties, stakeholders and NGOs were invited to provide comments during a 30 days period from 10 December 2009 to 08 January 2010. No comments were received during that period.

5 VALIDATION OPINION

RINA Services S.p.A. (RINA) has performed the validation of the project activity "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" in Brazil, with regard to the relevant requirements for CDM activities.

The review of the project design document and the subsequent follow-up interviews have provided RINA with sufficient evidence to determine the fulfillment of the stated criteria.

The host Party, Brazil, fulfills the requirements to participate in the CDM. No Annex I party has yet been identified. The project participant(s) are Hidrelétrica Malagone S.A. and Carbotrader Assessoria e Consultoria em Energia Ltda, from Brazil.

The project correctly applies the approved baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 11 of 26/02/2010.

By generating renewable energy from hydropower plant the project results in reduction of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total GHG emission reductions from the "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" are estimated to be 192,864 tCO_2e during the first renewable 7 years crediting period, resulting in an annual average emission reductions of 27,552 tCO_2e / year. The emission reduction forecast has been checked and it is deemed likely the stated amount is achieved given that the underlying assumption does not change.

The monitoring plan sufficiently specifies the monitoring requirements for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is RINA's opinion that the project participants are able to implement the monitoring plan.

In conclusion, it is RINA's opinion that the project activity "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)" in Brazil, as described in the PDD version 3 of 07 July 2010, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 11 of 26/02/2010.

Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.

APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirements

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reductions commitment under Art. 3.	Kyoto Protocol Art.12.2		No Annex I party has yet been identified. Table 2, Section, B.6.3, B.6.4
2. The project shall assist non Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a	-	Table 2, Section A.2.3 Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.
3. The project shall assist non Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	**OK**	No Annex I party has yet been identified.
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved.	Kyoto Protocol Art.12.5a, Marrakesh Accords, CDM Modalities §40a, § 28	-	Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	**OK**	Table 2, Section B.6.1.1 and B.6.3.1
6. Reductions in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43 and § 44	**OK**	Table 2, Section B.5
7. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an	Decision 17/CP.7, CDM Modalities and Procedures	**OK**	Table 2, Section A.4.5

Requirement	Reference	Conclusion	Cross Reference / Comment
affirmation that such funding does not result in a diversion of official development assistance (ODA) and is separate from and is not counted towards the financial obligations of these Parties.	Appendix B, § 2		
8. Parties participating in the CDM shall designate a national authority for the CDM.	Marrakech Accords, CDM Modalities §29	**OK**	The Brazilian Designated National Authority for the CDM is the "Comissão Interministerial de Mudança Global do Clima" (CIMGC).
9. The host country and the participating Annex I Party shall be a Party to the Kyoto Protocol.	Marrakech Accords, CDM Modalities §30	**OK**	Brazil has ratified the protocol on 23 August 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	**OK**	No Annex I party has yet been identified.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	**OK**	No Annex I party has yet been identified.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	Marrakech Accords, CDM Modalities §37b	**OK**	Table 2, Section E As required by the Interministerial Commission on Global Climate Change (CIMGC) and in accordance to the Resolution 7 of the Brazilian DNA (05 March 2008), the project participants sent letters, inviting for comments, to local stakeholders/City authorities.
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	Marrakech Accords, CDM Modalities §37c	**OK**	Table 2, Section D
14. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel.	Marrakech Accords, CDM Modalities §37e	**OK**	Table 2, Section B.2
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the	Marrakech Accords, CDM Modalities §37f	**OK**	Table 2, Section A.4.5

Requirement	Reference	Conclusion	Cross Reference / Comment
COP/MOP.			
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	Marrakech Accords, CDM Modalities, §40	**OK**	The PDD of 8 July 2009 was made publicly available on the UNFCCC CDM website and Parties, stakeholders and NGOs were invited to provide comments during a 30 days period from 10 December 2009 to 08 January 2010. http://cdm.unfccc.int/Projects/Validation/DB/6HXNSSNH17UCTOB9UJ7HU5T63UTHFZ/view.html No comments were received.
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	Marrakech Accords, CDM Modalities, §45 b, c, d, e	**OK**	Table 2, Section B.4
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	Marrakech Accords, CDM Modalities, §47	**OK**	Table 2, Section B.4
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	**OK**	PDD is in accordance with CDM-PDD (version 03 of 28 July 2006).

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A. General Description of Project Activity. *The project design is assessed.*					
A.1. Title of the project activity.					
A.1.1. Title of the project activity, version number and date of document (PDD).	/1/ /21/	DR	The title of the project activity is "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)", as per PDD Version 1 dated 8 July 2009.	**OK**	**OK**
A.2. Description of project activity.					
A.2.1. Is the purpose of the project activity included?	/1/ /4/ /9/ /10/ /21/	DR	Yes. The project activity contains a clear description of the proposed project activity. Section A.2 of the PDD (version 1) is in accordance with the latest template of PDD and Guidelines for completing the PDD (EB 41 - annex 12). The project activity consists on the installation of a new small hydropower plant with an installed capacity of 19 MW, located in the Uberabinha river, Uberlândia municipality (county), Minas Gerais state, Brazil. Reservoir area (1.27 Km^2) and installed capacity (19 MW) were confirmed through ANEEL Dispatch number 2,860 and ANEEL Resolution number 1,809, respectively. Equipments were verified during site visit (See section A.4.3.1).	**OK**	**OK**
A.2.2. Is it explained how the project activity reduces greenhouse gas emissions, i.e. technology, measures?	/1/ /4/ /21/	DR	The project activity reduces GHG by preventing the operation of the thermoelectric plants, which use fossil fuel to generate energy. In the absence of the project activity, the energy would be generated by the thermoelectric plants connected to the grid. Emission reductions are claimed from displacing	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			grid electricity with the estimated electricity that will be generated by the project power plant (SHP) and supplied to the Brazilian grid.		
A.2.3. Contribution to Sustainable Development. Table 1 - 2					
A.2.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/ /4/ /9/ /10/ /11/ /12/ /13/ /21/	DR	The proposed project activity is in line with the Brazilian and local regulations. The project obtained the following environmental license, assessed by RINA: -Installation license (LI), nº 005/2008 issued by COPAM on 15/02/2008 valid until 15/02/2012. The following ANEEL (Brazilian Electricity Regulatory Energy Agency) documents were assessed: - ANEEL Resolution number 1,111, dated 13 November 2007 - authorizes Wanerg Energética Ltda to implement and explore Malagone SHP (amended by Authorization Resolution number 1.809) and mentions also installed capacity and coordinates; - ANEEL Resolution number 1,809, dated 10 February 2009 - transferring the authorization to implement and explore Malagone SHP (19 MW installed capacity) from Wanerg Energética Ltda to Hidrelétrica Malagone S.A.; - ANEEL Decree number 10, dated 26 February 2008 - defines a 10.11 MW (average) assured energy for the Malagone SHP; - ANEEL Dispatch number 2,860, dated 11 September 2007 - mentions Malagone SHP coordinates and reservoir area.	**OK**	**OK**
A.2.3.2. Is the project in line with host-country specific	-	DR	Prior to the submission of the Project Design	**-**	

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
CDM requirements?			Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.		
A.2.3.3. Is the project in line with sustainable development policies of the host country?	-	DR	Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.	-	
A.2.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/ /4/ /14/ /21/	DR	The PDD version 1 mentions that the project activity will contribute to better working conditions and increases the employment in the region of the project activity. It was verified that the social contribution of the project activity was mentioned in the RIMA (Environmental Impact Report).	**OK**	**OK**
A.3. Project participants. Annex 1					
A.3.1. Are Party (ies) and private and / or public entities involved in the project activity listed?	/1/	DR	The project participants (private entities) are Hidrelétrica Malagone S.A. and Carbotrader Assessoria e Consultoria em Energia Ltda.	**OK**	**OK**
A.3.2. Is the contact information provided in Annex 1 of the PDD, using the (proper table) tabular format?	/1/ /21/	DR	The contact information is properly provided using the proper table (tabular format).	**OK**	**OK**
A.4. Technical description of the project activity.					
A.4.1. Is the location of the project activity clearly defined, including details of the physical location and information allowing the unique identification of this project activity(ies)?	/1/ /4/ /9/ /10/ /21/	DR	The project activity is located in Uberlândia, Minas Gerais state, Brazil in the following Geographical Coordinates: 18º 40' 50´´ S and 48º 29´ 57´´ W. Coordinates were confirmed through the following ANEEL documents:	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			- ANEEL Resolution number 1,111, dated 13 November 2007 - authorizes Wanerg Energética Ltda to implement and explore Malagone SHP (amended by Authorization Resolution number 1.809) and mentions also installed capacity and coordinates; - ANEEL Resolution number 1,809, dated 10 February 2009 - transferring the authorization to implement and explore Malagone SHP (19 MW installed capacity) from Wanerg Energética Ltda to Hidrelétrica Malagone S.A.; - ANEEL Dispatch number 2,860, dated 11 September 2007 - mentions Malagone SHP coordinates and reservoir area..		
A.4.2. Is (are) the category (ies), type(s) and sectoral scope(s) of the proposed project activity specified?	/1/ /4/ /21/	DR	The proposed project activity falls under Project category "Grid-connected electricity generation from renewable sources" and Sectoral Scope 1- Energy industries (renewable/non-renewable sources). PPs are requested to include in the PDD the category of the project activity.	~~CL 1~~	**OK**
A.4.3. Technology to be employed. *Validation of the project technology focuses on the project engineering, choice of technology competence/ maintenance needs. The Validator should ensure that environmentally safe and sound technology and know how is used / transferred.*					
A.4.3.1. Does the project design engineering reflect current good practices?	/1/ /4/ /21/	DR SV	The project design engineering reflects current good practices in Brazil. As per EB 41 annex 12: - *(a) The scenario existing prior to the start of the*		**OK**

