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# VALIDATION REPORT

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## EL CANADÁ HYDROELECTRIC PROJECT IN GUATEMALA

REPORT No. 2005-1508

REVISION No. 02

DET NORSKE VERITAS



## VALIDATION REPORT

Date of first issue: 2005-11-29	Project No.: 28924666
Approved by: Michael Lehmann Technical Director	Organisational unit: DNV Certification, International Climate Change Services
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### Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed the validation of the “El Canadá Hydroelectric Project” in Guatemala 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.

The validation consisted of the following three phases: i) a desk review of the project design documents, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In summary, it is DNV’s opinion that the “El Canadá Hydroelectric Project”, as described in the PDD of 30 August 2006, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002 (Version 6). DNV thus requests the registration of the “El Canadá Hydroelectric Project” as a CDM project.

Report No.: 2005-1508		Subject Group: Environment					
Report title: El Canadá Hydroelectric Project in Guatemala							
Work carried out by: Anjana Vasudev, Gustavo Godinez, Einar Telnes							
Work verified by: Haefeli Susanne							
Date of this revision: 2006-09-07	Rev. No.: 02	Number of pages: 10					
<b>Indexing terms</b> <table border="1"> <tr> <td rowspan="3">Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism</td> <td>Service Area Verification</td> </tr> <tr> <td>Market Sector</td> </tr> <tr> <td>Energy Industry</td> </tr> </table>				Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism	Service Area Verification	Market Sector	Energy Industry
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	Market Sector						
	Energy Industry						
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***Abbreviations***

AMM	Administrador del Mercado Mayorista (Coordinator of Guatemalan Grid)
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification request
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
CONAMA	National Environmental Commission
DNV	Det Norske Veritas
DNA	Designated National Authority
GdO	Generadora de Occidente, Ltda.
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OGIC	Office for Activities Implemented Jointly
OM	Operating Margin
PCF	Prototype Carbon Fund
PDD	Project Design Document
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention on Climate Change



## 1 INTRODUCTION

The World Bank's Carbon Finance Unit has commissioned Det Norske Veritas Certification Ltd. to perform a validation of the "El Canadá Hydroelectric Project" in Guatemala. This report summarises the findings of the validation of the project, performed based on UNFCCC criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consisted of the following personnel:

Einar Telnes	DNV Certification Norway	Project Manager, Energy sector expert
Gustavo Godinez	DNV Certification Mexico	GHG Auditor
Anjana Vasudev	DNV Certification India	GHG Auditor
Susanne Haefeli	DNV Certification Norway	Technical Reviewer

### 1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design, baseline and monitoring plan. The project's compliance with the relevant UNFCCC and the host country 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 defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against Kyoto Protocol criteria for the CDM, the CDM rules and modalities as agreed in the Marrakech Accords and relevant decisions by the CDM Executive Board. The validation team has employed, based on the recommendations in the Validation and Verification Manual /6/, a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CER's.

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

### 1.3 Description of Proposed CDM Project

The "El Canadá Hydroelectric Project" consists of a 43 MW run-of-the river hydroelectric plant located on the Samala River on the West coast of Guatemala, near the town of Santa Maria de Jesus. Construction of the project began in February 2002, the annual electricity generation is projected to an average of 175 GWh. The project intends to sell its electricity to Guatemala's largest commercial distributor, COMEGSA, under a 10-year Power Purchase Agreement (PPA).



## 2 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design documents;
- II follow-up interviews with project stakeholders;
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /6/. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol for the “El Canadá Hydroelectric Project” is enclosed in Appendix A to this report.

Findings established during the validation can be seen as either a non-fulfilment of validation criteria or where a risk to the fulfilment of project objectives is identified. *Corrective action requests* (CAR) are issued, where:

- i) mistakes have been made with a direct influence on project results;
- ii) CDM or host Party requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The term *Clarification* may be used where additional information is needed to fully clarify an issue.



<b>Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities</b>			
<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>	<b>Cross reference</b>
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (<b>OK</b>), a <b>Corrective Action Request (CAR)</b> of risk or non-compliance with stated requirements or a request for <b>Clarification (CL)</b> where further clarifications are needed.</i>	<i>Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.</i>

  

<b>Validation Protocol Table 2: Requirement Checklist</b>				
<b>Checklist Question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Comment</b>	<b>Draft and/or Final Conclusion</b>
<i>The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (<b>OK</b>), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question (See below). A request for <b>Clarification (CL)</b> is used when the validation team has identified a need for further clarification.</i>

  

<b>Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification</b>			
<b>Draft report corrective action requests and requests for clarifications</b>	<b>Ref. to Table 2</b>	<b>Summary of project participants' response</b>	<b>Final conclusion</b>
<i>If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

**Figure 1 Validation protocol tables**



## 2.1 Review of Documents

The PDD /1/ (draft version of April 2003 (applying NM0006) and version 2 of 7 November 2005 and version 3 of 30 August 2006 (both applying ACM0002)) submitted by the World Bank Carbon Finance Unit and additional background documents related to the project design and baseline were assessed during the validation. The PDDs of October 2005 and August 2006 apply the baseline and monitoring methodology ACM0002. The draft PDD of April applied the baseline and monitoring methodology that was originally proposed for the project (NM006).

## 2.2 Follow-up Interviews

In the period of 12-13 May 2003 DNV performed interviews with project stakeholders to confirm selected information and to resolve issues identified during the document review. Representatives of the Ministry of Environment, Ministry of Energy, Administrador del Mercado Mayorista (AMM), OGIC and GdO as well as the World Bank's consultant were interviewed. Again in December 2005, representatives of AMM and the World Bank Carbon Finance Unit were interviewed. The main topics of the interviews are summarised in Table 1.

**Table 1 Interview topics**

Interviewed organisation	Interview topics
Ministry of environment/ Ministry of energy	<ul style="list-style-type: none"> <li>➤ Host-country specific CDM requirements</li> <li>➤ Sustainable development policies</li> </ul>
OGIC	<ul style="list-style-type: none"> <li>➤ Voluntary participation of Parties</li> <li>➤ Comments by local stakeholders</li> <li>➤ Account of any comments received</li> </ul>
AMM	<ul style="list-style-type: none"> <li>➤ Market development/ capacity expansion /least cost expansion</li> <li>➤ Baseline assumptions</li> </ul>
GdO	<ul style="list-style-type: none"> <li>➤ Baseline establishment</li> <li>➤ Additionality</li> </ul>
World Bank and IBRD	<ul style="list-style-type: none"> <li>➤ Technical issues, technical assumptions</li> <li>➤ Calculation of BM and OM</li> </ul>

## 2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified for DNV's positive conclusion on the project's design and eligibility as CDM project. The initial validation of the project identified some Corrective Action Requests (CARs) and request for Clarification (CLs). The project participant's response to DNV's initial findings, which also included the submission of the final PDD of August 2006, addressed the raised requests to DNV's satisfaction.

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





### 3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation of 30 August 2006.

#### 3.1 Participation Requirements

The project participants are Generadora de Occidente and the International Bank for Reconstruction and Development as Trustee of the Prototype Carbon Fund (PCF). The involved Parties are Guatemala, the Netherlands and Canada. Both Canada and the Netherlands wish to be considered as project participants. All participating Parties meet the requirements to participate in the CDM.

A letter of approval (LoA) is provided by the Guatemalan DNA, in which the DNA confirms the project's contribution to sustainable development. Letters of approval from Canada and the Netherlands are also provided for the project.

