

FINAL VALIDATION REPORT FOR THE RENEWAL OF THE CREDITING PERIOD BABILONIA HYDROELECTRIC PROJECT



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Summary:

South Pole Carbon Asset Management Ltd. has commissioned the TÜV NORD JI / CDM Certification Program to carry out the validation of the renewal of the crediting period of the Project “Babilonia Hydroelectric Project” in Honduras with regard to the requirements of VCS Version 3 Standard.

The project activity involves generation of electricity by using the renewable energy source (hydro) for the national grid system in Honduras. Thus, the project activity displaces electricity and green house gas (GHG) emissions currently produced by fossil fuel-burning Power plants. The generated electricity by the project activity is being exported to the National grid of Honduras through Empresa Nacional de Energia Electrica (ENEE) – the national Honduras electricity utility.

The project participant has successfully commissioned 4 MW of hydropower energy on 2004-04-02, since then project is operational with some planned/unplanned shutdowns. The phase wise commissioning dates of the project activity have been addressed in the energy contract/EC/. Project activity was operational during the first crediting period (2004-04-02 to 2014-04-01). Operation of the plant will remain the same for the second crediting period (2014-04-02 to 2024-04-01)

In the course of the validation 7 Corrective Action Requests (CARs), 3 Clarification Requests (CLs) were successfully closed. Any Forward Action Request (FAR) was raised during the validation.

The review of the project design documentation and additional documents related to baseline and monitoring methodology and subsequent background investigation have provided the TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- A reasonable level of assurance has been applied.
- All data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature.
- The project is in line with all relevant host country legislation incl. its GHG assertions, where applicable.
- The project additionality is not required to be reassessed, however it is sufficiently justified in the VCS-PD.
- The monitoring plan is transparent and adequate.
- Deviations from the applied CDM methodology have sufficiently been addressed and justified.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 73,900 t CO₂e is most likely to be achieved within the 10 year renewable crediting period.
- The conclusions of this report show, that the project, as it was described in the project

documentation/GHG Report, is in line with all criteria applicable for the validation against the VCS Version 3 standard without any qualifications or limitations.

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1 INTRODUCTION

1.1 Objective

The purpose of a validation is to have an independent third party assess the project design for the renewal of the crediting period. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of the VCS Version 3;
- the requirements of the approved methodology;
- relevant rules, including the host country legislation

are validated in order to confirm that the revised project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Verified Carbon Units (VCUs) / Emission reductions.

The second crediting period will be from 2014-04-02 to 2024-04-01.

1.2 Scope and Criteria

The validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the methodology, the project's baseline study, additionality justification, stakeholder involvement, environmental impacts and monitoring plan, which are included in the PD other relevant supporting documents, to ensure that the proposed VCS project activity meets all relevant and applicable VCS Version 3 criteria.

The information included in the PD and the supporting documents were reviewed and assessed against the requirements as set out by the VCS Version 3.

The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions. TÜV NORD JI/CDM CP cannot be held liable by any entities for making its validation opinion based on any false or misleading information supplied to it during the course of validation.

The validation is not meant to provide any consulting to the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Level of Assurance

The validation has been planned and organized to achieve a

- reasonable level of assurance
- limited level of assurance.

1.4 Summary Description of the Project

The project is a small run-of-river hydroelectric project with a capacity of 4 MW located on the Babilonia river, Department of Olancho, Honduras, and operated by Energisa S.A. The generated electricity is supplied to the national grid through Empresa Nacional de Energia Electrica (ENEE) – the national Honduran electricity utility.

The emission reductions associated to the implementation of the project during the second crediting period are estimated to be 73,900 tCO_{2e}

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the VCS project description (VCS PD) / GHG Report
- A desk review of the VCS PD^{/PD/} / GHG Report submitted by the client and additional supporting documents with the use of customised validation protocol
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft validation reporting
- Resolution of corrective actions
- Final validation reporting
- Technical review
- Final approval of the validation.

The sequence of the validation is given in the table 2.1 below:

Table 2.1: Validation sequence

Topic	Time
Assignment of validation	2015-03-03
On-site visit	From: 2015-04-20 To 2015-04-22
Draft reporting finalised	2015-04-22
Technical review on draft reporting finalised	-
Final reporting finalised	2015-10-22
Technical review on final reporting finalised	2015-11-09
Final corrections	2016-03-28

The main validation steps are detailed described below.

Appointment of team members and technical reviewer:

On the basis of a competence analysis and individual availabilities a validation team was appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 2-2 below.

Table 2-2: Involved Personnel

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence ³⁾	Technical competence ⁴⁾	Verification competence ⁵⁾	Host country Competence	On-site visit
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Guadalupe Avendaño Reyes	TN Mexico	TL	LA	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Oliver Quireza Campos	TN Mexico	TM ^{A)}	A	<input type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Alexandra Nebel	TN CERT GmbH	TR/ FA ^{B)}	SA	<input checked="" type="checkbox"/>	1.2	<input checked="" type="checkbox"/>	-	-

1) TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

2) GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

3) GHG auditor status (at least Assessor)

4) As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

5) In case of verification projects

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

2.2 Document Review

The VCS PD ^{/PD/} and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The references used in the course of this validation are completely included in APPENDIX 1: REFERENCES.

2.3 Interviews

The validation team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in Table 2-4.

Table 2-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Project Owner & Operations Personnel /IM01/ 2. Project Consultant /IM02/	<ul style="list-style-type: none"> - Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project - Monitoring and measurement equipment and system. - Crediting period - Ownership - Baseline reassessment - Additionality reassessment - Emission reduction calculation - Emission factor calculation - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - Editorial issues of the VCS PD

A comprehensive list of all interviewed persons is part of APPENDIX 1: REFERENCES.

2.4 Site Inspections

As an essential part of the renewal of the crediting period, an inspection on site has been in order to verify that the project is implemented in accordance with the applicable methodology, revised version of PD and VCS criteria. Furthermore the on- site assessment is necessary to check the baseline validity, the continuation of monitoring methods and equipment lifetime. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- The monitoring processes, routines and documentations were audited to check their proper application.

- The review of laws and current legislation to assess the validity of baseline
- The review of documents regarding the technical lifetime of the installed equipment
- Historical data on generation.

2.5 Resolution of Findings

Material discrepancies identified in the course of the validation are addressed either as CARs, CLs or FARs.

A Corrective Action Request (CAR) is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A Clarification Request (CL) will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A Forward Action Request (FAR) will be issued when certain issues related to project implementation should be reviewed during the first verification.

In the course of the validation 7 Corrective Action Requests (CARs), 3 Clarification Requests (CLs) were successfully closed. Any Forward Action Request (FAR) was raised during the validation. Table 3-1 includes an overview of all raised CARs, CLs and FARs.