<table>
<tr><th>Checklist Question</th><th>Ref.</th><th>MoV*</th><th>Comments</th><th>Draft Concl.</th><th>Final Concl.</th></tr>
<tr><td></td><td></td><td></td><td>
implementation of the project activity, with a list of the equipment(s) and systems in operation at that time.
The prior scenario is energy generation by mix power plants, mainly thermal power plants.
- (b) The scope of activities/measures that are being implemented within the project activity, with a list of the equipment(s) and systems that will be installed and/or modified within the project activity,
The following equipments have been installed at SHP:
<table>
<tr><td>Equipments listed in the PDD</td><td>List of equipments checked at site inspection</td></tr>
<tr><td>2 turbines Francis:
Power 9,800 kW each
Flow rate (m^3/s) 26.36 / 400 rpm</td><td>2 turbines Francis, Voith Siemens, serial nº 19602 and 19603
Power 9,800kW each
Flow rate (m^3/s) 26.36 / 400 rpm
Manufactured in 2009 in São Paulo, Brazil.</td></tr>
<tr><td>2 Generators: Nominal Power (kVA) 10,560 each
Effective Power (MW): 9.5 each
Voltage (kV): 6.9
Power factor: 0.9
Frequency (Hz): 60</td><td>2 GE Motors, serial nº 227001612 and 227001613.
Nominal Power (kVA) 10,560 each
Effective Power (MW): 9.5 each
Voltage (kV): 6.9
Power factor: 0.9</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			Frequency (Hz): 60 Manufactured in 2009, Brazil. The following energy meters were also verified during the site visit: Schneider Electric, power logic ION 8600, serial numbers PT-0902A505-01 (Principal/Main) and PT-0902A177-01 (Backup/Rearguard). *(c) The baseline scenario, as identified in section "B.4 Description of how the baseline scenario is identified and description of the identified baseline scenario", with an indicative list of the equipment(s) and systems that would have been in place in the absence of the project activity.* The baseline scenario is the same of prior project implementation. PPs should provide evidences regarding the lifetime of equipments (turbines and generators).	~~CL 2~~	
A.4.3.2. Does the project use the state of the art technology or could the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/ /4/ /21/	DR	At this particular time, the technology used can be considered as state of the art.	**OK**	**OK**
A.4.3.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/ /4/ /9/ /21/	DR	The expected operational lifetime of the project is 30 years and in line with the validity (30 years) of the Authorization Resolution number 1.111, issued on 13 November 2007. PPs should provide evidences regarding the	~~CL 2~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			lifetime of equipments (turbines and generators). The project technology is not likely to be substituted by other or more efficient technologies within the project period. See C.1.2.1.		
A.4.3.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/4/ /15/	DR I	A third party company will be contracted to operate the SHP. The company will be responsible for the training of the operational personnel, as per technical proposal PRT 0027/08 R4.	**OK**	**OK**
A.4.3.5. Does the project make provisions for meeting training and maintenance needs?	/4/ /15/	DR I	See A.4.3.4.	**OK**	**OK**
A.4.4. Estimated amount of emission reductions over the chosen crediting period. Table 1 - 5					
A.4.4.1. Is the chosen crediting period, total and annual estimated reductions defined and presented in a (proper table) tabular format? (*check these figures against item B.6.4 figures*)	/1/ /2/ /4/ /21/	DR	The information was provided in a proper table. The project is expected to reduce CO_2 emissions to the extent of 192,864 tCO_2e (27,552 tCO_2e / year average) over the renewable 7 years crediting period.	**OK**	**OK**
A.4.5. Public funding of the project activity. Table 1 - 7 & Annex 2					
A.4.5.1. Is it indicated whether public funding from Parties included in Annex 1 is involved in the proposed project activity?	/1/ /21/	DR	No public funding is provided for the "Malagone SHP CDM Project, Minas Gerais, Brazil (JUN1122)".	**OK**	**OK**
A.4.5.2. If public funding is involved, is information on sources of public funding for the project activity is provided in Annex 2, including an affirmation that such funding does not result on a diversion of official development assistance (ODA) and is separate from and is not counted towards the financial obligations of those Parties?	/1/ /21/	DR	See A.4.5.1.	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B. Project Baseline Application (methodologies). *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.* Table 1 - 14 & Annex 3					
B.1. Baseline Methodology. *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel? *(correctly quoted and interpreted?)*	/1/ /4/ /5/ /21/	DR	The project applies the ACM0002 methodology version 10 of 11/06/2009, that is in line with the relevant project category. However, considering the grace period (25/10/2010) for the submission of project activities for registration, when using a revised approved methodology, and the present validation timeline to submit projects for registration, it is recommended to revise the PDD according to ACM0002 version 11, valid from 26 February 2010 onwards.	~~**CL 3**~~	**OK**
B.1.2. Are other methodologies or tools drawn up by the approved methodology mentioned? *(correctly quoted and interpreted?)*	/1/ /4/ /6/ /7/ /21/	DR	ACM0002 methodology refers to the latest approved versions of the following tools: • Tool to calculate the emission factor for an electricity system; • Tool for the demonstration and assessment of additionality; • Combined tool to identify the baseline scenario and demonstrate additionality; • Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion. The project activity is applying the following tools: - "Tool to calculate the emission factor for an electricity system" (version 2);	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			- "Tool for the demonstration and assessment of additionality" (version 5.2). Both tools versions are the latest approved versions.		
B.2. Description of how the methodology is applied in the context of the project activity.					
B.2.1. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/ /4/ /5/ /9/ /21/	DR	The project is a grid-connected renewable power generation project activity that is installing a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity. Furthermore, the project activity results in a new reservoir and the power density of the power plant (14.96 W/m^2) is greater than 4 W/m^2. Thus, ACM0002 is applicable to the project activity. Reservoir area (1.27 Km^2) and installed capacity (19 MW) were confirmed through ANEEL Dispatch number 2,860 and ANEEL Resolution number 1,809, respectively. The PDD mentions in the beginning of section B.2: "The ACM0002 methodology is applicable to grid-connected renewable power generation project activities that involve electricity capacity additions under the following conditions:". This statement (capacity additions) must be corrected as per ACM0002 (new power plant) applicability definitions.	~~CL 6~~	**OK**
B.2.2. Background information or documentation, including tables with time series data, documentation of measurement results and data sources are properly addressed? (*check Annex 3*)	/1/ /5/	DR	Yes. Additional information about the Brazilian Interconnected System is presented in the Annex 3.	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.2.3. If comparable information is available from sources other than that used in the PDD, cross check the PDD against the other sources to confirm that the project activity meets the applicability conditions.	/1/ /4/ /5/ /9/ /10/ /11/ /13/	DR CC	Yes. Reservoir area (1.27 Km^2) and installed capacity (19 MW) were confirmed through ANEEL Dispatch number 2,860 and ANEEL Resolution number 1,809, respectively. Malagone SHP is a new power plant and that was confirmed at site assessment, environmental licenses and ANEEL documents.	**OK**	**OK**
B.3. Description of the sources and the gases included in the project boundary *(physical delineation of the proposed CDM project activity)***.**					
B.3.1. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/ /4/ /5/ /21/	DR	The proposed project's boundaries (spatial extent) encompass the project power plant and all power plants physically connected to the electricity system (SIN-National Interconnected System) that the proposed project activity is connected to. The section B.3 of the PDD is not in accordance with the applicable CDM requirements for completing PDDs (EB 41 annex 12), because the diagram of project boundary in the PDD (version 1) does not consider the National Interconnect System. The diagram shall present the emissions sources and gases included in the project boundary and the monitoring variables.	~~**CAR 1**~~	**OK**
B.3.2. Are all emission sources and significant GHGs included in the project boundary clearly identified and described in the appropriate table? Are the demonstration / justification (also for exclusions) adequate and sufficient?	/1/ /4/ /5/ /9/	DR	In the baseline, the main emission source is the CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology ACM0002 establishes that if the power density of the project activity (*PD*) is greater	~~**CAR 2**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			than 10 W/m^2, project emissions from water reservoirs (tCO$_2$e/yr) is zero (PE = 0). However, the table 3 of the PDD version 1 includes the CH$_4$ emissions as the main emissions in the project activity and section B.6.2 also mentions the emission factor for emissions from the reservoir. The PDD shall be revised accordingly.		
B.3.3. If GHG emissions occurring within the proposed CDM project activity boundary (not addressed by the applied methodology), as a result of project's implementation, are expected to contribute more than 1% of the overall expected average annual emissions reductions, are they informed in the PDD?	/1/	DR	Not applicable.	**OK**	**OK**
B.4. Description of how baseline scenario is identified. Baseline Determination. Table 1 - 17, 18 *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.4.1. Is the application of the methodology and the discussion and determination of the chosen baseline scenario transparent?	/1/ /4/ /5/ /6/ /8/ /21/	DR	The application of the baseline methodology is transparent and conservative. The proposed project activity consists in the installation of a new grid-connected renewable power plant/unit and the baseline scenario is in accordance with the methodology: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants (mostly large hydro and thermal power plants) and by the addition of new generating sources, as reflected in the combined margin (CM) from "Tool to calculate the		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			emission factor for an electricity system". Emission reductions were estimated *ex-ante* using the latest available (PDD published on 10/12/2009) emission factor of the Brazilian grid system for 2008 (= 0.3111 tCO_2/MWh conservatively rounded down from 0.3111899 - average OM=0.4766 tCO_2/MWh and BM=0.1458 tCO_2/MWh) provided by the Brazilian DNA, and considering all four regions connected (North, Northeast, South and Southeast-Midwest). The grid emission factor will be updated *ex-post* during the verification process. The emission factor calculation presented in the spreadsheet "*CERs JUN1122_v1.xls*" is equal to 0.3112 tCO_2/MWh, however emission reductions are calculated using an emission factor of 0.3111 tCO_2/MWh. PPs shall revise the PDD and CERs spreadsheet accordingly.	~~**CAR 3**~~	
B.4.2. Has the baseline been determined using conservative assumptions where possible? *(confirm that any procedure contained in the methodology to identify the most reasonable baseline scenario, has been correctly applied)*	/1/ /4/ /8/	DR	Yes, data for the emission factor is public available by Brazilian DNA.	**OK**	**OK**
B.4.3. Has the baseline been established on a project-specific basis?	/1/ /4/ /5/ /6/ /8/	DR	The baseline scenario has been established on a project-specific basis. See B.4.1.	~~**CAR 3**~~	**OK**
B.4.4. Does the baseline scenario sufficiently take into account relevant national and / or sectoral policies, macro-economic trends and political	/4/ /8/	DR	National and/or sectoral policies implemented during the initial phase were considered.	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
aspirations?					
B.4.5. Is the baseline determination compatible with the available data?	/1/ /4/ /5/ /6/ /8/	DR	Yes. The baseline determination is compatible with available data.	**OK**	**OK**
B.4.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/ /4/ /5/ /6/ /7/	DR	The selected baseline represents the most likely scenario among the two alternative scenarios discussed. The following two alternative baseline scenarios were considered: ***Alternative 1***: the project activity undertaken without being registered as a CDM project activity; ***Alternative 2***: the continuation of the current situation: electricity generation by Brazilian National Interconnected System (SIN). See B.4.1.	**OK**	**OK**
B.4.7. Have the major risks to the baseline been identified? (*Are uncertainties in the GHG emission estimates properly addressed in the documentation?*).	/1/ /5/	DR	The major risk of the project is not being able to produce the estimated amount of electricity to the grid.	**OK**	**OK**
B.4.8. Is all literature and sources clearly referenced?	/1/ /4/ /8/	DR	Yes. The Brazilian DNA web site was checked to confirm the values used to calculate the emission factor.	**OK**	**OK**
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (*Assessment and demonstration of additionality*). Table 1 - 6					
B.5.1. Does the PDD follow all the steps required in the methodology to determine the additionality? (*Is an approved additionality tool required / used? -*	/1/ /4/ /7/	DR	As the project activity is not a retrofit or replacement of existing grid-connected renewable power plant/unit(s) at the project site, the	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
Note: the guidance in the methodology shall supersede the tool)	/21/		additionality is demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionality", (Version 5.2), as indicated in ACM0002, Version 11 of 26/02/2010.		
B.5.2. Is the discussion on the additionality clear and have all assumptions been conservative, supported by transparent and documented evidence for all steps?	/1/ /4/ /3/ /7/ /15/ /20/ /21/	DR	The investment analysis has been used to demonstrate the additionality of the proposed project activity. The plant load factor was taken into consideration in the investment analysis and the assured energy (10.11 MW) was used in IRR calculations (spreadsheet "*IRR JUN1122 Malagone v1.xls*"). PDD version 1, mentions that the benchmark analysis was done in accordance with the "Tool for demonstration and assessment of additionality" (version 5.2). ***Determine the appropriate analysis method*** Among the three options available for investment analysis as discussed in the "Tool for the demonstration and assessment of additionality", project participants have chosen the benchmark analysis since the other two are not applicable. The simple cost analysis is not applicable because the project will generate financial and economic benefits (from electricity sales) other than CDM related income. The investment comparison analysis is not applicable either because the only alternative to the project activity is the supply of electricity from a grid, which is not to be considered a similar investment project. ***Apply benchmark analysis*** In Brazil there is not a widely accepted benchmark for SHP projects nor does the Government require a		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			minimum profitability in projects of this kind. The project IRR (internal rate of return) was compared with the yield on Government Bonds plus a Market Risk Premium. Project participants have chosen a Brazilian Government Bond named National Treasury Notes, Series C (NTN-C). It is placed on the market by the Brazilian National Treasury by a Public Offering and its profitability is linked to Inflation by the IGP-M Index. The Market Risk Premium chosen for the benchmark was based on the study *"Uma Análise de Risco do Segmento de Energia Elétrica"* – A risk analysis of the Electricity segment, which was presented in the Administration Seminars at the School of Economics, Business and Accounting at the University of São Paulo (USP). Regarding the benchmark, PPs are working with NTN-C with maturity for April 1st, 2021. The average yield of 2006 and 2007 was calculated resulting in an average yield of 20.24% per year. Taking into account that Brazil does not have a fully stabilized economy and some inflation index, like IGP-M (that is linked to the profitability of the NTN-C), a non-linear behavior in the last ten years exists. PPs shall consider a longer period for the calculation of yield average. Regarding to the risk premium, project participants are considering the value of 1.27% that is average return of investment on the Electrical Segment Index versus IBOVESPA index (main index of BOVESPA – São Paulo Stock Exchange). It is not	~~CAR 4~~ ~~CAR 5~~	