Affirmations have been provided by Canada and the Netherlands that any funding used to participate in the PCF does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.

#### 3.2 Project Design

The project is located on the Samalá River, 12 kilometres South of the Quetzaltenango Municipality and 198 kilometers West from Guatemala City. The project is located immediately downstream from the existing Santa María hydro powerhouse owned by the national utility, Instituto Nacional de Electrificación (INDE) and will take advantage of an existing infrastructure.

All equipment to be utilized in the project is proven technology that has been successfully applied in similar projects. Nameplate plant capacity is 43 MW at 365 m net head with an associated maximum hydraulic capacity of 13.4 m<sup>3</sup>/sec. The project collects its power flow from the tailrace of the existing Santa Maria power plant, and also spillages from the Santa Maria dam and local inflow from the area between the Santa Maria dam and the project diversion dam. All power flows will flow through a desander, located immediately downstream of the diversion dam, and are subsequently diverted through a tunnel, three meters in diameter and approximately 1200 m long, to a regulating pond. The regulating pond is designed to collect water inflows for daily peaking operation, totalling 5 hours.

The storage reservoir for the power plant is 184,000 m<sup>3</sup>, with an 8 m fluctuation pond. This gives a surface of 23 000 m<sup>2</sup>, which again gives a power density of the project much higher than 10 W/m<sup>2</sup>. Hence, project emissions from submerged areas are not considered.

The El Canada powerhouse contains two 21.5 MW units, using Pelton turbines. The technology is in line with good practices for hydropower configurations. Sufficient initial training to operate the hydropower plant has been provided to personnel.

Given the project surroundings, the project is not likely to create any severe additional impacts for the river flow or utilization of the water streams for other purposes than power generation.



The dam construction will not impact the local vegetation significantly, as the local climate with its high precipitation and huge river flow variability, as well as steep volcanic river sides, does not create an environment for large and sustained vegetation growth.

The project contributes to sustainable development in Guatemala in various ways. Firstly, it increases the power supply to the local grid, improving stability and helping to reduce losses in the distribution system. Secondly, it will reduce greenhouse gas emissions as well as emissions of local pollutants from power generation by using a cleaner energy source than what typically would have been used. Thirdly, it is one of the first renewable energy projects to be developed after the approval of Guatemala's new General Electricity Law. The project development will provide important knowledge and experience for other project developers that are striving to participate in the competitive national and regional market. As a fourth point, the project will through agreements with the neighbouring municipalities conserve sub-surface water, re-forest certain land on which the project is being constructed and make annual payments to improve the conditions of the local communities.

All licences and permits are in place and have been verified.

The project's crediting period started on 19 November 2003 and a renewable crediting period of 7 years is selected, with the option of two renewals. Project lifetime is estimated to be at least 50 years.

### 3.3 Baseline Determination

The project correctly applies ACM0002, version 6. The baseline scenario is that electricity delivered to the grid by the project 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). The combined margin consists of the operating margin (OM), calculated based on the simple approach and the build margin (BM), calculated based on the last added 20% of plant generation in the grid. The combined margin emission factor is determined *ex-ante* to be 0.71 tCO<sub>2</sub>/MWh /5/.

### 3.4 Additionality

As required by ACM0002, the *Tool for the demonstration and assessment of additionality* has been applied:

Step 0: The starting date of the project is 19 November 2003. Evidence of this starting date has been provided during the follow-up interviews in May 2003. Evidence that the CDM has been seriously considered during the decision to precede with the project activity, i.e. as early as before February 2002, can be found in correspondence between DNV and PCF in the initial phases of the validation. In addition correspondence has been provided that shows the discussion about CDM being considered for the establishment of the plant at the planning stage of the project.

Step 1: The only other plausible scenario identified is the fossil-fuel based generation of the electricity provided by the project. This is deemed justified.

Step 2: An investment comparison analysis based on generation costs in US\$ / MWh is chosen and correctly applied. A discount rate of 12% and a useful life of 30 years is chosen, which is deemed appropriate. It is clearly demonstrated that the hydroelectric generation is not the least-cost option.



The investment costs for the project, i.e. close to 60 million US \$, has been substantiated with audited balance sheet and cash flow statements.

A sensitivity analysis is provided. Even when increasing the investment costs for thermal generation, decreasing the interest and useful life and increasing the plant factor from 46 to 50% for the project, the coal-fired power plant remains cheaper. The figures are not expected to change even if the comparison is made with a coal-fired power plant with comparable size to the project.

Step 3: A barrier analysis raises the uncertainty due to electricity generation depending on weather conditions as well as the inversely linear relationship between hydropower electricity generation and electricity spot prices. A further explanation is provided in order to present uncertainties represented by the 10 year PPA the project has with COMEGSA, Guatemala's largest commercial electricity distributor.

Step 4: A common practice analysis shows that about 35% of all power generated in Guatemala in 200-2003 are from hydro or geothermal sources. As such, hydropower can be considered common practice. However, information is provided that shows that the hydro capacity additions over the past decade is only 7.3 % of the added capacity in Guatemala.. Hence, it is deemed valid that hydropower capacity additions have not been common practise in recent years and the project can be considered not representing common practice.

Step 5: The financial contribution of the CERs help alleviate the financial and common practice barriers and compensates for the uncertainty of electricity generation due to changing weather conditions.

### 3.5 Monitoring Plan

The monitoring methodology is in line with ACM0002, version 6. Electricity generation will be monitored.

The project management is clearly described and the provisions for monitoring, training of personnel, internal QA/QC and data handling are sufficiently established so that the project generates verifiable emission reductions. Electricity generation will be cross-checked by sales invoices and all data will be kept until 2 years after the end of the last crediting period.

### 3.6 Calculation of GHG Emissions

The calculation of forecast emission reductions is straight forward by applying the CO<sub>2</sub> coefficient to the forecast electricity generation. The OM and BM are calculated *ex-ante* and are fixed for the first crediting period. Based on data on the Guatemalan grid's total generation from 2002 to 2004, low-cost must-run facilities make up less than 50% of the generation during the last three years. Hence, a simple OM was determined to be 0.83 tCO<sub>2</sub>/MWh based on data for the Guatemalan grid for the years 2002-2004 provided by AMM. The 20% of the most recent capacity additions by 2004 was the group of power plants used to determine the BM of 0.59 tCO<sub>2</sub>/MWh. The calculation of the OM and BM are made in accordance with version 6 of ACM0002 methodology and results a combined margin emission factor of 0.71 tCO<sub>2</sub>/MWh /4/. Imported electricity has been taken into account applying a 0 tCO<sub>2</sub>/MWh coefficient. Local heat values and carbon emission factors have been used where available, else are IPCC factors applied.

Leakage does not need to be considered by this type of projects.



The forecast average annual emission reductions during the first crediting period of 118 527 t CO<sub>2</sub> is deemed likely to be achieved.

### 3.7 Environmental Impacts

The International Finance Corporation (IFC) is the lead financier of the \project and has conducted an analysis of the environmental impacts of the project. The environmental impacts of run-of-hydro projects, such as on fish population or surrounding households, are considered insignificant. The project EIA was approved by CONAMA in December 2000.

A summary of the findings from this IFC EIA has been provided. This analysis also demonstrates that the CDM and CO<sub>2</sub> reductions from the project were considered at an early stage of the project.