Table 3-1: Overview of CARs, CLs and FARs issued

Topic / Chapter	CAR	CL	FAR
Project Design	5	2	0
Application of Methodology	2	1	0
Environmental Impact	0	0	0
Comments by stakeholders	0	0	0
SUM	7	3	0

A detailed list of the CARs and CLs raised, the response(s) provided by the project proponent, the final conclusion and any resulting change to project document in the course of this validation is included in the next section 3 of this report.

2.6 Forward Action Requests

Any Forward Action Request (FAR) was raised during the validation.

3 VALIDATION FINDINGS

3.1 Project Details

Project scope, type, technologies and measures implemented and eligibility of the project:

Description

The project participant has successfully commissioned 4 MW of project activity on 2004-04-02, since then project is operational with some planned/unplanned shutdowns. The phase wise commissioning dates of the project activity have been addressed in the energy contract/EC/. Project activity was operational during the first crediting period (2004-04-02 to 2014-04-01). Operation of the plant will remain the same for the second crediting period (2014-04-02 to 2024-04-01).

As per the onsite assessment, observations, interviews and collected evidences, it is concluded that project activity has been implemented as described in the revised Project Description/PD/ validated as per VCS version 3/VCS/. There is no change in the key equipments such as generators and turbines. This was corroborated during on-site inspection.

Essential data of the project is presented in the following Table 3.1-1a.

Table 3.1-1a.: Project Characteristics

Item	Data			
Project title	Babilonia Hydroelectric Project			
Project owner	ENERGISA S.A. DE C.V.			
Any specific project categories	<input checked="" type="checkbox"/>	Project (= < 300,000 tCO ₂ eq /a)		
	<input type="checkbox"/>	Large project (> 300,000 t CO ₂ eq / a)		
	<input type="checkbox"/>	AFOLU project		
	<input type="checkbox"/>	Grouped project		
	<input type="checkbox"/>	No specific project category		
VCS PD	Draft: Version 1.0	2015-10-22	Final:	-
Applied Methodology	AMS-I.D., version 18.0			
Project starting date	2004-04-02			
Crediting period	<input type="checkbox"/>	Renewable Crediting Period (7 y)		
	<input checked="" type="checkbox"/>	Renewable Crediting Period (10 y)		
Start of first crediting period	2004-04-02			
Start of second crediting period	2014-04-02			

The key parameters of the project are given in table 3.1-1.b:

Table 3.1-1b: Technical data of the project

Parameter	Unit	Value
Total installed capacity of the power plant	MW	4
Generator 1		
Installed capacity (serial: HY-60PNT282-1)	MW	2.0
Frequency	Hz	60
Speed	rpm	900
Turbine 1		
Installed capacity (serial: 03-3003A)	MW	2.0
Speed	rpm	900
Generator 2		
Installed capacity (serial: HY-60PNT281-1)	MW	2.0
Frequency	Hz	60
Speed	rpm	900
Turbine 2		
Installed capacity (serial: 03-3003B)	MW	2.0
Speed	rpm	900

Table 3.1-1c: Parameters confirmed during validation

Parameter	Name	Unit	Value
Emission factor for Honduran electricity system	EF _{grid,y}	tCO ₂ /MWh	0.2614
Net electricity exported to the grid	EG _{PJ,y}	MWh/year	28,276

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Finding:	CAR 1-3.1		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)	According to the VCS PD Template guideline, an estimate of annual average and total GHG emission reduction is missing in section 1.1 of PD		
Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.	To fill this requirement, the following sentence was added “It is expected that the project will reduce GHG emissions by 7,390 tCO ₂ e/ year in average and by a total of 73,900 tCO ₂ e over the 10 year-crediting period.”		

<p>DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<p>The required information is included in the PD and it is consistent to the excel sheet delivered to the VT.</p> <p>The issue is CLOSED.</p>
<p>Conclusion Tick the appropriate checkbox</p>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input type="checkbox"/> The project complies with the requirements</p>

Finding:	CAR 2-3.1		
<p>Classification</p>	<p><input checked="" type="checkbox"/> CAR</p>	<p><input type="checkbox"/> CL</p>	<p><input type="checkbox"/> FAR</p>
<p>Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)</p>	<p>In section 1.2 of the PD, information provided is not in line with VCS project webpage and instructions of the VCS PD Template.</p>		
<p>Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>The VCS PD is revised to include the information in line with VCS PD template.</p>		
<p>DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<p>Changes in the PD are still not in line with the requirement of the template. CDM reference is not necessary and project webpage information is not stated.</p>		
<p>Corrective Action #2 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>The information included has been limited to the sectoral scope and project type as per the information contained in the project's VCS webpage. Additionally, it has been stated that this does not correspond to a grouped project.</p>		
<p>DOE Assessment #2 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<p>Information placed in section 1.2 is now correct and consistent to the project webpage. Information is now according to the VCS PD Template requirement.</p> <p>This issue is CLOSED</p>		
<p>Conclusion Tick the appropriate checkbox</p>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input type="checkbox"/> The project complies with the requirements</p>		

Final Assessment

All the PD sections are now consistent and correct according to the VCS PD Template and the VCS project webpage

- The project technology and the description of the same are in line with the applicable VCS criteria.

Project proponent:

Description

The project proponent in the revised PD is consistent to the registration deed of representation in the VCS project webpage. However, the following clarification is needed.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Finding:	CL 1-3.1.2		
Classification	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)	Clarify why the identified contact person in section 1.3 of the PD is different from the last verification and the representation deed in the VCS project webpage. The registration representation is requested accordingly.		
Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.	The identified contact person will remain identical to the one of the previous crediting period. Thus, the name appearing in Section 1.3 was changed to Hector Borjas and associated contact details were modified accordingly.		
DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	The contact person is now consistent to the rest of the project documentation found in the project webpage. This issue is CLOSED.		
Conclusion Tick the appropriate checkbox	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements		

Final Assessment

All the PP and related entities are consistent to the information in the VCS webpage.

- The project proponent and the description of the same are in line with the applicable VCS criteria.

Project start date:

Description

The project start date is 2004-04-02.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The date is correctly indicated in the revised PD. No further assessment is needed during the renewal of the crediting period.

Project crediting period:

Description

The project crediting period is 10-year, renewable
 First crediting period: 2004-04-02 to 2014-04-01
 Second crediting period: 2014-04-02 to 2024-04-01

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Finding:	CAR 1-3.1.4		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)	Dates provided in section 1.6 of the PD are not in line with previous crediting period. All the PD shall be changed accordingly.		
Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.	The appropriate amendments have been performed in order to start the 2 nd crediting period right after the end of the 1 st , meaning that the start and end dates of the 2nd crediting period were changed to April 2nd 2014 and April 1st 2024, respectively.		
DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	The dates were corrected and are in-line to the project timeline. The issue is CLOSED.		