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			appropriate to use this Risk Premium because it was calculated in a different base since the project participants are considering the NTN-C as the benchmark and not the IBOVESPA. ***Calculation and comparison of financial indicators.*** Project participants provided the spreadsheet "IRR JUN1122 Malagone v1.xls" /3/ with all financial analysis. According to the project participants, the Malagone Small Hydropower Plant forecasted to begin in operation in September 2009, the installed capacity is 19.0 MW/hour and the assured energy is of 10.11 MW/hour, totalizing 88.564 MW/year. The value of energy value was confirmed in the PPA signed between CEMIG and Hidrelétrica Malagone (signed 30/01/2009): R$ 169.10/MWh. PPA contracted 9.9 MWh average and the additional energy will be sold in the free market /20/ For conservativeness, PP considered in the spreadsheet the value of R$ 169.10/MWh for all energy produced (88.564 MW). Further information about the energy prices and its evolution shall be presented. The established price is related to a contract so it should be clear what is the reference date for this price and which index will be chosen to adjust this price over the years (For example: …the price was defined for July/200X as R$ Y MW/h and should be adjusted every year by the ZZ index). The investment presented in the financial analysis	~~CL 4~~ ~~CAR 6~~	

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			was based on the feasibility study presented to ANEEL: R$ 92,137,019. However, in the spreadsheet "*IRR JUN1122 Malagone v1.xls*", 100% of the investment is considered in the first year of the Financial Analysis. Project participants shall provide the details (components) of this investment and the distribution of this investment over the years. Regarding the prices and costs evolution over the years presented in the IRR spreadsheet, Project Participants had presented flat values for all years. It's necessary to demonstrate in P&L and the Cash Flow the evolution for all lines, in accordance to contracts or the more appropriate inflation index. This evolution can be different for any line and this can represent a significant impact on the EBITDA evolution. The inflation on prices and costs has to be considered because in the benchmark the return of the investment includes the inflation. Also related to the indexes, inflation and interest rates and also foreign exchange rates, Project Participants should demonstrate the sources of the information. PPs shall prioritize the sources of the Brazilian Government or some large financial institutions (normally those institutions provide a forecast for next few years). After this the PPs should repeat the last year forecasted for all the project period. The PPs shall revise the financial spreadsheet and PDD accordingly. Project participants did not detail the operational costs. Just the group insurances and another fees	~~CAR 7~~ ~~CL 5~~	

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			and taxes paid for the government and some electricity sector regulatory agencies were presented and this evolution is linked to the revenues. It was verified that part of the O&M costs were based on the proposal of Energisa for the operation of the SHP, but the evidences for the other part of the O&M composition is needed. Moreover, it is not clear how this tariff will be adjusted over the years. Evidences and clarifications regarding the applied value should be provided. The explanation about the benchmark has to be *moved from the section "Sub-step 2c: Calculation* and comparison of financial *indicators" to section "Sub-step 2b: Option III. Apply benchmark analysis".* ***Sensitivity Analysis*** The following parameters were taken into account in the combined sensitivity analysis: (i) Energy Price; (ii) Investment and (iii) Plant Load Factor. The magnitude of IRR variations will depend on the extent to which these parameters vary. Positive variations of Energy Price and Plant Load Factor are beneficial to the projects' IRR while the opposite holds true for Investments. The sensitivity analysis did not include the Operational Cost and according to the "Guidelines o the assessment of investment analysis" (Version 02) Article 17, *"Only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues*	~~CAR 8~~ ~~CAR 9~~	

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			should be subjected to reasonable variation". However, PPs should consider applying a sensitivity analysis on this parameter as this is the main cash out value over the years after the investment. ***Step 3: Barrier analysis*** Not selected. ***Step 4: Common practice analysis*** ***Sub-step 4a: Analyze other activities similar to the proposed project activity*** Comparing others activities that are operational and that are similar to the proposed project activity, Rina took into consideration that it is appropriate to compare the proposed project activity to "similar" projects assuming a capacity range of +/- 50%, i.e. 9.0 – 30 MW. The proposed project activity has been compared with similar projects that have become operational between 2005 (when Kyoto Protocol was taken in force) and 2008 (project start date). Other CDM projects activities (registered and published on UNFCCC website) are not included in the analysis, as well as similar SHPs that received other type of incentives, like PROINFA - *Programa de Incentivo às Fontes Alternativas de Energia Elétrica*. Based on that analysis, it was found out the following similar projects in 2005 – 2008: N° of SHPs with capacity between 9 – / N° of SHPs with CDM incentives / N° of SHPs with Proinfa incentives		

<table>
<tr><th>Checklist Question</th><th>Ref.</th><th>MoV*</th><th>Comments</th><th>Draft Concl.</th><th>Final Concl.</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td>30 MW</td><td></td><td></td></tr>
<tr><td>60</td><td>19</td><td>39</td></tr>
<tr><td></td><td>31.66%</td><td>65%</td></tr>
</table>

From the total, only 3.33% of SHPs under operation in Brazil did not receive any incentive for its implementation. The SHPs are:
<table>
<tr><td>Year</td><td>Name</td><td>Installed capacity MW</td><td>State</td></tr>
<tr><td>2005</td><td>Porto Góes</td><td>14.3</td><td>SP</td></tr>
<tr><td>2008</td><td>Graça Bernnand (Terra Santa)</td><td>27.4</td><td>MT</td></tr>
</table>

Regarding the common practice analysis, as similar activities were found, essential distinctions between them as per the requirements of the Additionality Tool (version 5.2)/sub-step 4b must be addressed/explained.</td><td><s>CAR 12</s></td><td></td></tr>
<tr><td>B.5.3. Is it demonstrated / justified that the project activity itself is not a likely baseline scenario? (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, (c) a qualitative or quantitative assessment</td><td>/1/
/3/
/7/
/15/
/20/</td><td>DR</td><td>See sections B.4.6 and B.5.1</td><td>OK</td><td>OK</td></tr>
</table>