### 3.8 Comments by Local Stakeholders

IFC has carried out an environmental and social review of the project, which was published on the IFC web site and in the local press. No concerns about the project were voiced by the local stakeholders during the process described above. This was confirmed during the site interviews.

## 4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD (version 2 of 7 November 2005) was made publicly available on DNV's climate change website ([www.dnv.com/certification/climatechange](http://www.dnv.com/certification/climatechange)) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 9 November to 8 December 2005. No comments were received

Also the draft PDD of April 2003 was made publicly available on DNV's climate change and stakeholders were through Climate-L invited to provide comments during a 30 days period from 11 April to 11 May 2003. Two comments were received during this comment period. The comments received (in unedited form) are given in Appendix B.

#### *How DNV has considered the comment received in its validation:*

The two comments both claim that the project is a non-additional project. The comments were made before the additionality tool was accepted by the CDM Executive Board. Most of the concerns are addressed in the additionality assessment of the revised PDD of October 2005 and August 2006. However, some concerns remained valid and were also been raised by DNV during the validation (Reference is made to CAR 2, CAR 3 and CL 4 in Table 3 of the validation protocol in Appendix A). These concerns have subsequently been satisfactorily addressed and resolved during the last stage of the validation.



## 5 VALIDATION OPINION

*Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “El Canadá Hydroelectric Project” in Guatemala proposed as a CDM project activity. The validation is performed on the basis of UNFCCC criteria for CDM project activities, the requirements in the applied methodology ACM0002 as well as criteria given to provide for consistent project operations, monitoring and reporting. This validation report summarises the findings of the validation of the project design and the project’s baseline and monitoring plan.*

*The project utilises the irrigation water from the existing Secacao dam in a run of river power plant construction. The project will contribute to sustainable development by displacing fossil fuel-based electricity generation with renewable energy in the Guatemalan grid.*

*The project participants are Generadora de Occidente of Guatemala and the International Bank for Reconstruction and Development as Trustee of the Prototype Carbon Fund, which participation is authorised by Canada and the Netherlands. The DNAs of Guatemala, Canada and the Netherlands have approved the project.*

*The validation did not reveal any information indicating that the project can be seen as a diversion of ODA funding towards Guatemala.*

*It is demonstrated that the proposed project activity 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 determination of the baseline is transparent. The project applies the baseline and monitoring methodology ACM0002 (version 6). A combined margin is determined ex-ante for the first 7-year crediting period as the weighted average of the build and operating margin emission factor for the Guatemalan grid.*

*The monitoring plan provides for the monitoring of electricity generated by the project. Responsibilities and authorities for project management, monitoring and reporting and QA/QC procedures have also been addressed.*

*By displacing fossil-based electricity with hydropower electricity, the project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. Project emissions are zero and the baseline emissions are forecasted using reasonable assumptions. Estimated annual emission reductions are 118 527 t CO<sub>2</sub>e.*

*A local stakeholder consultation process has been carried out by the project participant. DNV has published the PDD on DNV’s Climate Change website at two occasions and comments by Parties, stakeholders and UNFCCC accredited NGOs were invited through the CDM website in the second call. Two comments were received during the first call and considered by the validation. No comments were received during the second call.*

*In summary, it is DNV’s opinion that the “El Canadá Hydroelectric Project”, as described in the PDD of 30 August 2006, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002 (version 6). The forecast average annual emission reductions during the first crediting period of 118 527 t CO<sub>2</sub> is deemed likely to be achieved. DNV thus requests the registration of the “El Canadá Hydroelectric Project” as a CDM project.*



## REFERENCES

*Documents provided by the project proponent that relate directly to the project:*

- /1/ The World Bank Carbon Finance Unit: *CDM-PDD for the El Canadá Hydroelectric Project*, draft version of April 2003 (applying NM0006) and version 2 of 7 November 2005 and version 3 of 30 August 2006 (both applying ACM0002).
- /2/ DNA of Guatemala: *Letter of Approval*, dated 28 November 2005
- /3/ DNA of Canada: *Letter of Approval*, dated 18 November 2005
- /4/ DNA of the Netherlands: *Declaration of Approval*, dated 01 December 2005
- /5/ The World Bank Carbon Finance Unit: *Capacidad Instalada en el sistema eléctrico Nacional. AMM generation and capacity data*, Excel file. August 2006

*Background documents related to the design and/or methodologies employed in the design or other reference documents:*

- /6/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /7/ CDM EB: *ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources*, version 6 of 19 May 2006.
- /8/ CDM EB, *Tool for the demonstration and assessment of additionality*, version 02

*Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above:*

- /9/ GdO, Carlos Esquivel / Juan Carlos Mendez / Alden Kitson.
- /10/ OGIC, Eduardo Alvarez.
- /11/ Ministry of Environment, Ervin Gomez/Ruth Portillo.
- /12/ Ministry of Energy, Marco Davila.
- /13/ AMM, Yuri Omar Urbina.
- /14/ PCF Consultant, Hernan García.

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## **APPENDIX A**

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### **CDM VALIDATION PROTOCOL**

**Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities**

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	OK	Table 2, Section E.4.1
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, CDM Modalities and Procedures §40a	<del>CAR-1</del> OK	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	<del>CAR-1</del> OK	LOAs from Guatemala, the Netherlands and Canada have been provided.
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 E
6. Reduction 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, CDM Modalities and Procedures §43	OK	Table 2, Section B.2
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Decision 17/CP.7	OK	Affirmations have been provided by Canada and the Netherlands that any funding used to participate in the PCF does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.



Requirement	Reference	Conclusion	Cross Reference / Comment
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK.	Guatemala: Ministerio de Ambiente y Recursos Naturales Canada: Canada's CDM and JI Office, Climate Change Division Netherlands: Ministry of Housing, Spatial Planning and the Environment
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	OK	Guatemala ratified the Kyoto Protocol on 5 October 1999. Canada ratified the Kyoto Protocol on 17 December 2002. The Netherlands ratified the Kyoto Protocol on 31 May 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	OK	Canada's and the Netherlands' assigned amounts are 945 and 92% of the emissions in 1990, respectively.
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	Canada and the Netherlands has a national greenhouse gas inventory system in place for estimating, monitoring and archiving its emissions.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	OK	Table 2, Section G
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.	CDM Modalities and Procedures §37c	OK	Table 2, Section F
14. Baseline and monitoring methodology shall be previously approved	CDM Modalities and	OK	Table 2, Section B.1.1 and D.1.1

Requirement	Reference	Conclusion	Cross Reference / Comment
by the CDM Executive Board	Procedures §37e		
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D
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	CDM Modalities and Procedures §40	OK	The PDD of October 2005 was made publicly available on DNV's climate change website and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 9 November to 8 December 2005. No comments were received Also the draft PDD of April 2003 was made publicly available on DNV's climate change and stakeholders were through Climate-L invited to provide comments during a 30 days period from 11 April to 11 May 2003. Two comments were received and considered in the validation.
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	CDM Modalities and Procedures §45c,d	OK	
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	OK	The following changes were requested: - Title page in line with template - A.1: Inclusion of date and version number - A.2: Inconsistencies with regards

Requirement	Reference	Conclusion	Cross Reference / Comment
			to the starting date between A.2, B.3 and C - A.3: Change of status of Parties involved from direct to indirect - A.4.4.1: Inclusion of table according to latest guidance from the EB - B.5: Inclusion of whether or not the person determining the baseline is a project participant - E.6: Inclusion of table according to latest guidance from the EB.