<p>Conclusion Tick the appropriate checkbox</p>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements
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Final Assessment

The dates of the second crediting period are consistent to the end of the first crediting period.

- The project crediting period and the description of the same are in line with the applicable VCS criteria.

Project scale and estimated GHG emissions reductions or removals:

Description

The project scale is correctly indicated in the revised PD. The table of the template was correctly included; however information in section 1.7 of the PD may change due to corrections requested in below sections.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The PD complies with VCS PD template.

- The Project scale and estimated GHG emission reduction or removals and the description of the same are in line with the applicable VCS criteria.

Project activities for GHG emission reduction:

Description

During the site visit the validation team verified the following:

- The regulation reservoir is a natural reservoir existing before the implementation of the project activity. The hydroelectric project only takes water from the reservoir as a run-of-river. The validation team corroborated the measurements described in the PD by means of documentary description and maps of the reservoir and the dam constructed to deviate the water to the project. /RESERV/
- There are two Pelton turbines, with installed capacity of 2 MW each and two National Oilwell generators of 2 MW each. /PLATE/

- The power meters were corroborated to be the same as in the last Monitoring Report of the 1st Crediting Period /CC/

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Finding:	CAR 1-3.1.6		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)	In section 1.8 of the PD, the electricity meters specifications are not consistent to the last MR and the physically installed meters.		
Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.	Section 1.8 was updated to reflect the specifications of the current electricity meters. The indicated specifications corresponded to the ones of the meters that were replaced in 2012.		
DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	The indicated meters' specifications in the PD are now consistent to those in the last MR. The VT corroborated this data by means of on-site inspection. The nameplate was cross-checked to the PD and manufacturer's specifications, all of them are consistent. The above issue is closed, however please refer to the following clarification: In section 1.8 is stated that a regulation reservoir with an area of 363,845 m ² is part of the technical components of the project. In section 2.2 it is stated that the project activity is implemented in an existing reservoir with no change in the volume of reservoir. From the above, please confirm if the project is under case (a), (b) or (c) of applicability in section 2.2. Relevant justification is required.		
Corrective Action #2 This section shall be filled by the PP. It shall address the corrective action taken in details.	The project is under case (a), since the project activity was implemented in an existing reservoir with no change in the volume of reservoir. This clarification has been included in section 1.8 for consistency.		

<p>DOE Assessment #2 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<p>The PD is now consistent and clear. As per on-site visit observations, the existing reservoir is a natural water body in place before the project implementation. The corresponding area is included in the calculation of project emissions.</p> <p>Furthermore, please address the following comments:</p> <ol style="list-style-type: none"> Chapter 1.8 description of the project activity: Under C) the turbine capacity is given with 2,000 and 2,500 kW each. This is not in line with the rest of the documentation where twice 2,000 kW is the installed capacity. Chapter 1.8 description of the project activity: The power output of the 2 generators has not been included here. 										
<p>Corrective Action #3 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>Section 1.8 of the PD has been corrected to state that both turbines have the same capacity, 2,000 kW each. Additionally, information about the installed capacity of the generators has been included in section 1.8 (being 2.0 MW each).</p>										
<p>DOE Assessment #3 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<ol style="list-style-type: none"> Turbines capacity is correct. Generators capacity is correct. <p>Both are indicated in the PD and are consistent to the physically installed equipment. The issue is CLOSED.</p>										
<p>Conclusion Tick the appropriate checkbox</p>	<table border="0"> <tr> <td><input type="checkbox"/></td> <td>To be checked during the next periodic verification</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Appropriate action was taken</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Project documentation was corrected correspondingly</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Additional action should be taken</td> </tr> <tr> <td><input type="checkbox"/></td> <td>The project complies with the requirements</td> </tr> </table>	<input type="checkbox"/>	To be checked during the next periodic verification	<input type="checkbox"/>	Appropriate action was taken	<input checked="" type="checkbox"/>	Project documentation was corrected correspondingly	<input type="checkbox"/>	Additional action should be taken	<input type="checkbox"/>	The project complies with the requirements
<input type="checkbox"/>	To be checked during the next periodic verification										
<input type="checkbox"/>	Appropriate action was taken										
<input checked="" type="checkbox"/>	Project documentation was corrected correspondingly										
<input type="checkbox"/>	Additional action should be taken										
<input type="checkbox"/>	The project complies with the requirements										

Final Assessment

All the technical components are consistently described in the PD; this was corroborated by means of on-site observation and relevant documentation /RESERV/, /PLATE/ and /CC/.

The project activity is in line with the applicable VCS criteria.

Project location:

Description

The details of the project location are given in table 3.1-1d:

Table 3.1-1d: Project Location

Item	Location
Host Country	Honduras
Region:	Department of Olancho

Item	Location
Project location address:	Over Babilonia river
Latitude:	15° 2' 53" N
Longitude:	85° 55' 57" W

A reassessment of project location or conditions prior to project initiation is not required when renewing the crediting period.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The PD complies with VCS PD template.

- The project location could be confirmed.

Project compliance with applicable laws, statutes and other regulatory frameworks:

Description

Applicable laws to the project activity are included and mentioned in the PPA. The validation team reviewed the PPA and compare to the actual and valid licenses and permissions granted to the project activity. /PPA/LIC/

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

According to the interviews done at site, the only laws and regulations that will have impact in the project activity during its lifetime are those indicated in the PPA published in the official journal of Honduras (La Gaceta).

- The project is in compliance with applicable laws, statutes and other regulatory frameworks.

Ownership and other programs:

Right of use

Description

The validation team reviewed the PPA and compare to the actual and valid licenses and permissions granted to the project activity. /PPA/LIC/

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

All related documents were provided, the VT could confirm its consistency and validity.

- The proof of title could be confirmed, and is in line with the applicable VCS criteria.

Emissions trading programs and other binding limits:

Description

The project is not participating in other emission trading programs. The same was corroborated by searching in the different carbon standards and emission trading programs project registries.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The VT could corroborate PD is consistent.

- The project is in line with the VCS requirements w.r.t. this issue.

Other forms of environmental credit sought or received and eligible to be sought or received:

Description

The project is not participating in environmental credits other than VCS. The same was corroborated by searching in the different carbon standards and emission trading programs project registries.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The VT could corroborate PD is consistent.

- The project is in line with the VCS requirements w.r.t. this issue.

Participation under other GHG programs:

Description

The project is not participating in other GHG programs. The same was corroborated by searching in the different carbon standards and emission trading programs project registries.

Related findings

No CARs, CLs or FARs have been identified in this context

The following finding(s) have been addressed:

Final Assessment

The VT could corroborate PD is consistent.