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
of one or more barriers facing the proposed project activity or ***(d)*** *an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations*)					
B.5.4. If the starting date of the project activity is before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, evidence to demonstrate that the CDM was seriously considered in the decision to implement the project activity, was provided, adequate and sufficient to justify it? (If starting date is on or after 2 August 2008, see C.1.1.2)	/1/ /4/ /16/ /17/ /19/ /21/ /23/	DR	The project starting date is 27/02/2008. A contract (dated 27/02/2008) for the purchase of the main equipments signed between Wanerg Energética Ltda. and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda was provided and verified. Furthermore, an amendment to the contract (dated 27/02/2008) between Wanerg Energética Ltda and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda, dated 13/08/2008, which assigns and transfers all rights and obligations from Wanerg to Hidrelétrica Malagone and confirms that Wanerg owns 99.7% of Hidrelétrica Malagone's shareholding was also provided and assessed. In light of the above evidences, the earliest date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity is confirmed to be 27/02/2008. The following documents related to the CDM consideration were assessed /19/: * 31/08/2006: Wanerg minutes of meetings - along with the minutes there is a description of preliminary studies of carbon credits for the project activity from a third part company;		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			* 20/11/2007: email from Mr Ronaldo (Wanerg) to Carbotrader; * 28/07/2008: email between PP and Carbotrader; * 29/07/2008: proposal from Carbotrader signed; * 08/09/2008: letter to Brazilian DNA informing about the project activity; * 05/12/2008: Brazilian DNA response; * 21/04/2009: proposal for validation of the project activity. Considering the documents listed above, it can be concluded that the CDM was seriously considered in the decision to implement the project activity and that continuing and real actions were taken to secure CDM status as per EB 49, annex 22. During the site visit, it was verified that the events described in November and December 2009 of table 11 of the PDD version 1, are not correct. Commissioning and commercial operation did not happen in these months. PPs should revise/correct table accordingly.	~~**CAR 10**~~	
B.5.5. Is the above evidence based on official, legal and / or other corporate document that was available at, or prior to, the start of the project activity?	/1/ /16/ /19/	DR	See B.5.4.	**OK**	**OK**
B.5.6. If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity, evidences that the proposed CDM project activity would not be: (a) The most economically or financially attractive alternative; or (b) Economically or financially feasible, without the revenue from the sale of certified emission	/1/ /4/ /3/ /7/ /15/ /20/ /21/	DR	See section B.5.2	~~**CAR 12**~~ ~~**CAR 4**~~ ~~**CAR 5**~~ ~~**CAR 6**~~ ~~**CAR 7**~~ ~~**CAR 8**~~ ~~**CAR 9**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
reductions (CERs); were provided? (*"Guidance on the Assessment of Investment Analysis")*				~~CL 4~~ ~~CL 5~~	
B.6. Emission Reductions. *Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.*					
B.6.1. Explanation of methodological choices.					
B.6.1.1. Have the project, baseline and leakage emissions and emission reductions been properly explained and determined using the same appropriate methodology and conservative assumptions?	/1/ /2/ /4/ /5/ /6/ /8/ /21/	DR	Yes. The methodology ACM0002, Version 11 of 26/02/2010 was correctly applied. -Leakage is not applicable to the project activity, as the energy generating equipments were not transferred from another activity. -Project emissions are not applicable to the project activity because power density is greater than 10 W/m^2. -Baseline emissions were estimated using data provided by the Brazilian DNA (publicly available in the Brazilian DNA website). The baseline emissions are calculated according to the methodology ACM0002 using the following formula: $BE_y = EG_{BL,y} * EF_{CO2}$. As reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system", emission reductions were estimated *ex-ante* using the latest available (PDD published on 10/12/2009) emission factor of the Brazilian grid system for 2008 (= 0.3111 tCO_2/MWh conservatively rounded down		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			from 0.3111899 - average OM=0.4766 tCO_2/MWh and BM=0.1458 tCO_2/MWh) provided by the Brazilian DNA, and considering all four regions connected (North, Northeast, South and Southeast-Midwest). The emission factor calculation presented in the spreadsheet "*CERs JUN1122_v1.xls*" is equal to 0.3112 tCO_2/MWh, however emission reductions are calculated using an emission factor of 0.3111 tCO_2/MWh. PPs shall revise the PDD and CERs spreadsheet accordingly.	~~**CAR 3**~~	
B.6.1.2. Does the proposed project clearly state which equations for the calculation of emission reductions are used, as given by the approved / applied methodology?	/1/ /2/ /4/ /5/ /6/ /21/	DR	The equations used are in line with the applied baseline methodology.	**OK**	**OK**
B.6.1.3. Are the demonstration / justification for the choice of the chosen scenario (for example, in ACM0006) or case, option / method (for example in ACM0002) adequate and sufficient?	/1/ /4/ /5/ /21/	**DR**	The baseline scenario is the following: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants (mostly large hydro and thermal 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".	**OK**	**OK**
B.6.1.4. Are the demonstration / justification for the chosen default values adequate and sufficient?	/1/ /5/	DR	Yes. As per ACM0002 A_{BL} and Cap_{BL} for new hydro power plants are considered 0.	**OK**	**OK**
B.6.2. Data and parameter those are available at validation.					

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
Data that is calculated with equations provided in the methodology or default values specified in the methodology should not be included in the compilation.					
B.6.2.1. Is the list of the *ex-ante* data and parameters used by the project -including data from other sources- complete, transparent, documented and available? (*measurements after the implementation of the project activity should not need to be included here but in the tables in section B.7.1*)	/1/ /4/ /5/ /21/	DR	The methodology ACM0002 establishes that if the power density of the project activity (*PD*) is greater than 10 W/m^2, project emissions from water reservoirs (tCO_2e/yr) is zero (PE = 0). However, the table 3 of the PDD version 1 includes the CH_4 emissions as the main emissions in the project activity and section B.6.2 also mentions the emission factor for emissions from the reservoir. The PDD shall be revised accordingly.	~~**CAR 2**~~	**OK**
B.6.2.2. Is the chosen value or, where relevant, the qualitative information for each supporting data or parameter(s) provided in a (proper table) tabular form and the choice for the source of data explained / justified with clear and transparent references or additional documentation? (*check Annex 3*)	/1/ /4/ /5/ /21/	DR	Yes. As per ACM0002 A_{BL} and Cap_{BL} for new hydro power plants are considered 0.	**OK**	**OK**
B.6.2.3. If values were measured, a description of measurement methods and procedures (standards), indicating the responsible(s) for carrying out the measurement(s), dates and results of measurement(s) was provided? (*check Annex 3*)	/1/ /4/ /5/ /21/	DR	See section B.6.2.2	**OK**	**OK**
B.6.3. *Ex-ante* calculation of emission reductions. Table 1 - 1, 3, 5					
B.6.3.1. Is the *ex-ante* calculation of the expected project, baseline and leakage emissions transparent, conservative, accurate, and documented and as per the approved / applied methodology (equations) of the project activity?	/1/ /2/ /4/ /5/ /8/	DR	Yes. No leakage or project emissions are applicable to the project activity. Calculations are in accordance with the requirements of methodology ACM0002, Version 11 of 26/02/2010. The estimated net electricity		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
	/11/ /21/		generation supplied by the project plant to the grid was calculated based on the assured energy (10.11 MW) provided by ANEEL (ANEEL Decree number 10, dated 26 February 2008) and the estimated emission factor calculation was based in the data published by the Brazilian DNA for the year 2008 (PDD published on 10/12/2009). Energy delivered to the grid and emission factor will be updated *ex-post* during the verification process. The emission factor calculation presented in the spreadsheet "*CERs JUN1122_v1.xls*" is equal to 0.3112 tCO_2/MWh, however emission reductions are calculated using an emission factor of 0.3111 tCO_2/MWh. PPs shall revise the PDD and CERs spreadsheet accordingly.	~~**CAR 3**~~	
B.6.3.2. Sufficient background information and / or data to assess the calculation(s) and enable its reproduction, including electronic files (i.e. spreadsheets), was provided? (*check Annex 3*)	/1/ /8/	DR	Yes. Data for the emission factor was presented in Annex 3.	**OK**	**OK**
B.6.4. Summary of *ex-ante* estimation of emission reductions. Table 1 - 1, 3, 5					
B.6.4.1. Is all *ex-ante* estimation of emission reductions summarized in a (proper table) tabular form for all years of the crediting period? (*Check against A.4.4.1 figures*)	/1/ /2/ /4/ /21/	DR	Yes. The emissions reductions are presented in a proper table, on items A.4.4 and B.6.4 of the PDD version 1, totalizing 192,864 tCO_2e for the first 7 years crediting period. The emission factor calculation presented in the spreadsheet "*CERs JUN1122_v1.xls*" is equal to 0.3112 tCO_2/MWh, however emission reductions are calculated using an emission factor of 0.3111 tCO_2/MWh. PPs shall revise the PDD and CERs	~~**CAR 3**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			spreadsheet accordingly.		
B.7. Application of monitoring methodology and description of the monitoring plan. *Compliance of the monitoring plan with the approved methodology and Implementation of the plan* Table 1 - 15 & Annex 4					
B.7.1. Data and parameters monitored. *(background documentation in Annex 4)*					
B.7.1.1. Specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity is provided? (m*easurements after the implementation of the project activity should be included here*)	/1/ /4/ /5/ /21/	DR	The following parameters are mentioned as to be monitored: $EG_{facility,y}$ - Net Electricity supplied by the SHP to the grid in hour *h*; $EF_{grid,CM,y}$ - Brazilian grid emission factor; $EF_{grid,OM-DD,y}$ - CO_2 Operating Margin emission factor of the grid, in a year *y*; $EF_{grid,BM,y}$ - CO_2 Build Margin emission factor of the grid, in a year *y*; Cap_{PJ} - Installed capacity of the hydro power plant after the implementation of the project activity; A_{PJ} - Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full. Measurement methods and procedures are specified. ***Ex-post* calculation of emission reductions** The combined margin emission factor ($EF_{grid,CM,y}$) will be calculated *ex-post* using the CO_2 emission factors for the build margin and the operational margin that are provided by the Brazilian DNA. CO_2 emission factors for the build margin and the operational margin for electricity generation in	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			Brazil's National Interconnected System (SIN) are calculated, according to the dispatch analysis, from generation records of plants dispatched in a centralized manner by the National Electric System Operator (ONS).		
B.7.1.2. Are all the parameters and its sources of data reliable, specified and documented in a (proper table) tabular form?	/1/ /21/	DR	Yes, a proper table was used.	**OK**	**OK**
B.7.1.3. Where data or parameters are supposed to be measured, are measurement methods and procedures, including a specification of which accepted industry standards or national or international standards will be applied, specified?	/1/	DR	Yes. The energy delivered to the grid will be measured trough electricity meters that complies with national standards. The National Grid Operator (ONS) and Electric Power Commercialization Chamber (CCEE) are responsible for the definition of the technical requirements of energy measurements for billing.	**OK**	**OK**
B.7.1.4. Are the measuring instruments / equipments, measurement methods, accuracy and interval, measurement responsible(s) and calibration procedures specified?	/1/	DR	Yes. PP will follow the ONS procedures (Modulo 12, sub-module 12.2) available at: http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.2_Rev_1.0.pdf	**OK**	**OK**
B.7.1.5. Are the QA / QC procedures applied described and complying with existing good practice? (*The parameters related to the performance of the project will be monitored using meters and standard testing equipment, which will be regularly calibrated following standard industry practices*)	/1/ /4/	DR	The indicated QA/QC procedures are in line with the applied methodology. The electricity supplied to the grid will be monitored by electronic calibrated and inviolable (sealed) energy meters. The data from the energy meters will be cross checked with the invoices of energy sales or with the CCEE databank.	**OK**	**OK**
B.7.2. Description of monitoring plan. *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.*					