**Table 2 Requirements Checklist**

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
<b>A. General Description of Project Activity</b> <i>The project design is assessed.</i>					
<b>A.1. Project Boundaries</b> <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
<ul style="list-style-type: none"> <li>Are the project's spatial (geographical) boundaries clearly defined?</li> </ul>	/1/	DR	The boundaries are defined by the project itself, a run of river project in the Samala River in Guatemala		OK
<ul style="list-style-type: none"> <li>Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?</li> </ul>	/1/	DR	The hydropower project will contribute to mitigate GHG emissions by adding renewable based electricity to the Guatemalan grid, and thereby offsetting marginal fossil-based electricity generation. The system boundaries are defined by the Guatemalan grid. The geographical boundaries are defined by the national borders of Guatemala.		OK
<b>A.2. Technology to be employed</b> <i>Validation of project technology focuses on the project engineering, choice of technology and competence/maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.2.1. Does the project design engineering reflect current good practices?	/1/	DR	Yes. The run-of river project employs good engineering practices for this type of technology		OK
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies	/1/	DR	Yes, the project is using proven technology that has been successfully applied worldwide.		OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
in the host country?					
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	No the project technology is not likely to be substituted by other more efficient technologies.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR,I	No, run-of-river hydroelectric power plants require less O & M efforts than other electricity generation technologies.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR, I	Yes. GdO ensures that their staff is adequately trained in order to undertake tasks related to O&M as well as monitoring.		OK
<b>A.3. Contribution to Sustainable Development</b> <i>The project's contribution to sustainable development is assessed.</i>					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/	DR	Yes. The Guatemalan authorities have expressed a desire to develop sources for renewable energy. However, the deregulation and privatisation of the electricity generation has not contributed much to that, due to the strict economic dispatch order of electricity sources in the privatised grid.		OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	The project has yet to receive the approval letter.	<del>CAR-1</del>	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR	The project has yet to receive the approval letter.	<del>CAR-1</del>	OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	Yes, The project will reduce dependence on fossil fuels for power generation, will create job opportunities and will also improve the health of the local public by reducing the emission of harmful gases from the burning of fossil fuels.		OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
<b>B. Project Baseline</b> <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
<b>B.1. Baseline Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/	DR	Yes the project applies the approved consolidated methodology ACM002.		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	Yes, ACM002 is applicable to grid connected renewable power generation project activities under the condition that the electricity capacity addition is from the run-of-river hydroelectric power plants such as the project activity.		OK
<b>B.2. Baseline Determination</b> <i>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.</i>					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/	DR	Yes, the application of ACM002 is transparent. Sufficient discussion on the chosen methodology is available in PDD. The baseline is the generation of the equivalent amount of power from other power plants, mainly run with fossil fuels.		OK
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	The list with power plants provided in the PDD is insufficient to verify the combined margin	<del>CL</del>	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>calculations.</p> <p>An excel file is requested detailing:</p> <ul style="list-style-type: none"> <li>- all power plants dispatching electricity to the grid,</li> <li>- their year of commissioning,</li> <li>- the electricity generated and</li> <li>- fuel used by each.</li> </ul> <p>Local heat values and carbon content factors should be used where available, rather than IPCC default values.</p> <p>Electricity imports from other countries need to be included.</p> <p>Finally, it is not clear whether the OM and BM is fixed ex-ante or calculated on an annual basis ex-post. If the OM is fixed ex-ante, the data as detailed above also needs to be submitted for the years 2002 and 2003.</p> <p>All sources need to be documented.</p>		
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	Yes. The baseline is established on a project-specific basis, according to ACM0002.		OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes. The operating and build margin evaluate the current electricity generation mix (OM) as well as current trends of future additions (BM).		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	Yes, detailed data is available from AMM.		OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	Yes. The baseline is the generation of an equal amount of electricity by a mix of fossil-fuel powered and renewable energy power plants.		OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/	DR	<p>The tool for the demonstration and assessment of additionality has been applied:</p> <p>Step 0: The starting date of the project is</p>	<p><del>CAR-2</del></p> <p><del>CL-4</del></p> <p><del>CAR-3</del></p>	OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>19.November 2003. Evidence of this starting date has been provided during the follow-up interviews in May 2003. A request for validation of the project was received already in August 2002 and evidence that the CDM was considered at an early stage.</p> <p>Step 1: The only other plausible scenario identified is the fossil-fuel based generation of the electricity provided by the project. This is deemed justified.</p> <p>Step 2: An investment comparison analysis based on generation costs in US\$ / MWh is chosen and correctly applied. A discount rate of 12% and a useful life of 30 years is chosen, which is deemed appropriate. It is clearly demonstrated that the hydroelectric generation is not the least-cost option.</p> <p>A sensitivity analysis is provided. Even when increasing the investment costs for thermal generation, decreasing the interest and useful life and increasing the plant factor from 46 to 50 % for the project, the coal-fired power plant remains cheaper.</p> <p>Step 3: A barrier analysis raises the uncertainty due to electricity generation depending on weather conditions as well as the inversely linear relationship between hydropower electricity generation and electricity spot prices. This step needs further explanation as it is understood that the project has secured a 10 year PPA with COMEGSA, Guatemala's largest commercial electricity distributor.</p> <p>Step 4: The provided information shows that</p>		