The project is in line with the VCS requirements w.r.t. this issue.

Rejection by other GHG programs:

Description

The project was not rejected by any other GHG program. The same was corroborated by searching in the different carbon standards and emission trading programs project rejections.

Related findings

No CARs, CLs or FARs have been identified in this context

The following finding(s) have been addressed:

Final Assessment

The VT could corroborate PD is consistent.

The project is in line with the VCS requirements w.r.t. this issue.

Additional information relevant to the project, including:

Eligibility criteria for grouped projects:

Not applicable to the project activity since this is not a grouped project

Leakage management for AFOLU projects:

Not applicable to the project activity

Commercially sensitive information:

Not applicable to the project activity

CONCLUSION: The project description in the PD is accurate, complete and provides an understanding of the nature of the project.

3.2 Application of Methodology

3.2.1 Title and Reference

Description

The project activity was registered under the following methodology (table 3.2.1-a)

Table 3.2.1-a: Applied methodologies

At registration stage		At RCP stage	
Name of methodology	Version	Name of methodology	Version
Grid connected renewable electricity generation	AMS-I.D ver. 13.0	Grid connected renewable electricity generation	AMS-I.D ver. 18.0
Consolidated baseline methodology for grid-connected electricity generation from renewable sources ¹	ACM0002 ver. 6	-	-

For the renewal of the crediting period, the PP updated the applied methodology from version 13.0 to 18.0. The methodology ACM0002 is no longer in use since the new version of the methodology refers to the “Tool to calculate the emission factor for an electricity system”. Thus, the following methodological tool is being applied:

Table 3.2.1-b: Applied methodological tools

At registration stage		At RCP stage	
Name of tool	Version	Name of tool	Version
-	-	Tool to calculate the emission factor for an electricity system	4.0

By means of checking the UNFCCC website it is confirmed that the selection of the applied methodology and methodological tool has been done correctly in line with the applicable requirements for the RCP.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The VT could confirm information in the PD is consistent.

- The title and reference of the methodology are mentioned correctly and in line

¹ In the specific case of the project activity this methodology was used for the calculation of the combined margin baseline emission factor at the moment of registration.

with the applicable VCS criteria.

3.2.2 Applicability

Description

All applicability conditions of the updated methodology are still met as detailed in table 3.2.2-a of this report. Thus the methodology is deemed fully applicable for the new crediting period and no request for deviation with regards to the applicability of the methodology is required. All applicability conditions are completely and correctly included in the revised PD.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The applicability criteria and the assessment thereof are summarized in table 3-2 below.

Table 3.2.2-a: Assessment of applicability criteria

Criteria	Assessment	Fulfilled?
<p>This methodology is applicable to project activities that:</p> <ul style="list-style-type: none"> (a) Install a Greenfield plant; (b) Involve a capacity addition in (an) existing plant(s); (c) Involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s). 	<p>The project activity consists of a Greenfield hydroelectric plant, option (a), which entry into operation on April 2004.</p>	<input checked="" type="checkbox"/>
<p>Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <ul style="list-style-type: none"> (a) The project activity is 	<p>The project activity consists of a run-of-river hydroelectric plant; before the project implementation a reservoir (cuenca) existed in the site, however this reservoir serves other hydroelectric plants and the community needs. In the specific case of the project</p>	<input checked="" type="checkbox"/>

<p>implemented in an existing reservoir with no change in the volume of reservoir;</p> <p>(b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m²;</p> <p>(c) 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/m².</p>	<p>activity, only the daily needed water is taken from the reservoir. The reservoir is not managed by the project owner.</p> <p>The VT corroborated that the project is under condition (a)</p>	
<p>If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.</p>	<p>This project activity includes only the renewable generation component.</p>	<input checked="" type="checkbox"/>
<p>Combined heat and power (co-generation) systems are not eligible under this category</p>	<p>The project activity is not a co-generation system.</p>	<input checked="" type="checkbox"/>
<p>In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project</p>	<p>This is a Greenfield project, thus any capacity addition is involved.</p>	<input checked="" type="checkbox"/>

<p>should be lower than 15 MW and should be physically distinct¹ from the existing units.</p>		
<p>In the case of retrofit, rehabilitation or replacement, to qualify as a small-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.</p>	<p>This condition is not applicable to the project activity.</p>	<p style="text-align: center;">☒</p>
<p>In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as “AMS-I.C.: Thermal energy production with or without electricity” shall be explored.</p>	<p>This condition is not applicable to the project activity.</p>	<p style="text-align: center;">☒</p>
<p>In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.</p>	<p>This condition is not applicable to the project activity.</p>	<p style="text-align: center;">☒</p>

☒ The project activity is in line with the applicability criteria of the applied baseline methodology.

Likewise, the applicability of the used tool to calculate the emission factor for an electricity system was assessed and the VT concluded it is appropriate to the project activity, since according to the tool:

“This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity

supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects)."

CONCLUSION: The used methodologies and tool are applicable to the project activity as assessed before.

3.2.3 Project Boundary

Description

The project boundary is given by the applied methodology, AMS-I.D, version 18.0:

"The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to."

Regarding the GHG sources, as per the used methodology:

"Baseline emissions include only CO₂ emissions from electricity generation in power plants that are displaced due to the project activity."

"For most renewable energy project activities, P_{Ey} = 0."

The above is correctly justified and included in the revised PD, specific for the project activity.

Related findings

No CARs, CLs or FARs have been identified in this context

The following finding(s) have been addressed:

Final Assessment

The VT could confirm information in the PD is consistent.

The project boundary and selected sources are applied as per the methodology and the applicable VCS criteria.

3.2.4 Baseline Scenario

Description

The baseline scenario for Greenfield power plants is given by the applied methodology AMS-I.D, version 18.0:

"The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid."

This is correctly included in the revised PD.

According to VCS Standard, v3.5, paragraph 3.8.5-2) the validity of the original baseline scenario shall be demonstrated when renewing the project crediting period, by means of impacts of new relevant national and/or sectoral policies and actual circumstances.