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.7.2.1. Is the monitoring methodology previously approved by the CDM Methodology Panel?	/1/ /2/ /4/ /21/	DR	The project applies the approved consolidated monitoring methodology ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 11 of 26/02/2010.	**OK**	**OK**
B.7.2.2. Is the monitoring methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	The applied monitoring methodology is the one deemed most applicable to the project. The project is a grid-connected renewable power generation, with power density greater than 4W/m^2, which is applicable for ACM0002. See B.2.1.	**OK**	**OK**
B.7.2.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	Yes. Monitoring plan establishes that all data will be stored during the crediting period plus two years.	**OK**	**OK**
B.7.2.4. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/ /5/	DR	Leakage is not applicable to the project activity.	**OK**	**OK**
B.7.2.5. Is the authority and responsibility of project management clearly described?	/1/	DR	Carbotrader Assessoria e Consultoria em Energia Ltda is responsible for the emission reductions calculations. Hidrelétrica Malagone S.A. is responsible for all the project activity issues regarding the SHP's construction.	**OK**	**OK**
B.7.2.6. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	The monitoring plan should clearly state the authority and responsibility for registration, monitoring, measurement and reporting.	~~**CL 7**~~	**OK**
B.7.2.7. Are procedures identified for training of monitoring personnel?	/15/	DR I	A third party company will be contracted to operate the SHP. This company will be responsible for the training of the operational personnel, as per	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			technical proposal PRT 0027/08 R4 /15/.		
B.7.2.8. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR I	The emergency procedures related to the project activity operation (for instance: workers' safety and health, dam safety related emergency drills/exercises, etc), according to the Brazilian legislation, should be included in the training courses that the specialized third party company (to be contracted) is to offer (as applicable).	**OK**	**OK**
B.7.2.9. Does the monitoring plan reflect good monitoring and reporting practices?	/1/	DR	Yes. The electricity supplied to the grid will be monitored by electronic calibrated and inviolable (sealed) energy meters.	**OK**	**OK**
B.7.2.10. Is the discussion and selection of all required monitoring parameters and / or data variables (for example, project emissions, project electricity generation, baseline grid / captive power emission factor) of the monitoring plan according to the approved / applied methodology transparent?	/1/	DR	Monitoring plan (PDD-section B.7.2) and Annex 4 do not mention the monitoring of the parameters Cap_{PJ} (Installed capacity of the hydro power plant after the implementation of the project activity) and A_{PJ} (Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full).	~~**CAR 11**~~	**OK**
B.8. Date of completion of the application of the baseline and monitoring methodology and the name of responsible person(s) / entity (ies).					
B.8.1. Is the date of completion of the application of the methodology to the project activity provided and mentioned in the format *DD / MM / YYYY*?	/1/ /21/	DR	The date of completion of the application of the methodology to the project activity provided and mentioned in the PDD version 1 is 08/07/2009. As the section was revised in the PDD version 2, date was updated to 10/05/2010.	**OK**	**OK**
B.8.2. Is the contact information of the person(s) / entity (ies) responsible for the baseline and monitoring methodology to the project activity provided? If applicable, are they indicated as project	/1/ /21/	DR	The responsible for the baseline and monitoring methodology is Mr. Arthur Moraes from Carbotrader Assessoria e Consultoria em Energia Ltda. Carbotrader is identified as project participant in Annex 1.	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
participants in Annex 1?					
C. Duration of the Project activity / Crediting Period. *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1. Duration of project activity.					
C.1.1. Starting date of project activity.					
C.1.1.1. Is the project's activity starting date (the earliest date at which either the implementation or construction or real action of a project activity begins implementation, construction or real action - *project participant has committed to expenditures related to the implementation or related to the construction of the project activity*) clearly defined and reasonable?	/1/ /4/ /16/ /21/ /24/	DR	The project starting date is 27/02/2008. A contract (dated 27/02/2008) for the purchase of the main equipments signed between Wanerg Energética Ltda. and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda was provided and verified. Furthermore, an amendment to the contract (dated 27/02/2008) between Wanerg Energética Ltda and the following companies: Voith Siemens Hydro Power Generation Ltda.; Gevisa S.A.; Voith Siemens Hydro Power generation Services Ltda, dated 13/08/2008, which assigns and transfers all rights and obligations from Wanerg to Hidrelétrica Malagone and confirms that Wanerg owns 99.7% of Hidrelétrica Malagone's shareholding was also provided and assessed. In light of the above evidences, the earliest date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity is confirmed to be 27/02/2008. The project start date was correctly defined as per Glossary of CDM terms, version 5.	**OK**	**OK**
C.1.1.2. If the project activity started on or after 2 August 2008, were the Host Party DNA and/or the	/1/	DR	See section B.5.4	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
UNFCCC secretariat informed in writing of the commencement of the project activity and of the intention to seek CDM status? (If starting date is before 2 August 2008, see B.5.4)					
C.1.2. Expected operational life time of the project.					
C.1.2.1. Is the project's operational lifetime (mentioned in years and months) clearly defined and reasonable? (*check against crediting period and equipment lifetime*)	/1/ /4/ /9/ /21/	DR	The expected operational lifetime of the project is 30 years (0 months), the same period for which the ANEEL's Authorization Resolution number 1.111, issued on 13 November 2007, is valid /9/. PPs should provide evidences regarding the lifetime of equipments (turbines and generators).	~~CL 2~~	**OK**
C.2. Choice of crediting period. *The crediting period may only start after the date of registration of the proposed activity as a CDM project activity.*					
C.2.1. Is the chosen crediting period clearly defined (mentioned in years and months) and its starting date mentioned in the format *DD / MM / YYYY*? (*renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal*)	/1/ /4/ /21/	DR	A renewable crediting period of 7 years was selected (with the potential of being renewed twice), starting on 01/01/2011 (PDD version 2) or the date in which occurs the registration, the one that occurs later.	**OK**	**OK**
D. Environmental impacts. *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the Validator.* Table 1 - 13					
D.1. Documents on Environmental impacts, including transboundary impacts.					
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /4/ /9/ /10/	DR	The environmental aspects of the project activity were analyzed by the environmental agency (COPAM). The project obtained the following environmental	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
	/11/ /21/		license, assessed by RINA: -Installation license (LI), nº 005/2008 issued by COPAM on 15/02/2008 valid until 15/02/2012.		
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/9/ /10/ /11/ /14/	DR	An Environmental Impact Assessment - EIA (which results in a RIMA- Environmental Impact Report) is requested by the environmental agency to issue the licenses. The RIMA for the Malagone Small hydropower plant, issued by Limiar Engenharia and dated October 2005, was provided and assessed by RINA.	**OK**	**OK**
D.1.3. Will the project create any adverse environmental effects?	/9/ /10/ /11/	DR	See D.1.1.	**OK**	**OK**
D.1.4. Are transboundary environmental impacts considered in the analysis?	/9/ /10/ /11/	DR	See D.1.1.	**OK**	**OK**
D.1.5. Have identified environmental impacts been addressed in the project design?	/9/ /10/ /11/	DR	See D.1.1.	**OK**	**OK**
D.1.6. Does the project comply with the environmental legislation in the host country?	/9/ /10/ /11/	DR	See D.1.1.	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E. Stakeholders' comments. *The Validator should ensure that stakeholders' comments have been invited and that due account has been taken of any comments received.* Table 1 - 12					
E.1. Description of how comments by local stakeholders have been invited and compiled. *The local stakeholder process shall be completed before submitting the proposed project activity to a DOE for validation.*					
E.1.1. Have relevant stakeholders been adequately consulted / invited for comments?	/1/ /18/ /21/	DR	It was verified that the local stakeholders consultation followed the Brazilian DNA Resolution nº 7 requirements and letters were sent to the following stakeholders: - Uberlândia city hall; - Uberlândia city council; - Minas Gerais environmental agency - COPAM; - Uberlândia Environmental Secretary; - Brazilian Fórum of NGOs (FBOMS - *Fórum Brasileiro de ONGs e Movimentos Sociais*); - District Attorneys' Office of Minas Gerais State (Ministério Público do Estado de Minas Gerais); - Minas Gerais State Attorneys' Office (Procuradoria da República no Estado de Minas Gerais); - Community association from Uberlândia (Instituição Cristã de Assistência Social de Uberlândia - ICASU; - Community association from Martinésia – Uberlândia. Excluding the FBOMS letter receival confirmation,	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			AR dated 09/09/2009, all others stakeholders received the letters on 08/09/2009.		
E.1.2. If a stakeholder consultation process is required by regulations / laws in the host country, has the stakeholders' consultation process been carried out in accordance with such regulations / laws?	/1/ /18/ /21/	DR	It was verified that the letters sent to the stakeholders followed the Brazilian DNA Resolution nº 7. Letters were sent in Portuguese and PDD was made publicly available, in Portuguese, in the following web link: http://www.carbotrader.com/jun1122dcp.pdf. Letters are dated 02/09/2009 and ARs are dated 08/09/2009 and 09/09/2009.	**OK**	**OK**
E.1.3. Was the stakeholders' consultation process conducted, within a reasonable time for comments submission, in an open and transparent manner to facilitate comments and properly described?	/1/ /18/	DR	See section E.1.2.	**OK**	**OK**
E.2. Summary of comments received.					
E.2.1. Are the stakeholders who made comments identified (addresses provided / available)?	/1/ /21/	DR	No comments were received.	**OK**	**OK**
E.2.2. The summary of the stakeholders' comments received is provided / available?	/1/	DR	No comments were received.	**OK**	**OK**
E.3. Report on how due account was taken of any comments received.					
E.3.1. Has due account been taken of any stakeholders' comments received?	/1/	DR	No comments were received.	**OK**	**OK**
Annex 1. ***Contact information on project participants***					
• Are the Names of all organization given? (*as listed in section A.3*)	/1/ /21/	DR	Contact information is correctly provided in Annex 1.	**OK**	**OK**
A Name of contact person, Street, City, Post fix / ZIP, Country, Telephone Fax or e-mail mandatory fields are filled?	/1/	DR	All the mandatory fields were corrected fulfilled.	**OK**	**OK**
Annex 2. ***Information regarding public funding*** Table 1 – 7 & Table 2, A.4.5					