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			about 35% of all power generated in Guatemala in 200-2003 is from hydro or geothermal sources. As such, hydropower could be considered common practice. However, provided that information about hydro capacity additions over the past decade can be provided that sustains the argumentation that hydropower capacity additions in recent years are small, the project may not be considered representing common practice.  Step 5: The financial contribution of the CERs help alleviate the financial and common practice barriers and will compensate the uncertainty of electricity generation due to changing weather conditions.		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	Yes. The current trend of predominantly new fossil fuel based generation capacity is not foreseen to change anytime soon.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	Yes.		OK
<b>C. Duration of the Project/ Crediting Period</b> <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/1/	DR	The starting date of the project indicated in section C (C.1.1) of the PDD version October 2005 is 19 November 2003. But in Section A (A.2.), it is mentioned that the construction began in February 2002 and was completed in December 2003. Hence, the starting date needs to be clarified. The operational lifetime of the project is estimated to be 50 years.	CL-2	OK
C.1.2. Is the assumed crediting time clearly defined	/1/	DR	Yes, a renewable crediting period of seven years		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
(renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?			has been defined, starting on 19 November 2003.		
<b>D. Monitoring Plan</b> <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).</i>					
<b>D.1. Monitoring Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/	DR	Yes, The Monitoring methodology is as given in ACM0002.		OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/	DR	Yes, the methodology is clearly applicable to this type of project.		OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	Yes, the monitoring methodology clearly defines the procedure for monitoring and reporting of electricity generation of the project, electricity generation and fuel consumption from all plants supplying electricity to the grid.		OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
<b>D.2. Monitoring of Project Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. 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	There are no direct emissions from the project.		OK
<b>D.3. Monitoring of Leakage</b> <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	There is no leakage from the project activity.		OK
<b>D.4. Monitoring of Baseline Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	Yes. Electricity generation will be measured continuously and electricity generation records will be collected and archived until 2 years after the end of the last crediting period.		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes. The baseline indicators are directly available from AMM.		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/	DR	Yes.		OK
D.4.4. Will the indicators give opportunity for real	/1/	DR	Yes.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
measurements of baseline emissions?					
<b>D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts</b> <i>It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR, I	There is no requirement for monitoring of sustainable development indicators in Guatemala.		OK
<b>D.6. Project Management Planning</b> <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/	DR, I	Yes the management and operation of the project is the responsibility of GdO.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR, I	Yes.		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR, I	Provision for internal training of the staff has been made.		OK
D.6.4. Are procedures identified for calibration of monitoring equipment?	/1/	DR, I	Yes. Procedures are in line with the national requirements established by AMM.		OK
D.6.5. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR, I	Yes.		OK
D.6.6. Are procedures identified for monitoring, measurements and reporting?	/1/	DR, I	Yes.		OK
D.6.7. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance	/1/	DR, I	Yes. All data will be kept until 2 years after the end of the last crediting period.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
documentation)					
D.6.8. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	Yes.		OK
D.6.9. Are procedures identified for review of reported results/data?	/1/	DR	Yes.		OK
D.6.10. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	Yes.		OK
D.6.11. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	Yes.		OK
D.6.12. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	Yes.		OK
<b>E. Calculation of GHG Emissions by Source</b> <i>It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.</i>					
<b>E.1. Predicted Project GHG Emissions</b> <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/	DR	There are no direct emissions from the project.		OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
<b>E.2. Leakage</b> <i>It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.</i>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	There is no leakage.		OK
<b>E.3. Baseline Emissions</b> <i>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.</i>					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/	DR	Yes, baseline emission calculations are based on the OM and BM which is based on the actual generation data collected from AMM.		OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	Yes, Baseline boundaries are clearly defined.		OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	No. refer to part B.2.2	<del>CL1</del>	OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	Unclear, refer to part B.2.2	<del>CL1</del>	OK
<b>E.4. Emission Reductions</b> Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/	DR	Yes, the annual forecast emission reductions are 124 750 t CO <sub>2</sub>		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
<b>F. Environmental Impacts</b> <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/		The International Finance Corporation (IFC) is the lead financier of the El Canada project, and has conducted an analysis of the environmental impacts of the project. A summary of the findings from this IFC analysis is requested.	<del>CL</del> 4	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR, I	Yes. The project EIA was approved by CONAMA in December 2000.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	No. The environmental impacts of run-of-hydro projects such as on fish population or surrounding households are considered insignificant.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	There are no transboundary environmental impacts foreseen for this type of projects.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	No impacts have been identified and hence there is no need for anything to be addressed in the project design.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	Yes. The project EIA was approved by CONAMA in December 2000.		OK
<b>G. Stakeholder Comments</b> <i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR	Yes, local stakeholders have been invited to		OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			comments on the project and the IFC EIA during meetings in the neighbouring municipalities.		
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	Yes. This review was published on the IFC website and in the local press.		OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	Yes.		OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	A summary of the findings from this IFC analysis should be provided to DNV.	<del>CL-3</del>	OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR, I	No concerns about the project were voiced by the local stakeholders during the process described above.		OK



**Table 3 Resolution of Corrective Action and Clarification Requests**

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 1 The Letters of Approval of the Parties involved are missing.	Table 1, A.3.2 and A.3.3	LoA from the Guatemalan DNA, dated Nov. 28, 2005, is attached. LoAs from Annex I Participants is attached.	LOAs received. CAR closed.
CAR 2 It is unclear what the outcome would be if a coal-fired power plant with comparable size had been compared to the project in terms of cost per MWh generated. In addition, the investment costs for the project plant need to be further substantiated as they seem to be rather high compared to hydro projects of similar size.	B.2.7	A comparison of cost per MWh generated with a similar size coal-fired power plant was not possible because the project participants do not have the information to conduct such a comparison. However, it is widely accepted that there are tremendous economies of scale achieved when boiler technologies are used. The larger the boiler capacity, the lower the investment costs on a MW installed basis. All costs for the project are documented in the attached .pdf document, Balance Sheet and Statement of Operations, audited by KPMG.	The presented explanation for comparison of power plants is deemed acceptable. A copy of audited accounts has been received, which shows investments and balance figures for the years in question. This justifies the figures provided in the PDD. CAR closed.
CAR 3 Additionality, step 4: The provided information shows that about 35% of all power generated in Guatemala in 200-2003 are from hydro or geothermal sources. As such, hydropower can be considered common practice. However, provided that information about hydro capacity additions over the past decade can be provided that sustains that hydropower capacity additions in recent years are small, the project may not be considered representing common practice. Such information is hereby requested.	B 2.7.	Information on the recent hydro capacity additions to support the argument that the project does not represent common practice is provided in the attached Excel file, System Capacity Installed. It should be noted that when the project go-ahead decision was made in 2001, hydro expansion represented only 8% (35MW) of capacity additions in the previous 5 years (1996-2001), whereas thermal-bunker C units represented 87% (378MW) and geothermal 5% (22MW) during this same time period.	The received information sustains the project proponent's claims. Only 7.3 % of plant capacity added in the past decade is represented by hydro plants. CAR closed.

<p>CL 1</p> <p>The list with power plants provided in the PDD is insufficient to verify the combined margin calculations.</p> <p>The following data is requested:</p> <ul style="list-style-type: none"> <li>- all power plants dispatching electricity to the grid,</li> <li>- their year of commissioning,</li> <li>- the electricity generated and</li> <li>- fuel used by each.</li> </ul> <p>Local heat values and carbon content factors should be used where available, rather than IPCC default values.</p> <p>Electricity imports from other countries need to be included.</p> <p>Finally, it is not clear whether the OM and BM is fixed ex-ante or calculated on an annual basis ex-post.</p>	<p>B.2.2, E.3.3 and E.3.4</p>	<p>The requested information is provided in the attached Excel file, El Canadá – Baseline Emission Rate for 2005, worksheet entitled “Operating MEF”.</p> <p>The values given in the PDD are ex-ante calculations for the OM and the BM. They will remain fixed (ex-ante) during the first crediting period. For subsequent crediting periods, the baseline emission factor will also be calculated ex-ante.</p>	<p>The received files cater for OM and BM calculations for the three years 2002-2004. CL closed.</p>
<p>CL 2</p> <p>The starting date of the project indicated in section C (C.1.1) of the PDD version October 2005 is 19 November 2003. But in Section A (A.2.), it is mentioned that the construction began in February 2002 and was completed in December 2003. Hence, the starting date needs to be clarified. 23 November 2003 is also mentioned in the PDD as starting date.</p>	<p>C.1.1</p>	<p>The El Canada project started commercial operation per the Whole Sale Market Norms on November 23, 2003. This is the date on which it began to displace GHGs, therefore, it should be regarded as the CDM start date. The December 2003 date refers to the completion of entire construction per the EPC contract.</p>	<p>Explanation OK. CL closed.</p>
<p>CL 3</p> <p>The International Finance Corporation (IFC) is the lead financier of the El Canada project and has conducted an analysis of the environmental impacts of the project.</p> <p>A summary of the findings from this IFC analysis is requested.</p>	<p>F.1.1 G.1.4</p>	<p>The IFC Environmental Review Summary, dated April 11, 2002, is attached.</p>	<p>Summary reviewed and found acceptable. CL closed.</p>