This assessment is not included in the revised PD, thus please refer to the following finding.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Finding:	CAR 1- 3.2.4		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<p>Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)</p>	<p>For section 2.4 of the PD:</p> <ol style="list-style-type: none"> Baseline scenario was not assessed according to par. 3.8.5, 2) of the VCS Standard v. 3.5 and the “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” Information provided in this section is not the most updated as requested by the mentioned tool. 		
<p>Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>The VCS PD is revised (section 2.4) to include the assessment of the validity of the original baseline in line with UNFCCC, including the assessment of original baseline as per the “Tool to assess the validity of the original/ current baseline and to update the baseline at the renewal of a crediting period, Version 3.0.1”, which has been concluded to be still valid and applicable for the project.</p>		
<p>DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<ol style="list-style-type: none"> The complete assessment is in place and is consistent to the mentioned tool and VCS Standard. The information provided related to the new relevant circumstances is not updated to the most recent sources of data, the information provided in all the section is exactly the same as in the 1st crediting period registered PD. The tool requests the use of updated data and national circumstances, thus to use the same information may not be acceptable. <p>Furthermore, it is stated that: „No recent laws in the country affect the validity of baseline, which is supply of electricity from grid connected power plants.” However in section 1.11 two new laws are mentioned. Assessment on these new laws is missing.</p>		
<p>Corrective Action #2 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>References and information regarding national circumstances in sections 2.4 and 2.5 of the PD have been updated, including information related to the regulatory framework.</p>		

<p>DOE Assessment #2 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<p>Information regarding the national circumstances is now updated to the last information available (June 2015). As can be noticed, the energy sources weight is similar to the one existing at the commencement of the 1st crediting period.</p> <p>On the other hand, a reference to the new laws/decrees is included in the assessment. According to the interviews done at site, the only laws and regulations that will have impact in the project activity during its lifetime are those indicated in the PPA published in the official journal of Honduras (La Gaceta).</p> <p>Regarding section 2.5, the information was updated to demonstrate that the trend of 2007 continues until 2015.</p> <p>Furthermore, please address the following comment:</p> <ul style="list-style-type: none"> - Chapter 2.4/2.a) it has not been demonstrated how the additional capacity by renewable sources (41.3%) since first crediting period evaluation could have been realized (are they state investments or private or have they also been registered for carbon credits, or other).
<p>Corrective Action #3 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>Additional information has been added to the referred section in order to clarify that most of the renewable energy comes from state owned power plants, who controls more than 83% of hydro power facilities in the country, which is basically the same scenario as the one of the start of the first crediting period.</p>
<p>DOE Assessment #3 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<p>The baseline scenario is defined by the used methodology. The PP made an assessment on the current operation of grid-connected power plants and addition of new generation sources; from which it can be concluded that in the actual baseline scenario it is still predominant the installed capacity based on fossil fuel sources. The issue is CLOSED.</p>
<p>Conclusion Tick the appropriate checkbox</p>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input type="checkbox"/> The project complies with the requirements</p>

Finding:	CL 2- 3.2.4		
Classification	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)	The evidence on the technical lifetime of the equipment is requested.		

<p>Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>The technical lifetime of the project, is established on the basis of - Tool to determine the remaining lifetime of equipment, version 01. As per option (c) the default values are used to determine the lifetime of project equipment. Expected operational hours per year = 7,069 (80.70% plant load factor – in line with assumption for estimation of energy generation) Default lifetime of Equipment = 150,000 hours i.e. 21 years approximately. The project started operation in Dec 2004, and hence should be operational till Dec 2025 as per default values, and this goes beyond the second crediting period.</p>
<p>DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<p>The technical lifetime estimation is clear, however the PLF (based on average generation from 2004 to 2014) is not traceable. Please provide the calculation.</p>
<p>Corrective Action #2 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>The PLF has been recalculated based on the yearly net energy exported to the grid during the 1st crediting period (28,276 MWh/year), resulting in 80.70%. The calculation is provided to the DOE in the “PLF” sheet included in the Excel file that contains the net emission factor calculation.</p>
<p>DOE Assessment #2 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<p>The technical lifetime estimation is now clear and traceable. Information can be corroborated in each Monitoring Period. This issue is CLOSED.</p>
<p>Conclusion Tick the appropriate checkbox</p>	<p><input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements</p>

Final Assessment

After corresponding changes and taken actions, the PD correctly describes the updated baseline scenario according to the VCS Standard v. 3.5 and the “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”. Further elaboration can be found in APPENDIX 2: ASSESSMENT OF BASELINE IDENTIFICATION.

- The baseline identification is in line with the methodology and the applicable VCS criteria.

3.2.5 **Additionality**

Description

According to VCS Standard, v3.5, paragraph 3.8.5-1), a full reassessment of additionality is not required when renewing the project crediting period.

The revised PD does not reflect this, thus refer to the following finding.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Finding:	CAR 1-3.2.5		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)	Section 2.5 in the PD: 1. Additionality was not assessed as per paragraphs 3.8.5, 1) and 4.6.3) of VCS Standard v.3.5. 2. Information on additionality as per actual registered PD is missing. Correction is requested.		
Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.	1. The wording of the first sentence was changed to: For projects renewing the crediting period, no re-assessment of additionality is required according to paragraph 3.8.5., 1) of VCS standard v.3.5. 2. The information on additionality as per actual registered PD was included in Section 2.5		
DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	1. The paragraph included is correct and consistent to the VCS Standard v.3.5 requirement in par. 3.8.5, 1). 2. Information on additionality placed in the previous registered version of the PD is included in the most recent version of the PD. No further assessment is needed. This issue is CLOSED.		
Conclusion Tick the appropriate checkbox	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements		

Final Assessment

The VT could confirm information in the PD is consistent.

- The project is additional as per the requirements of the VCS.

3.2.6 **Quantification of GHG Emission Reductions and Removals**

Quantification of baseline emissions:

Description

The updated version of the methodology is used in the new calculation of BE. According to the VCS Standard, v3.5, paragraph 3.8.5-2) where it is determined that the original baseline scenario is still valid, the project case, the GHG emissions associated with the original baseline scenario shall be assessed using the “Tool to assess the validity of the original/current baseline and to update baseline at the renewal of a crediting period”. The revised PD does not completely reflects this guidance, thus refer to the following findings.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Finding:	CAR 1-3.2.6		
Classification	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)	For the calculation of EF_{grid} : 1. The steps of the “Tool to calculate the emission factor for an electricity system” have not been followed and clearly indicated in the PD. 2. All the chosen options were not clearly indicated and justified, for instance ex-ante or ex-post determination. 3. Calculations have not been made with the most recently available information as per “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”.		
Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.	1) The steps of the for the calculation of the emission factor have been revised and rightly followed as well as clearly indicated in the PD as per the “Tool to calculate the emission factor for an electricity system”. 2) All the chosen options have now been clearly indicated and justified. To elaborate further, the Operating Margin is fixed ex-ante as per Step 3: Select a method to determine the operating margin (OM), of para 36, section 6.3 from methodological tool, “To calculate the emission factor for an electricity system“. Version 04.0. 3) Numbers and data have been thoroughly revised. The revised calculations in the PDD have been drawn from the most recently available information as per “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period“.		
DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	1) Mentioned steps are not following the same order as in the tool. 2) It is not mentioned which method to calculate Operating Margin was used, also if it is calculated ex-ante or ex-post. 3) Sources of data are missing in the PD and in the provided excel sheet.		