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
• Is information from Parties included in Annex I on sources of public funding for the project activity provided?	/1/ /21/	DR	No Annex I party has yet been identified.	**OK**	**OK**
• Does the information provided above include an affirmation that such funding does not result in a diversion of ODA and is separate from and is not counted towards the financial obligation of those Parties?	/1/	DR	The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Brazil.	**OK**	**OK**
Annex 3. ***Baseline information*** Table 1 - 14, 17, 18 & Table 2, B					
• Is any needed further background information used in the application of the baseline methodology, i.e. tables with time series data, documentation of measurement results and data sources, provided?	/1/ /21/	DR	See section B.	**OK**	**OK**
Annex 4. ***Monitoring information*** Table 1 - 15 & Table 2, B.7					
• Is any needed further background information used in the application of the monitoring methodology, i.e. tables with time series data, documentation of measurement results and data sources, provided?	/1/ /21/	DR	Monitoring information is provided in the section B.7 and Annex 4 of the PDD.	**OK**	**OK**

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
~~**CAR 1**~~ The section B.3 of the PDD is not in accordance with the applicable CDM requirements for completing PDDs (EB 41 annex 12), because the diagram of project boundary in the PDD (version 1) does not consider the National Interconnect System. The diagram shall present the emissions sources and gases included in the project boundary and the monitoring variables.	B.3.1	Corrections were provided to the diagram contained in the section B.3 of the PDD. After corrections, the diagram has passed to consider the National Interconnected System (Sistema Interligado National – SIN). Moreover, were included the emissions sources, gases included in the project boundary and the monitoring variables. Please see "PDD JUN 1122 Malagone_v2".	PDD version 2 of 10/05/2010 included the National Interconnected System in the boundary of the project activity. Moreover, the gases included in the project boundary and monitoring variables are also included in the diagram. This CAR is closed.
~~**CAR 2**~~ The methodology ACM0002 establishes that if the power density of the project activity (*PD*) is greater than 10 W/m^2, project emissions from water reservoirs (tCO_2e/yr) is zero (PE = 0). However, the table 3 of the PDD version 1 includes the CH_4 emissions as the main emissions in the project activity and section B.6.2 also mentions the emission factor for emissions from the reservoir. The PDD shall be revised accordingly.	B.3.2 B.6.2.1	Corrections were provided to the Table 3 contained in the section B.3. The Table 3 of the PDD version 2 (ref. name: "PDD JUN 1122 Malagone_v2) is not considering CH_4 emissions in the project activity scenario as the power density (*PD*) is greater than 10 W/m^2 (Calculations of PD can be viewed in the PDD). The section B.6.2 of the PDD was revised in order to reflect the project activity scenario, which does not consider emissions from the reservoir.	PDD version 2 of 10/05/2010 was revised accordingly. This CAR is closed.
~~**CAR 3**~~ The emission factor calculation presented in the spreadsheet "*CERs JUN1122_v1.xls*" is equal to 0.3112 tCO_2/MWh, however emission reductions are calculated using an emission factor of 0.3111 tCO_2/MWh. PPs shall revise the PDD and CERs spreadsheet accordingly.	B.4.1 B.4.3 B.4.4 B.6.1.1 B.6.3.2	Corrections were provided in the Emission Reductions spreadsheet. Considering that the expected starting date of the first crediting period stated in the PDD version 1 is difficult to occur (01/07/2010 – dd/mm/yyyy), PPs has revised the ERs spreadsheet in order to update this date, so it was revised to 01/01/2011.	The spreadsheet "*CERs JUN1122_v2.xls"* is considering the 2008 emission factor as 0.3111 tCO_2/MWh (= 0.3111899, conservatively rounded down / calculation based on the published Brazilian DNA 2008 operating and build margins' data) and that this emission factor will be updated *ex post*. Moreover, as mentioned in the CAR response, the crediting period starting date changed from 01/07/2010 to 01/01/2011 and so the emissions reductions are

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		Due to corrections, the "*CERs JUN1122_v2.xls*" was sent to the DOE.	estimated considering the period 01/01/2011-31/21/2017. This CAR is closed.
~~**CAR 4**~~ Regarding the benchmark, PPs are working with NTN-C with maturity for April 1st, 2021. The average yield of 2006 and 2007 was calculated resulting in an average yield of 20.24% per year. Taking into account that Brazil does not have a fully stabilized economy and some inflation index, like IGP-M (that is linked to the profitability of the NTN-C), a non-linear behavior in the last ten years exists. PPs shall consider a longer period for the calculation of yield average.	B.5.2	A longer period for the NTN-C calculation of yield average was used to determinate the benchmark. An average yield over five years was used to calculate the benchmark (from the January 2003 to December 2007), in this way since the beginning of the commercialization of the government bond NTN-C with maturity for April 1st 2021. The performed calculation resulted in an average yield of 22.22% per year. The results above mentioned were presented in the PDD version 2 as well as in the support document "*Government bond rates_benchmark_v2*".	A longer period was considered by Project Participants and all evidences were provided in the spreadsheet "*Government bond rates_benchmark_v2.xls*". The benchmark applied in the PDD version 2 is 22.22 % (was 21.51% in PDD version 1), considering an average yield over five years before the project's starting date (from January 2003 to December 2007). This CAR is closed.
~~**CAR 5**~~ Regarding to the risk premium, project participants are considering the value of 1.27% that is average return of investment on the Electrical Segment Index versus IBOVESPA index (main index of BOVESPA – São Paulo Stock Exchange). It is not appropriate to use this Risk Premium because it was calculated in a different base since the project participants are considering the NTN-C as the benchmark and not the IBOVESPA.	B.5.2	Considering that the project activity consists in a project for investment related to the brazilian electrical sector, which has an associated risk higher than other risk free investment alternative, is appropriated to use an risk premium to reflect risks that the Project Participant is subjected to occur. This is a relevant factor that makes the investor asks for a return higher than a risk free investment alternative. The Risk Premium chosen was derived from the article "***O Papel do BNDES na Expansão do Setor Elétrico Nacional e o Mecanismo de Project Finance*", from**	According to the EB 51, Annex 58, (Guidelines on the Assessment of Investment Analysis, version 3), *"Risk premiums applied in the determination of required returns on equity shall reflect the risk profile of the project activity being assessed, established according to national/international accounting principles"*. It is not clear in the BNDES article provided by Project Participants the methodology and the assumptions of Risk Premium calculation, furthermore the document provided is more recent than the investment decision date of the project.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		March 2009. The article summarizes the BNDES operations into the electrical sector, defines the relevant risks associated and also provide a risk spread of 1.3% for the finance operations. This value is a reasonable and conservative risk premium because the BNDES (Banco Nacional de Desenvolvimento Econômico e Social – Brazilian Development Bank), has a more comfortable situation than the project proponent where the risk measured by them has greater possibilities of mitigation, which provides greater capacity to manage risks, on the point of view of creditor. The Risk Premium adopted reflects the BNDES* risk premium for the Brazilians electricity project finance, which is related to the sectorial project activity risk and not with the Benchmark index base. *(BNDES has been financing energy projects for more than 10 year). The mentioned BNDES's article is available at: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Publicacoes/Consulta_Expressa/Setor/Energia_Eletrica/200903_01.html# Second response: Taking into account that the BNDES is the main player in the financial market on the point of view of credit supplier, and considering that this bank is a federal government bank for infra-structure	PPs should provide evidences (methodology and the assumptions of Risk Premium calculation) based on information available at the time of the investment decision and not information available at an earlier or later point This CAR remains open. Second response The PDD version 3 and revised related documents are reflecting the Risk Premium exclusion. This CAR is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		development, the risk premium adopted should be considered a conservative risk premium. One reason to support the evidence provided is that the article has listed all types of risks involved in the electrical sector and has presented the source of data of its analysis, for example the amount of projects assessed between 2003 until June 2008 on which results in the risk premium used: 1,3%. In the past, the risk premium was 2.5% and was recently adjusted, which also support that the value is adequate and now more conservative. The 1,3% of risk premium was also confirmed by the BNDES manager from the Electrical Energy Department. Please see the evidence: "*Re: Artigo publicado - O Papel do BNDES na Expansão do Setor Elétrico e o Mecanismo de Project Finance*", which is calculated by the Credit Área by assigning a rating to the company / project according to their risk rating – risk premium associated. Moreover something which should be considered is that all data used as source for the article, i.e. the risk profile of each project assessed is confidential and involves data from the projects covered by the Project Finance mechanism of the BNDES. However, the project participants have decided to exclude the risk premium from the additionality analysis, since that it does not affect the project additionality. Please see the project document's attached,	