<p>CL 4</p> <p>Step 3: A barrier analysis raises the uncertainty due to electricity generation depending on weather conditions as well as the inversely linear relationship between hydropower electricity generation and electricity spot prices. This steps needs further explanation as it is understood that the project has secured a 10 year PPA with COMEGSA, Guatemala's largest commercial electricity distributor.</p>	<p>B 2.7.</p>	<p>The project was evaluated on a merchant basis, taking into account the impact of a deregulated competitive electric market. The power contract with COMEGSA does not, in any way, offer the “security” associated with traditional PPA's. There is no sovereign guarantee, no take-or-pay provision, nor buy-out clause. The contract simply provides for a payment and contract compliance guarantee, which if the contract were rescinded, would provide “make-up” income for the two year period it is estimated would be necessary in order to rebuild an off-taker portfolio in similar terms to the COMEGSA contract. Another important issue to consider is hydrological and market risks. Under the COMEGSA agreement, El Canadá is still subject to hydrological risk and must make-up any deficits in on-peak energy through spot market purchases. The spot market is the representation of the inversely proportional relationship between the hydrological cycle and power prices. Thus, the project must purchase replacement power when prices are high and has excess energy during the wet season when prices are low. This situation confirms El Canada's exposure to technology and pricing barriers, as presented in the PDD.</p>	<p>The explanation provided is deemed acceptable. CL closed.</p>
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## **APPENDIX B**

### **STAKEHOLDER COMMENTS**

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**Comment by:** [Patrick McCully, International Rivers Network](#)

**Inserted On:** 2003-05-12

**Subject:** Comments on the proposal to validate the El Canadá Hydroelectric Project, Guatemala for Clean Development Mechanism emission reduction credits under the World Bank's Prototype Carbon Fund

**Comment:** Project Overview:

Status: 70% complete (Construction started Feb 2002; completion date Dec 2003.)

Location: Samalá River, western Guatemala

Type: 43MW "peaking run-of-river" hydropower

Developer: A subsidiary of Energía Global International which is in turned owned by ENEL GreenPower S.p.A of Italy.

Claimed generation: 178 GWh/y

Claimed emission reductions: 144,180 tCO<sub>2</sub>/year (3.03m tCO<sub>2</sub> over 21 years)

Claimed displaced generation: Diesel and fuel oil.

#### 1. Introduction

El Canadá is a non-additional business-as-usual project. It is already 70% complete. Its validation and registration as a CDM project activity will have no bearing on its completion and operation. El Canadá should not be validated as eligible for CDM credits. Validating the project would allow the governments and corporations that participate in the World Bank Prototype Carbon fund to obtain the PR and possible financial benefits of carbon credits without any carbon emissions being avoided. It would also send a message that DNV is willing to give in to lobbying from corporate special interests and allow the CDM to become a mechanism for undermining the emission reduction goals of the Kyoto Protocol.

Even leaving aside the fact that the project is non-additional, the project documentation prepared by the World Bank's Prototype Carbon Fund is rife with important omissions and unjustified assumptions which serve to greatly exaggerate the quantity of emissions the project would be reasonably likely to displace.

One of the most troublesome aspects of the El Canadá documentation is the claim that the Marrakech Accords "clarify that additionality is to be determined as 'environmental additionality'." This claim is untrue – the Accords nowhere even use the phrase "environmental additionality" which, as the PCF is well aware, is a highly contentious interpretation of additionality. It is particularly disturbing that the PCF – with its supposed commitment to "high quality emission reductions" and "learning by doing" – should be party to this underhand attempt to reinterpret the Accords. Interpreting additionality as "environmental additionality" would allow industrialized countries to gain emission credits for activities which do not reduce emissions below what they would otherwise be, thus undermining the purpose and public credibility of both the CDM and Kyoto Protocol in general.

#### 2. Lack of additionality

The "modalities and procedures" for the Clean Development Mechanism are defined in the Kyoto Protocol's 2001 Marrakesh Accords. Paragraph 43 of the Accords states that "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" (Decision 17/CP.7, paragraph 43). This means that a project is "additional" (and thus potentially eligible for CDM validation) only if its implementation is dependent upon its registration with the CDM.

The PCF's Project Design Document (PDD) for El Canadá states that the plant entered construction in February 2002 and will be completed in December 2003 (p.3). It is thus around 70% complete. There is no indication in the project documentation that the project will be abandoned if it is not registered by the CDM. Indeed, as the project has secured a 10-year Power Purchase Agreement, the developers presumably have a legal obligation to provide power from the project. The PDD states (p.6) that "the additionality of a project must be clearly established in order for the project to qualify for the CDM." As El Canadá clearly cannot be additional, it clearly should not qualify for the CDM.

The PDD attempts to circumvent the fact that the plant is already under construction by claiming that the CDM only requires what has become termed "environmental additionality" ("the Project is thus environmentally additional and meets the CDM requirement of additionality" (p.8)). The Baseline Study for El Canadá further states that "The Marrakesh Accords on the CDM clarify that additionality is to be determined as 'environmental additionality'" (BS, p.6). This is a blatant – and one must assume deliberate – misrepresentation. The Marrakesh Accords nowhere state that "environmental additionality" is sufficient to meet the CDM requirement of additionality.

Environmental additionality is commonly understood to mean that a project would result in less emissions than an alternative scenario, regardless of whether the project required carbon credits to go ahead. A windfarm for example, can claim that it is environmentally additional compared to a coal plant, whether or not the coal plant was ever likely to be built. "Environmental additionality" thus does not result in emission reductions in developing countries to offset non-reductions in industrialized countries, and so undermines efforts to meet the Kyoto targets.

There is widespread agreement that "environmental additionality" does not do what a CDM additionality test must do – screen out business-as-usual projects. In an email to IRN on 25 October, 2001, Société Générale de Surveillance, wrote that "the environmental additionality test does not screen out business as usual projects." According to the European Commission's project "Procedures for accounting and baselines for projects under Joint Implementation and the Clean Development Mechanism" (PROBASE): "The purpose of the additionality test is to make sure that projects are given credits only if they would not have happened under a business as usual scenario" ([www.northsea.nl/jiq/probase/bnote8.doc](http://www.northsea.nl/jiq/probase/bnote8.doc)).

Validating El Canadá would thus mean that DNV would be validating the fallacious claim that the Marrakesh Accords "clarify that additionality is to be determined as 'environmental additionality'." This would allow special interests to achieve through the back door, and without public debate, their desired reinterpretation of the Accords and the purpose of the CDM. This is clearly a highly inappropriate role for a validator. Such a reinterpretation would be a heavy blow to the public credibility of the CDM (and baseline-and-credit trading systems in general).

Validating El Canadá will achieve no reduction in CO<sub>2</sub> emissions. It will merely increase the rate of return enjoyed by project investors – not one of the purposes of the CDM. This rate of return is clearly sufficiently attractive without emission reduction credits. Further evidence that El Canadá's developers and the PCF are gaming the CDM comes from the investment details given in the International Finance Corporation's "Summary of Project Information" for El Canadá, which nowhere mention the need for emission reduction credits to make the project financially attractive. The IFC approved its investment in the project on June 26, 2002.

The PCF claims in the PDD that "the Project is an unlikely candidate for system expansion investment." Given that the Project has already attracted investment and is being built this claim cannot be taken seriously. The PCF attempts to show (see PDD pp.6-8) that financial logic implies that El Canadá would not be built by private investors without substantial subsidies from carbon emission credits, ignoring the fact that private investors are actually building the plant without any secured emission credits.

Even if one were to suspend disbelief and pretend that El Canadá was not being built, the PCF's rationale for additionality still fails to make sense. The PCF states that a theoretical investor in Guatemalan power generation would be most likely to put their money into the least expensive available power generation option, which it is claimed would be a 150MW coal-fired plant (p.8). According to the PCF's argument, the private sector would only develop El Canadá before such a coal plant if carbon credits enabled the hydro project to become cheaper than the coal plant.