<p>Corrective Action #2 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<ol style="list-style-type: none"> 1. The steps for EF calculator in the PD are revised to follow the order as per the tool. 2. The simple OM approach is used to estimate the Operating Margin, and the same is mentioned in the revised version. 3. The data sources are included in the excel sheet and revised PD. The following are the key data sources used for the data used to estimate the emission factor: <ol style="list-style-type: none"> a. Data provided by the national electricity company ENEE for 2014 & previous years and best practice assumptions. b. Some of the projects published generation data at end of the year. c. Default values / best practice assumptions for conservative estimates.
<p>DOE Assessment #2 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<ol style="list-style-type: none"> 1) The steps of the tool specified in the PD are now consistent with the tool order. 2) All the choices are now clear in the PD. 3) The sources of data are now clear and publicly available. The VT can corroborate information on the different sources provided.
<p>Conclusion Tick the appropriate checkbox</p>	<p> <input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements </p>

<p>Finding:</p>	<p>CL 2-3.2.6</p>		
<p>Classification</p>	<p><input type="checkbox"/> CAR</p>	<p><input checked="" type="checkbox"/> CL</p>	<p><input type="checkbox"/> FAR</p>
<p>Description of finding Describe the finding in un-ambiguous style; address the context (e.g. section)</p>	<p>In section 4.2 of the PD the calculation and justification of the value applied for the parameter $EG_{P,J,y}$ for the second monitoring period, it is not clear. Further assessment is needed as per “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”.</p>		
<p>Corrective Action #1 This section shall be filled by the PP. It shall address the corrective action taken in details.</p>	<p>The annual net electricity supply to the grid was reassessed using the average plant factor measured over the first 10 years (80.70%) of crediting period. The annual net electricity supply is thus expected to be 28,276 MWh/year.</p>		

<p>DOE Assessment #1 The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</p>	<p>According to the “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”, where values are used and determined only once for the crediting period, they should be updated at the renewal; the same shall be done based on the latest approved version of the methodology used and in the context of circumstances that are applicable at the time of request for renewal.</p> <p>The applicable methodology, AMS-I.D, version 18.0, refers that for greenfield power plants, which is the case of the project activity, the value for $EG_{PJ,y}$ is the quantity of net electricity generation supplied by the plant to the grid in year y.</p> <p>Therefore, the estimation and considerations done by the PP for the updated value, based on a long-term historic data, are appropriate, real and in-line with the relevant guideline.</p> <p>This issue is CLOSED.</p>										
<p>Conclusion Tick the appropriate checkbox</p>	<table border="0"> <tr> <td><input type="checkbox"/></td> <td>To be checked during the next periodic verification</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Appropriate action was taken</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Project documentation was corrected correspondingly</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Additional action should be taken</td> </tr> <tr> <td><input type="checkbox"/></td> <td>The project complies with the requirements</td> </tr> </table>	<input type="checkbox"/>	To be checked during the next periodic verification	<input type="checkbox"/>	Appropriate action was taken	<input checked="" type="checkbox"/>	Project documentation was corrected correspondingly	<input type="checkbox"/>	Additional action should be taken	<input type="checkbox"/>	The project complies with the requirements
<input type="checkbox"/>	To be checked during the next periodic verification										
<input type="checkbox"/>	Appropriate action was taken										
<input checked="" type="checkbox"/>	Project documentation was corrected correspondingly										
<input type="checkbox"/>	Additional action should be taken										
<input type="checkbox"/>	The project complies with the requirements										

Final Assessment

The baseliner estimation is calculated based on the historic yearly generation from 2004 to 2014 and the calculation of emission factor of the grid according to the mentioned tool. For the above assessment this calculation is considered to be plausible and conservative.

- The quantification of baseline emissions is in line with the methodology and the applicable VCS criteria.

Quantification of project emissions:

Description

According to the applied methodology, for the most renewable energy project activities, $PE_y = 0$. Except for:

- “(a) Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption);
- “(b) Emissions from water reservoirs of hydro power plants.”

Any of the conditions mentioned is applicable to the run-of-river hydroelectric project. During the on-site inspection, the validation team corroborated that any fossil fuel consumption engine is operating.

The PD however shows the calculation of the power density of the pre-existing reservoir in order to prove that PE can be dismissed in any case.

The revised PD correctly reflects that $PE_y=0$

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The VT could confirm information in the PD is consistent.

- The quantification of project emissions is in line with the methodology and the applicable VCS criteria.

Quantification of leakage:

Description

The only renewable projects that consider leakage are biomass sourced from dedicated plantations, which is not the case of the project activity, thus leakage emissions are zero.

The revised PD correctly reflects that $LE_y=0$

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The VT could confirm information in the PD is consistent.

- The quantification of leakage emissions is in line with the methodology and the applicable VCS criteria.

Summary of net GHG emission reductions or removals:

Description

The format of the table is correct in the PD; however, information in the whole table will be changed according to the findings.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The VT could confirm information in the PD is consistent.

- Overall ER are correctly and accurately calculated and presented in the PD.

Uncertainties associated with the calculation of emissions:

Description

The calculation of ERs is done as per the applied methodology. All changes due to the upgraded methodology and the re-assessment of the baseline have been considered appropriately. The calculation in the Excel spreadsheet and the corresponding calculation tables in the PD have been checked and no mistakes have been identified. The estimation of emission reductions for the 2nd crediting period is deemed plausible and conservative.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The VT could confirm information in the PD is consistent.

- The consideration of uncertainties is in line with the applicable VCS criteria.

All the documentation used as the basis for assumptions and sources of data is showed in APPENDIX 1: REFERENCES.

All relevant assumptions and data are listed in the project description, including their references and sources, being ENEE the main source of date for the EF calculation.

All data and parameter values used in the project description are considered reasonable in the context of the project and the National Circumstances.

All estimates of the baseline emissions can be replicated using the data and parameter values provided in the project description.

CONCLUSION: Overall ER were calculated accordingly with the used methodology and tool.

3.2.7 Methodology Deviations

Not applicable

3.2.8 Monitoring Plan

Data and parameters available at validation:

Description

The only parameter that will be recalculated and fixed for the second crediting period is the emission factor from the Honduran electricity grid.

To calculate the same the “Tool to calculate the emission factor for an electricity system“ version 4.0 and the „Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period“, version 03.0.1 were applied.

Table 3.2.8-a: Parameter available at validation

Parameter	Name	Unit	Value
Emission factor for Honduran electricity system	EF _{grid,y}	tCO ₂ /MWh	0.2614

The calculation as well as the revised PD does not completely reflect this, thus refer to the findings in section 3.2.6

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

After corrections and actions taken, the EF estimation is correct and in-line with the corresponding tool.