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		reflecting risk premium exclusion: - "PDD JUN 1122 Malagone_v3"; - "IRR JUN1122 Malagone v2_1"; - "Government bond rates_benchmark_v2_1".	
~~**CAR 6**~~ The investment presented in the financial analysis was based on the feasibility study presented to ANEEL: R$ 92,137,019. However, in the spreadsheet "*IRR JUN1122 Malagone v1.xls*", 100% of the investment is considered in the first year of the Financial Analysis. Project participants shall provide the details (components) of this investment and the distribution of this investment over the years.	B.5.2	The financial calculation presented in the IRR spreadsheet was revised taking into account the DOE suggestions. Details of the investment (a description of the components of investment) and the distribution of the value over the years were inserted in the "*IRR JUN1122 Malagone v2*". In order to evidence the components of investment, the following document was presented to the DOE: "Details Investment_OPE" and contains the subsequent items: - "Lands, relocations and other social and environmental actions"; - "Structures and other improvements"; - "Aqueducts and dam"; - "Turbines and Generators"; - "Electrical equipment accessories"; - "Miscellaneous plant equipment"; - "Highways and iron highways, and bridges"; - "Indirect costs"; - "Interest during construction"; - "Bay of Connection - Interligação CEMIG"; - "Transmission line of 138 kV". Those items described above represents the	All requested information was presented in the new Financial Analysis in the spreadsheet "*IRR JUN1122 Malagone v2.xls*". The investment was detailed in the document "*Details Investment_OPE.pdf*" and the distribution over the years was based on the document "*PCH_Malagone_Cron_Desemb.pdf*". This CAR is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		formal / ordinary structure for budget presentation for ANEEL. This budget is based on the "Eletrobrás Standard Budget" (from the portuguese "Orçamento Padrão Eletrobrás"). Regarding the distribution of investment over years in the IRR spreadsheet, the disbursement of 43% of investment in 2008 (R$39.3555 million) and 57% in 2009 (R$52.7825 million) were inserted in the "*IRR JUN1122 Malagone v2*", totaling R$92,137,019, considering that the PPs have divided previously this distribution in a financial disbursement schedule (evidence: "*PCH_Malagone_Cron_Desemb*").	
~~**CAR 7**~~ Regarding the prices and costs evolution over the years presented in the IRR spreadsheet, Project Participants had presented flat values for all years. It's necessary to demonstrate in P&L and the Cash Flow the evolution for all lines, in accordance to contracts or the more appropriate inflation index. This evolution can be different for any line and this can represent a significant impact on the EBITDA evolution. The inflation on prices and costs has to be considered because in the benchmark the return of the investment includes the inflation. Also related to the indexes, inflation and interest rates and also foreign exchange rates, Project Participants should demonstrate the sources of the information. PPs shall prioritize the sources of the Brazilian Government or some large	B.5.2	In the PDD version 1, the project participants have used the flat value of energy price for all years in the P&L and cashflow because it is considered a conservative approach in Internal Rate of Return analysis of SHPs, also it is a business practice in the electrical sector considering that some projects use to be implemented using the mechanism of project finance. Considering that the benchmark chosen remains in the analysis, PPs has considered the suggestions from the DOE to include the appropriate inflation index in the P&L and cashflow, because the investment return provided by the benchmark includes the inflation. Results from such modifications can be viewed in the spreadsheet "*IRR JUN1122 Malagone v2*".	Project participants have updated the Financial Analysis with the inflation over Energy Price, O&M and Insurance & Guarantees. PPs should verify the inflation correction until the first year of the Financial Analysis (Focal Point: 2010). Since some items values were defined in 2009 (Energy Price) or 2008 (O&M), therefore, these values should be corrected to 2010. PPs used the inflation forecast provided by the Focus Report of the Brazilian Central Bank. This report was released on January 8, 2010 and this is a subsequent date to the project investment decision. PPs should rely only in information generated at the time of the investment decision. This CAR remains open.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
financial institutions (normally those institutions provide a forecast for next few years). After this the PPs should repeat the last year forecasted for all the project period. The PPs shall revise the financial spreadsheet and PDD accordingly.		The items that was adjusted by inflation in the IRR spreadsheet is: - Energy price; - O&M; - Insurance and guarantees. The energy price was adjusted by the inflation index IGP-M, considering that this index is cited in the Power Purchase Agreement presented to the DOE. The O&M costs shall be adjusted by the IGP-M index as the Energisa's proposal (presented to the DOE) identify this parameter to correct the prices annually. Therefore, as a conservative measure, considering that the IGP-M is widely observed in the market being used to adjust Contracts/Agreements in Brazil and the proposed index is also well recognized as a reliable inflation index, it should be used to adjust the other components of O&M costs, as well as adjustments in the insurance costs, due to severe increases in the insurance market, mainly caused by environmental and technical issues. Otherwise, the evolution of wages, salaries, taxes, etc, contained in the items "Administrative costs" and "Plant surveillance costs" should be adjusted by the INPC index, because it is mainly used for this kind of annual adjustments. Taking into account that market expectations for this index and its usual behavior use to be higher than IGP-M, to use the second to adjust the administrative costs, salaries, etc, is a	Second Response Project participants provided a new spreadsheet "*IRR JUN1122 Malagone v2_1*" with the changes requested above. A new source of information was provided with the inflation forecast. This CAR is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		conservative measure. The source for the expected value for IGP-M used in the IRR spreadsheet is the official data from the Central Bank of Brazil, available in its report called "Boletim Focus" that provides expectations from the market for this index. Please see document "Boletim Focus BCB_R20100108", on which is possible to assess the value used in the IRR calculation. After revision of the financial spreadsheet, PDD was modified accordingly (PDD version 2). <u>Second response:</u> Corrections in the financial spreadsheet were provided taking into account the DOE suggestions. The source of inflation forecast used is the "Inflation Report" from the Central Bank of Brazil, issued on March 2008, available at: http://www.bcb.gov.br/htms/relinf/port/2008/03/ri200803P.pdf. Evidence sent to support data used is: "*Inflation Report_2008*". In this report are presented inflation forecast for 2008 and 2009. Considering that the project participants has not found other reliable source of inflation forecast for 2010, the inflation forecast for 2009 available in the chosen evidence was replicated in 2010. Moreover, the same Inflation Report does not forecast inflation (such as IGP-M index) for 2010.	