The theoretical 150MW coal plant is "conservatively" estimated to have a total net generation cost of \$38.7/MWh. El Canadá is assumed to cost \$48/MWh. Thus, for El Canadá to be more financially attractive than coal, carbon credits would have to provide a benefit of more than \$9.3/MWh. Using the PDD figure of 0.81tCO<sub>2</sub>/MWh saved by El Canadá gives a required price of \$11.48/tCO<sub>2</sub> for El Canadá to become financially attractive. This is nearly three times the actual price of CO<sub>2</sub>: in 2002 the PCF was contracting carbon at a maximum of \$4/tCO<sub>2</sub> and there is no sign of carbon prices increasing significantly in the foreseeable future.

Thus according to the logic and calculations of the PCF, investors would not finance El Canadá even with CDM registration. The fact that investors (including the World Bank's IFC) have already financed El Canadá shows that the methodology and calculations used in the PDD to calculate the project's baseline and additionality are thoroughly flawed.

### 3. Invalid Baseline

The PDD states that "Only two alternative baseline scenarios are plausible, namely the [national grid] and its eventual expansion (a) with the proposed Project, and (b) without the proposed Project" (p.7). The baseline scenario chosen in the PDD "consists of the current plants in the Guatemalan [grid] (including electricity exports and imports) plus capacity expansion, but not the proposed Project" (p.5). In the real world, the Project is not "proposed", it is 70% complete, and barring a major disaster, will be completed. The only plausible baseline scenarios are thus ones with the Project.

The Baseline Study (BS) maintains the PDD's refusal to accept reality by including El Canadá in a list of "potential new private sector projects" (see BS Table 3). Eleven of the 12 plants in this list are hydros, with a combined capacity of 285MW. This list is the National Interconnected System's (NIS) generation expansion plan for 2002-2005. In order to justify its baseline of purely fossil fuel plants, the BS says that the fact that El Canadá - and other hydros under development - are included in this list "cannot be read as an indication that these projects will actually be implemented without some outside assistance" (BS p.12). But El Canada already has "outside assistance" from the IFC and other investors as do presumably the other (unidentified and unquantified) hydros which the BS admits are being constructed (research indicates that at least four of the hydros are under construction or are now complete). The Baseline Study continues that "there is no reason to assume that these projects would actually be implemented by private developers in the face of lower-cost competition from old, depreciated plants, or from new, medium and large thermal plants" (BS, p.12-13). Yet the fact that nearly half the projects are in fact being implemented is a very good reason to assume that they will be implemented.

The PCF plays down the strong likelihood that within several years of El Canadá coming on-line Guatemala's grid will be linked with both Mexico and its Central American neighbours, making as much as 500MW of imports available to the country and rendering obsolete the power supply assumptions in the PDD.

The PDD states that "Border trade is expected to increase significantly upon Guatemala's connection to the Central American Interconnected System (SIEPAC), but the date of its implementation is currently unknown and highly uncertain" (p.8 emphasis added). The Baseline Study states that "implementation of SIEPAC is still uncertain and very unlikely to be realized before 2010" (BS, p.14). These claims do stand up to scrutiny. The InterAmerican Development Bank (IDB) has approved financing of \$240m for the six countries in SIEPAC, including \$41.4m to Guatemala's Instituto Nacional de Electrificación (INDE) approved in September 2002 (see [www.iadb.org](http://www.iadb.org)).

On May 9, 2003, IRN spoke to Stephen Fisher of the IDB's infrastructure department with responsibility for Central America. Fisher stated that the SIEPAC project, while meeting implementation difficulties before 2002, is now on track to start construction next year and to be completed by end 2006, as stated in loan documentation. The SIEPAC lines would allow reliable transmission of 300MW (3000GWh in 2007 rising to 4000GWh in 2009).

The PDD makes no mention of another significant development in Guatemala's power sector - the building of an interconnector to allow Guatemala to import up to 200MW (c. 1400GWh) from Mexico. The IDB intends to approve \$33.4m for this project in June 2003. The project is to be completed in 2006.

The only mention of geothermal power in the El Canadá PCF documentation is to say that "Geothermal resources are scarce and small in size" (BS, p.7). Yet the IDB is currently working on a joint technical assistance project with the GEF for geothermal development which aims to "provide a significant impulse to prospects for large-scale, competitive development of Guatemala's geothermal energy resources." Guatemala already has 29 MW of geothermal on-line. Guatemala has 58MW of proven geothermal potential and a further 398MW of estimated additional capacity according to the World Energy Council's Energy Info Centre,

Another potential source of supply for electricity in Guatemala which goes unmentioned in the El Canadá PCF documentation is a gas pipeline from Mexico. Guatemala and Mexico signed a protocol for this pipeline in December 1999. According to Pipeline Construction Outlook 2002, the gas would be used for industry and electrical generation. The \$450m pipeline has not gone forward as planned, but Stephen Fisher of the IDB has told IRN that it "still could go ahead." According to the IDB, one of the main goals of SIEPAC is to catalyze investments in natural gas pipelines and power plants throughout Central America ('SIEPAC: Hacia una integración regional de electricidad,' IDB, 2001).

Stephen Fisher has told IRN that SIEPAC could also stimulate investments in large hydros in Guatemala and elsewhere in Latin America. The Hydropower & Dams World Atlas 2002 states

that INDE is planning to build 813 MW of hydro and hoping that the private sector will build a further 1000 MW.

#### 4. Invalid Assumption of Displaced Generation

The Baseline Study for El Canadá argues that no significant new supply is likely to come on-line in Guatemala before 2011 other than plants which are already committed (the BS does not explain which plants these are or whether it includes El Canadá among them). It then shows (BS, Annex 3) that Guatemala is projected to have a demand deficit exceeding 1100 GWh by 2008 and 4,100 GWh by 2011. The implication of this situation is that the NIS will have to keep a group of old, inefficient fossil fuel power plants on line. Because these plants have high marginal costs, the PCF assumes that they will be dispatched last to the grid. The PCF assumes that El Canadá would displace the emissions from these plants.

The PCF's assumptions depend upon Guatemala having a serious power deficit and not being able to take obsolete plants off-line. But the PCF appears to be both overestimating demand and underestimating supply to Guatemala's grid.

##### Overestimating demand:

The demand projections given in Baseline Study Annex 3 state that demand will be 6845 GWh in 2002, rising at an annual rate that gradually declines from 7.2% in 2002 to 5% in 2010. According to the IDB, actual demand in 2001 was 5456 GWh (Proyecto GU-0171, Oct. 2002).

If the IDB's figures are correct, the PCF's demand numbers must be greatly overstated. To reach the power demand projected in 2002 by the PCF, demand would have had to have risen by 25% during 2001, compared to 4.2% demand growth in 2000. In 2000, Guatemala's economic growth was 3.3%. Economic growth declined in 2001 to 2.3%, implying that electricity demand growth would have fallen below the 2000 figure of 4.2%. Economic growth in Guatemala has continued to be weak. According to the Economist Intelligence Unit, Guatemala's "GDP growth is unlikely to exceed 2% in 2003." The power demand growth of 6.8% for 2003 given in the Baseline Study Annex 3 thus greatly overstates likely demand growth this year.