- The applied values and assumptions are in-line with the used tool.

Data and parameters monitored:

Description

According to the applied methodology, AMS-I.D, version 18.0, the only parameter to be monitored is the electricity generated by the project activity.

Table 3.2.8-b: Parameters to be monitored

Parameter	Name	Unit	Value
Net electricity exported to the grid	EG _{PJ,y}	MWh/year	28,276

For the monitoring purpose, there are two meters (1 main and 1 backup meter) at the generation point for measuring electricity generated by the two generators (S/N: 36292247 & S/N: 36292248, respectively).

The meters will continuously measure and recorded monthly. Monthly generation reports will be issued. Invoices to the grid company will still be available for verification, which will be used for comparisons of the values stated in the confirmation letters by ENEE.

At the moment of the site visit, the validation team could confirm:

- Periodic Internal audits for VCS data monitoring, QA/QC (calibrations, generation records etc.) have been evidenced^{/Audit/}.
- The personnel involved have been found to be trained and demonstrated good skills in operation and maintenance of hydroelectric projects.
- The calibration frequency is defined by the meters manufacturer which is on 10 year frequency. The verification/calibration certificates of all the meters were checked. No discrepancies were identified between manufacturer standards and calibration frequency performed by the PP.

As per the registered PD the calibration of the meter shall be conducted as per national standards. As no national standard are available for calibration in Honduras, manufacturer standards are used instead. The validation team does not identify any significant consequences with this deviation as normally no national standards for calibration are available in Latin America countries. Normally manufacturer standards are used as common practice for calibration requirements. This deviation is considered as acceptable and correct by the validation team. The monitoring will continue to be as in the first crediting period. The revised PD correctly includes all the details on the monitored parameter.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

After corrections and actions taken, the EG_{PJ,y} estimation is correct and in-line with the corresponding tool.

- The project activity is in line with all applicability criteria of the applied monitoring methodology.

Applicability and eligibility of monitoring equipment and procedures:

Description

For the second crediting period, the project activity will continue with the same procedures and equipment to comply with the monitoring plan. At the moment of the on-site visit, the validation team could corroborate that all necessary monitoring instruments are installed. The measuring devices are well known to the personnel and calibrated. Also the monitoring procedures were checked. /O&M/

The revised PD correctly includes this information.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The VT could confirm information in the PD is consistent.

- The monitoring plan is in line with the VCS requirements.

Responsibility and authority for monitoring:

Description

- During the site visit it was identified the operational structure as stated in the monitoring plan of the revised PD^{PD/}.
- Moreover the competent staff is employed to ensure the data quality.
- An operational structure is established with responsibilities identified. Personnel are daily trained with the most experimented operators.

- Data collection, measurement, calibration, recording and archiving was found to be carried out as per the monitoring plan as described in the revised PD/^{PD}.
- The validation team is satisfied with the management and operational system.

The revised PD correctly reflects the above.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The VT could confirm information in the PD is consistent.

- The responsibilities and authorities for monitoring are defined in line with the requirements of the VCS.

3.3 Non-Permanence Risk Analysis

Not applicable, non-permanence risks were not identified.

3.4 Environmental Impact

Description

The environmental impacts need not to be further assessed during the renewal of the crediting period. However, the validation team confirmed that the Environmental Licence ^{/LIC/} and related permissions are still valid for the second crediting period.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

Relevant licenses and permissions are still valid until the end of the PPA.

- The project activity is in line with the environmental impact assessment criteria of the VCS.

3.5 Comments by Stakeholders

Description

When renewing the crediting period is not mandatory to make a new stakeholders’ consultation meeting or similar. However, the validation team visited a Community School in which social programs take place all along the year. On the day of the visit, the students from the school were receiving dental care as part of ENERGISA well being activities to the communities. The complete social report was delivered to the DOE ^{/SOC/}.

Related findings

- No CARs, CLs or FARs have been identified in this context
- The following finding(s) have been addressed:

Final Assessment

The PP is still carrying out social actions in the near communities as can be corroborated during the site visit.

- The stakeholder consultation process is in line with the VCS requirements.

4 VALIDATION CONCLUSION

South Pole Carbon Asset Management Ltd. has commissioned the TÜV NORD JI / CDM Certification Program to carry out the validation of the renewal of the crediting period of the Project “Babilonia Hydroelectric Project” in Honduras with regard to the requirements of VCS Version 3 Standard.

The project activity involves generation of electricity by using the renewable energy source (hydro) for the national grid system in Honduras. Thus, the project activity displaces electricity and green house gas (GHG) emissions currently produced by fossil fuel-burning Power plants. The generated electricity by the project activity is being exported to the National grid of Honduras through Empresa Nacional de Energia Electrica (ENEE) – the national Honduras electricity utility.

The project participant has successfully commissioned 4 MW of hydropower energy on 2004-04-02, since then project is operational with some planned/unplanned shutdowns. The phase wise commissioning dates of the project activity have been addressed in the energy contract/EC/. Project activity was operational during the first crediting period (2004-04-02 to 2014-04-01). Operation of the plant will remain the same for the second crediting period (2014-04-02 to 2024-04-01)

In the course of the validation 7 Corrective Action Requests (CARs), 3 Clarification Requests (CLs) were successfully closed. Any Forward Action Request (FAR) was raised during the validation.

The review of the project design documentation and additional documents related to baseline

and monitoring methodology and subsequent background investigation have provided the TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- A reasonable level of assurance has been applied.
- All data and information used for ex-ante calculation of emission reductions is of projected and/or hypothetical nature.
- The project is in line with all relevant host country legislation incl. its GHG assertions, where applicable.
- The project additionality is not required to be reassessed, however it is sufficiently justified in the VCS-PD.
- The monitoring plan is transparent and adequate.
- Deviations from the applied CDM methodology have sufficiently been addressed and justified.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 73,900 t CO₂e is most likely to be achieved within the 10 year renewable crediting period.
- The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation against the VCS Version 3 standard without any qualifications or limitations.