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		Required corrections were provided in the project document's and were sent to DOE.	
~~**CAR 8**~~ The explanation about the benchmark has to be moved from the section *"Sub-step 2c: Calculation and comparison of financial indicators*" to section *"Sub-step 2b: Option III. Apply benchmark analysis*".	B.5.2	The explanation about the chosen benchmark was moved to section "*Sub-step 2 b: Option III. Apply benchmark analysis*". Please see the "PDD JUN 1122 Malagone_v2".	PDD was revised accordingly and the explanation about the benchmark was moved to section "Sub-step 2b: Option III. Apply benchmark analysis". This CAR is closed.
~~**CAR 9**~~ The sensitivity analysis did not include the Operational Cost and according to the "Guidelines o the assessment of investment analysis" (Version 02) Article 17, *"Only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation"*. However, PPs should consider applying a sensitivity analysis on this parameter as this is the main cash out value over the years after the investment.	B.5.2	Although the sensitivity analysis provided in the PDD version I was based on the "Guidelines on the assessment of investment analysis" (Version 02) Article 17, "*Only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation*", the PPs has extended the sensitivity analysis on the parameter "O&M" even it does not constitute more than 20% of total project costs or revenues. The results of the sensitivity analysis were presented in the PDD version 2 and in the project's IRR spreadsheet (ref. "IRR JUN1122 Malagone v2").	The O&M Costs were included in the sensitivity analysis in the revised spreadsheet "*IRR JUN1122 Malagone v2.xls*" and it is presented in the PDD version 2. This CAR is closed.
~~**CAR 10**~~ During the site visit, it was verified that the events described in November and December 2009 of table 11 of the PDD version 1, are not correct. Commissioning and commercial operation did not happen in these months. PPs should revise/correct table accordingly.	B.5.4	A correction was provided in the table 11 of the PDD, considering that the operation in test of the SHP was authorized by the Brazilian Electricity Regulatory Agency on 26 March 2010 and the commercial operation on 31 March 2010. Thus, the commercial operation has started on 01 April 2010. Evidences for the events inserted in the table	PDD was revised accordingly. The commissioning and commercial operation events (dates) were corrected in the PDD version 2 as per the ANEEL Dispatches # 783 and # 837, to 26/03/2010 and 31/03/2010 respectively. This CAR is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		11 are: - ANEEL Dispatch Nº 783, issued on 26 March 2010, available at: http://www.aneel.gov.br/cedoc/dsp2010783.pdf - ANEEL Dispatch Nº 837, issued on 31 March 2010, available at: http://www.aneel.gov.br/cedoc/dsp2010837.pdf The Table 3 can be viewed in the PDD version 2.	
~~**CAR 11**~~ Monitoring plan (PDD-section B.7.2) and Annex 4 do not mention the monitoring of the parameters Cap_{PJ} (Installed capacity of the hydro power plant after the implementation of the project activity) and A_{PJ} (Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full).	B.7.2.10	The monitoring plan (section B.7.2 and Annex 4 of the PDD) was adjusted in order to include the parameters Cap_{PJ} (Installed capacity of the hydro power plant after the implementation of the project activity) and A_{PJ} (Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full). Such modifications can be viewed in the PDD version 2.	The PDD version 2 included the monitoring of the parameters Cap_{PJ} *(*Installed capacity of the hydro power plant after the implementation of the project activity) and A_{PJ} (Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full). The Cap_{PJ} will be monitored through the technical specifications of the installed equipments, installed plaques in the equipments and factsheets. Moreover the authorizations of the regulatory agency will be checked. The A_{PJ} will be determined through topographical surveys, maps, satellite pictures, etc. Moreover, as the SHP Malagone has to monitor the level of the reservoir due to National requirements, data used for this purpose can be used to determine the reservoir area and will be also a measurement procedure to be considered to the project activity.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
			This CAR is closed.
~~**CAR 12**~~ Regarding the common practice analysis, as similar activities were found, essential distinctions between them as per the requirements of the Additionality Tool (version 5.2)/sub-step 4b must be addressed/explained.	B.5.2	The common practice analysis was revised for the range suggested by the DOE so considering similar activities those which have installed capacity between 9 to 30 MW (+/- 50% in relation to the installed capacity of Malagone SHP – 19MW, but extending to 30MW) for period applied to the project activity (since 2005 until May 2009, date on which data from ANEEL was available to the PPs). Similar activities found were included in the PDD version 2 and essential distinctions between the project activity and them were addressed. Summarizing the results, we have that all similar projects have been implemented through incentives. More details can be viewed in the PDD version 2. Moreover in the document: "*Prática Comum_PCHs de 2005 a 2009_evidenced_v2*". Regarding the SHPs found by the DOE in its own common practice analysis (Graça Brennand SHP – Terra Santa, and Porto Góes), such activities was excluded from the analysis considering that: - **Graça Brennand SHP** is a CDM Project, as per PDD publication in the CDM UNFCCC website: http://cdm.unfccc.int/Projects/Validation/DB/N68XFRKNR58M29GRSJGR81NCMFT7KJ/view.html, and; - **Porto Góes SHP** is a power plant that has passed by an expansion (the plant has passed	Confirmed on the ANEEL Resolution n° 255, dated 06/05/2003 that the Porto Góes SHP is an expansion project and Graça Bernand SHP is a CDM project, therefore, they can not be compared to the project activity. The conclusion of the common practice analysis is that there are no similar SHPs to the project activity. All SHPs considered incentives from CDM and/or Proinfa. This CAR is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		by a capacity addition) of 14.3MW, totaling 24.8MW installed. This expansion was authorized in 06 May 2003, by the ANEEL's resolution Nº 255: http://www.aneel.gov.br/cedoc/res2003225.pdf to the Empresa Metropolitana de Águas e Energia S.A. – EMAE. Before the expansion, the plant was operating since 01 December 1982, where the ELETROPAULO - Eletricidade de São Paulo S.A. company was authorized to produce electricity in such hydro potential, by the Decree Nº 87.884, available at: http://www.aneel.gov.br/cedoc/dec198287884.pdf. So this is not a similar activity to the present project activity considering their different designs. Therefore, all similar activities and their essential distinctions of the project activity were inserted in the PDD. Thus, the project activity is not a common practice in Brazil.	
~~**CL 1**~~ PPs are requested to include in the PDD the category of the project activity.	A.4.2	The category of the project activity was included in the PDD version 2. Please see the file: "PDD JUN 1122 Malagone_v2".	The category of the project activity was included in the PDD version 2. This CL is closed.
~~**CL 2**~~ PPs should provide evidences regarding the lifetime of equipments (turbines and generators).	A.4.3.2 A.4.3.3 C.1.2.1	Evidences regarding the lifetime of turbines and generators were provided to the DOE. According to the study developed by the Brazilian Electricity Regulatory Agency (Agência Nacional de Energia Elétrica – ANEEL) and the Center of Studies on Natural Resources and Energy from the Federal College of Engineering of Itajubá	Verified in the letter dated 24/05/2010 "*MALA-004-2010_Lifetime.pdf*" from Voith Hydro Ltda. that the generators units are projected to operate for 30 years to attend the concession period of the SHP Malagone. Therefore the operational lifetime of the project activity of 30 years is correctly defined in the PDD.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		("*Centro de Estudos em Recursos Naturais e Energia – Escola Federal de Engenharia de Itajubá*"), entitled as Study of Economic Lifetime and Depreciation rates (from the Portuguese "Estudo de Vida Útil Econômica e Taxa de Depreciação") the conservative lifetime of equipments are 40 years for turbines and 30 years for generators. This study was developed to serve as basis for the establishment of rules for calculating depreciation, amortization and exhaustion by ANEEL, in this way guiding the assets control in the electrical sector. Evidences to support information can be viewed in the following links: http://www.aneel.gov.br/aplicacoes/audiencia/arquivo/2006/012/documento/relatorio_vida_util_volume_1.pdf and http://www.aneel.gov.br/aplicacoes/audiencia/arquivo/2006/012/documento/relatorio_vida_util_volume_2.pdf. Moreover, the manufacturers of generator-groups (Voith) certify that equipments are designed to operate by thirty years. Please see the document: "*MALA-004-2010_Lifetime*".	This CL is closed.
~~**CL 3**~~ The project applies the ACM0002 methodology version 10 of 11/06/2009, that is in line with the relevant project category. However, considering the grace period (25/10/2010) for the submission of project activities for registration, when using a revised approved methodology, and the present validation timeline to submit projects for	B.1.1	The PDD was revised in order to attend all requirements of the ACM0002 methodology version 11, valid from 26 February 2010 onwards. Please see the file: "PDD JUN 1122 Malagone_v2".	PDD version 2 applies the methodology ACM0002 version 11. This CL is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
registration, it is recommended to revise the PDD according to ACM0002 version 11, valid from 26 February 2010 onwards.			
~~**CL 4**~~ Further information about the energy prices and its evolution shall be presented. The established price is related to a contract so it should be clear what is the reference date for this price and which index will be chosen to adjust this price over the years (For example: …the price was defined for July/200X as R$ Y MW/h and should be adjusted every year by the ZZ index).	B.5.2	Regarding the energy prices, the date on which it was defined is 31 January 2009 as R$169.1/MWh and should be adjusted every year by the IGP-M inflation index. Evidence supporting this information was provided to DOE.	It was confirmed that all adjustments were applied correctly and as defined in the PPA contract. This CL is closed.
~~**CL 5**~~ Project participants did not detail the operational costs. Just the group insurances and another fees and taxes paid for the government and some electricity sector regulatory agencies were presented and this evolution is linked to the revenues. It was verified that part of the O&M costs were based on the proposal of Energisa for the operation of the SHP, but the evidences for the other part of the O&M composition is needed. Moreover, it is not clear how this tariff will be adjusted over the years. Evidences and clarifications regarding the applied value should be provided.	B.5.2	The O&M costs inserted in the IRR spreadsheet are composed by three components: - Administrative costs and spare parts (from the Portuguese "*Gerenciamento da usina e reposição de peças*"), where value estimated is R$58.111,08/month; - Operation and Maintenance costs, where the average value is R$36.083,97/month as per Energisa's proposal; - Plant surveillance costs, with an estimated value of R$3.206,55 per month. By summarizing the components above, the value applied is R$97.401,70 per month so R$1.168.819,2/year. The O&M costs shall be adjusted by the IGP-M index as the Energisa's proposal identifies this parameter to correct the prices anually. Therefore, as a conservative measure, considering that the IGP-M is widely	The detailed O&M costs were presented in the document "*O&M estimatives_2008.pdf*". The O&M costs have been applied in the financial analysis and all adjustments were applied correctly in the financial analysis spreadsheet version 2. This CL is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		observed in the market being used to adjust Contracts/Agreements in Brazil and the proposed index is also well recognized as a confidence index of inflation, it should be used to adjust the other components of O&M costs. Otherwise, the evolution of wages, salaries, taxes, etc, contained in the items "Administrative costs" and "Plant surveillance costs" should be adjusted by the INPC index, because it is mainly used for this kind of annual adjustments. Taking into account that market expectations for this index and its usual behavior use to be higher than IGP-M, to use the second to adjust the administrative costs, salaries, etc, is a conservative measure. Evidences to support those data can be viewed in the following document: "O&M estimatives_2008".	
~~**CL 6**~~ The PDD mentions in the beginning of section B.2: "The ACM0002 methodology is applicable to grid-connected renewable power generation project activities that involve electricity capacity additions under the following conditions:". This statement (capacity additions) must be corrected as per ACM0002 (new power plant) applicability definitions.	B.2.1	The justification of the methodology choice and why it is applicable to the project activity was adjusted in order to attend the ACM0002 methodology. As the project activity involves the installation of a hydro power plant, the methodology is applicable under the following condition: "*The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m^2*". Malagone SHP is a grid-connected construction which is considered a renewable	The revised PDD version 2, describes the applicability criteria as per the methodology ACM0002, version 11. The project activity complies with item a) of the applicability of the methodology "*install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant)*". The project activity is a new small hydropower plant with 19 MW of installed capacity. At the site where the project is located, no renewable power plant was operating before. This information was confirmed through ANEEL documents, environmental licenses and site

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		power generation plant with 14.96 W/m^2 Power Density, so, greater than 4 W/m^2 and results in a new reservoir Therefore, the methodology is applicable to the present project activity and is better described in the PDD version 2.	inspection. Moreover the project activity complies with the following condition: "*The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, are greater than 4 W/m^2*". The project activity results in a new reservoir area of 1,270,000 m^2, with 14.96 W/m² Power Density. This CL is closed.
~~**CL 7**~~ The monitoring plan should clearly state the authority and responsibility for registration, monitoring, measurement and reporting.	B.7.2.6	The monitoring plan was adjusted in order to clearly state the authority and responsibility for registration, monitoring, measurement and reporting. Modifications can be assessed in the PDD version 2.	PDD version 2 included that the Hidrelétrica Malagone S.A is responsible for the maintenance and calibration of the monitoring equipments, compliance to operational requirements and corrective actions related to the functionality of the project activity. Moreover, the company has authority and responsibility for registration, monitoring, and measurement as well as managing the project, organizing staff training to use appropriated techniques in those procedures. Carbotrader Assessoria e Consultoria em Energia Ltda is responsible to report the results of the baseline, project emissions (if applicable) and emission reductions calculations. This CL is closed.