Querétaro, México 2016-03-28

Essen, 2015-11-09




Guadalupe Avendaño Reyes

Alexandra Nebel

TÜV NORD JI/CDM Certification
Program

TÜV NORD JI/CDM Certification
Program

Validation Team Leader

Final Approval

APPENDIX 1: REFERENCES

Table A1-1: Documents provided by the project participant

Reference	Document
/CC/	<ul style="list-style-type: none"> • GE Digital Energy Meters Certificate of Compliance, Customer order S2162312, Type kV2c. • Invoice from Electric Supply, Inc to Incomerh, order S02162312. • Inspection Act to measuring meters S/N: 36292247 and S/N: 36292248, issued by ENEE on 2012/01/20. • Qualification of Electricity Meters for Lengthened Initial Re-verification Period of 10 years – Bulletin E-28 Rev.8 – issued on 2013/01/01 by Measurement Canada (page 4).
/EEG/	<ul style="list-style-type: none"> • Power generation invoices issued by ENERGISA covering the MP from Aug/2013 to April 2014. • Raw data- PDF file from MeterMate Software (GE).
/LIC/	<ul style="list-style-type: none"> • Operation Contract, Decree 13-2000, "La Gaceta" Tegucigalpa Honduras, April 29th, 2000. • Contract for compliance of Mitigation Measures for EIA, SERNA, • Environmental License 07-2000, Babilonia project, May 19th, 2000. • Energy Contract - "Contrato No. 068/2000 Contrato de Suministro de Energia eléctrica..." La Gaceta. Diario Oficial de la República de Honduras. 04/Oct/2000.
/PD2/	<p>2nd crediting period PD:</p> <ul style="list-style-type: none"> • Draft VCS PD dated: 2015-04-10 • Final VCS PD dated: 2015-10-20

Reference	Document
/O&M/	<ul style="list-style-type: none"> • Corrective and preventive maintenance reports issued by INCOMERH 2013, 2014. • Operation daily log book, 2014, 2013. • CHB Procedures Manual – <i>Manual de Procedimientos CHB</i> – Operation, Inspection and Preventive Maintenance procedures • Instruction and Service Manual for Alternating Current Synchronous Generator Model: G855PNT-582 and G855PNT-582A – PO# 4497-033003 – S.O.#G03-1181 – issued by National Oilwell • Installation and Operation Manual – 2 X 2000 KW Hydroelectric Turbine Model #4030 S/N 033003 A & B – issued by Canyon Industries, Inc.
/PPA/	<ul style="list-style-type: none"> • Decree 126-2000,"La Gaceta", Tegucigalpa Honduras. PPA Energisa, project Babilonia.
/SOC/	Report of (Social) activities performed by the Foundation Energisa de Honduras, ENERGISA, 2014
/XLS/	ER calculation spreadsheet: „EF calculation tables SSC Babilonia 151020“
/EF/	<ul style="list-style-type: none"> • December 2014 bulletin. http://www.enee.hn/planificacion/2014/boletin%20diciembre2014.pdf • http://www.elheraldo.hn/economia/807391-364/enee-import%C3%B3-m%C3%A1s-energ%C3%ADa-por-incumplimiento-de-contrato • http://www.carboncr.com/proyectos/honduras/los-laureles • http://www.lufussa.com/planta_pavana3.htm • https://honduprensa.wordpress.com/2014/08/20/honduras-la-planta-termica-de-la-ceiba/ • http://www.enee.hn/index.php/centrales-hidroelectricas

Reference	Document
	<ul style="list-style-type: none"> http://www.enee.hn/planificacion/2015/Boletines/Boletin%20JUNIO_2015.pdf

Table A1-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" – Version 6, May 19th 2006.
/AMS-I.D./	AMS-I.D: "Grid connected renewable electricity generation" - Version 18.0.
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GHG Protocol/	GHG Protocol for Project Accounting 2005.
/IPCC/	<ol style="list-style-type: none"> 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/ISO 14064/	<p>Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals</p> <p>Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements</p> <p>Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions</p>
/ISO14065/	Greenhouse gases -- Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition

Reference	Document
/LAW/	Reform to the Law of promotion of electric energy generation by renewable resources, 2013-07-25, Honduras.
/PD1/	1 st crediting period PD “Babilonia Hydroelectric Project” Version 03 – January 21 th , 2008.
/VCS/	Verified Carbon Standard version 3.5
/VCS-PD-T/	VCS PD Template
/MR/	6 th monitoring report: <ul style="list-style-type: none"> Final Monitoring Report dated 2015-05-05, version 2.1
/CDM/	<ul style="list-style-type: none"> CDM Validation and Verification Standard (Version 09.) Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period Tool to determine the remaining lifetime of equipment, version 01. Tool to calculate the emission factor for an electricity system

Table 1A-3: Websites used

Reference	Link	Organisation
/cd4cdm/	www.cd4cdm.org	UNEP Riso Centre
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/web1/	http://204.15.217.174/user/babilonia.htm	Website consult (private) - Energy exported

Reference	Link	Organisation
/vcs/	www.v-c-s.org	VCSA
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table A1-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Aida Marlen Borjas	General Manager - Energisa
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Josue Carvajal	Supervisor Engineer - Incomerh
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Jorge Borgas	Finances - Energisa
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Egdardo Galeas	Operator - Incomerth
/IM03/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Sarah Boissinot	South Pole Carbon Asset Management Ltd./ Project Manager
/IM04/	E	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Miguel Chavarría	South Pole Carbon Asset Management Ltd./Consultant

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)

APPENDIX 2: ASSESSMENT OF BASELINE IDENTIFICATION

Table A-1: Assessment of Baseline Identification (EB 55 Annex 1 §§83 – 86)

<input type="checkbox"/>	Baseline is not identified
<input checked="" type="checkbox"/>	Assessment of baseline see below

Baseline Alternatives identified	Inline with the Methodology?	Eliminated	Reasons for elimination / non-elimination from list of alternatives	Evidence used	DOE Assessment	
					Appropriateness of elimination	Assessment of validation team (results and means of assessment)

<p><i>“The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources of the grid.”</i></p>	<p><input checked="" type="checkbox"/></p>	<p><input type="checkbox"/></p>	<p>The alternative is prescribed by the methodology.</p>	<p>AMS-I.D, ver. 18.0</p>	<p><input type="checkbox"/></p>	<p>The baseline scenario is defined by the used methodology. The PP made an assessment on the current operation of grid-connected power plants and addition of new generation sources, from which it is concluded that, by June 2015, 58.7% of the available installed capacity is fossil fuel based while the renewable energies represent 41.3% of the Honduran grid (i.e. hydro, wind and biomass). In the provided official source (http://www.enee.hn/planificacion/2015/Boletines/Boletin%20JUNIO_2015.pdf), it can also be observed that for the year 2014, the fossil fuel based generated energy was 57.4% and the renewables generation was 39.2% (the rest corresponds to imports to the grid). As can be noticed, the energy sources weight is similar to the one existing at the commencement of the 1st crediting period; from which it can be concluded that in the actual baseline scenario it is still predominant the installed capacity and generation based on fossil fuel sources. The PD correctly describes the updated baseline scenario according to the VCS Standard v. 3.5 and the “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”. On the other hand, a reference to the new laws/decrees is included in the assessment. According to the interviews done at site, the only laws and regulations that will have impact in the project activity during its lifetime are those indicated in the PPA published in the official journal of Honduras (La Gaceta).</p>
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