Actual demand for electricity in Guatemala in the coming years is thus likely to be significantly less than projected in the Baseline Study. Using an (optimistic) assumption of 4% demand growth from 2001-3, gives demand in 2004 of 6137 GWh, compared to the PCF's estimate of 7835 GWh. The PCF estimates that when El Canadá comes on-line at the end of this year Guatemala would have a 2 GWh power deficit: the above calculations imply that it is more likely to have a surplus of nearly 1700 GWh. (One factor which could prevent this predicted surplus from occurring is drought, always a risk for a heavily hydropower dependent system such as Guatemala's).

##### Underestimating supply:

As explained above, Guatemala is likely to have numerous new supply options in coming years, especially after the Central American (SIEPAC) and Mexican interconnections come on-line. The interconnections mean that even without any new supply coming on-line in Guatemala the country would not have a demand deficit until after 2011 - even allowing for the PCF's likely greatly exaggerated demand projections. As shown above, over the next eight years it is likely that new geothermal plants and hydros will come on line, and possible that new gas plants will be built if the pipeline from Mexico is implemented.

It is thus quite possible that Guatemala may be able to take off-line old and inefficient thermal plants, especially once the two interconnections are complete.

There is also no reason to assume that El Canadá would displace not (or not only) marginal generation from obsolete plants but would also delay investments in other planned hydros, or geothermals. As explained above, numerous hydros are planned in Guatemala and the IDB and GEF have a project to stimulate new geothermal investment. Especially in a scenario of a long-run supply surplus, it can be expected that investment in a medium-sized plant such as El Canadá would delay investments in other plants.

The Marrakesh Accords stipulate that a baseline should be established in a "conservative" manner. The baseline used for El Canadá can in no way be described as conservative, for reasons including that it has made numerous unjustified assumptions for the Guatemalan power sector which help to increase the project's putative displaced emissions.

#### 5. Failure to account for climate change



It is now widely accepted that global warming is impacting the hydrological cycle and that these changes (largely marked by increasing severity and frequency of floods and droughts) will increase in future (see e.g. Dialogue on Water and Climate, "Climate changes the water rules: How water managers can cope with today's climate variability and tomorrow's climate change," 2002). The PCF would have no reason to exist were it not for the international community's acceptance that global warming is occurring and will worsen.

It is thus quite remarkable that the PCF makes no allowance for the possible significant impacts of global warming on the project's power production. The Baseline Study states that the project generation was calculated using the last 31 years of hydrology data for the Samalá River. No mention is made of the fact that global warming makes it less than plausible that the hydrology of the Samalá over the last 31 years is an accurate guide to the hydrology over coming decades.

Guatemala's 2001 Primera Comunicación Nacional sobre Cambio Climático presents two different scenarios for the impacts of climate change on streamflow in Guatemala. Under the "optimistic" scenario, streamflows in the region of El Canadá would increase by 15-40%. Under the "pessimistic," streamflows in the region would decrease by 75-90%. A "conservative" estimate for El Canadá's power generation should thus allow for the likelihood of significantly lower power output (and displaced emissions) than would appear from the record of past streamflows.

#### Summary of concerns:

##### Additionality

- El Canadá is non-additional – it is 70% completed.
- The definition of additionality used is unacceptable.
- Even if the above two issues are ignored, the additionality test used does not support that the project is additional.

##### Baseline

- The baseline ignores the impact of two large interconnections planned to be completed in 2006.
- The baseline ignores that new hydros are receiving funding and that substantially more geothermal may be exploited.

##### Displacing power

- The displacement model used to estimate emission reductions is based on a long-term scenario of power shortages. To sustain this scenario the PCF exaggerates demand growth and underplays likely new supply sources.
- It is inaccurate to assume that the project will displace marginal dispatched power. It is just as likely to displace the building of other hydro or geothermal plants.

##### Failure to account for climate change

- The power generation estimates ignore the potentially significant impact of global warming upon streamflow and thus power generation.

**Comment by:** [Ben Pearson, CDM Watch](#)

**Inserted On:** 2003-05-12

**Subject:** CDM Watch Submission on Validation of the El Canada Hydroelectric Project

**Comment:** Additionality

The additionality justification for this project is highly questionable. It uses a methodology that arrives at the right answer for the project developer but ignores the fact that this project is well advanced in its implementation and will clearly be finished regardless of whether it is registered as a CDM project.

The baseline for this project is determined as the most likely capacity addition in the

Guatemalan NIS, consistent with option 48(b) of the Marrakech Accords: "Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment". To arrive at this, the PCF asks what is currently the most economically attractive (ie least cost) system expansion option in Guatemala. If it is an alternative development to the project, and one which has higher emissions, then the project is deemed additional.

Based on this methodology the developer claims

"3. Only two alternative baseline scenarios are plausible, namely the NIS and its eventual expansion (a) with the proposed Project, and (b) without the proposed Project".

The PCF concludes that (b) is the correct baseline because:

"...the Project would not be part of the Guatemalan National Interconnected System (NIS), because its generation cost is higher than the generation cost of the least-cost thermal alternative expected to be developed by private investors to cover demand increases in the NIS".

Given that the scenario with El Canada has lower emissions, it is therefore judged to be additional.

What this fails to address is the reality that the decision to go ahead with this project – El Canada – has already been taken, and the project has been under construction for 14 months, according to the PDD. There is no need to apply complex economic analysis to determine which of the two above scenarios is the baseline, because that question was answered 14 months ago when construction of El Canada began. To claim, as the Bank is doing, that the "without project" scenario is the most likely when the "with project" scenario has already been realized is plainly absurd. At another point in the PDD it is claimed that: "The Baseline Study therefore concludes that the Project is an unlikely candidate for system expansion investment", despite this investment having already been made. The fact that the Bank's "investment calculus" determines that it makes more economic sense in the current Guatemalan electricity market to invest in a coal plant is frankly irrelevant because the decision to build the hydro project was taken and it is scheduled for completion at the end of this year - whether it is approved as a CDM project or not.

In short, the Bank's additionality justification involves hypothesizing a scenario in which a nearly completed plant is not built and its capacity replaced by a thermal plant then asking if the emissions would be higher under this scenario. It seems designed not to test additionality in a real world situation but to get around the fact that the plant is not additional. To allow the PCF to "prove" additionality through a modeling exercise that directly contradicts the situation in the real world would only heighten growing skepticism about the credibility of the CDM.

The validator must insist that the developer address B4 of the PDD which requires a demonstration of how emissions were reduced below those that would have occurred "in the absence of the registered CDM project activity". What is clear is that if the project is not registered under the CDM it will be completed regardless, meaning that the additionality test should instead compare these two scenarios:

1. expansion of the NIS with El Canada as a registered CDM project
2. expansion of the NIS with El Canada not registered as a CDM project

The emissions for both scenarios are identical within the project boundary, and thus El Canada is non-additional.

Confusing terminology

The PCF also uses terminology in its additionality determination that is inaccurate and confusing, and is used to justify their inadequate additionality testing.

The PCF claims that: "the project is thus environmentally additionality and meets the CDM requirement of additionality". This is incorrect. There is nothing in the Marrakech Accords that refers to "environmental additionality" nor equates it to "the CDM requirement of additionality". This inaccurate claim is repeated elsewhere in the project documents. We would welcome clarification by the validator on this point.

When the PCF refers to "environmental additionality" they seem to be referring to the same test that has been used by others, that additionality testing involves a comparison between the project and a scenario in which the project does not proceed. However, in the case of a

project like El Canada, where project completion is reasonably assured, according to the PDD, this is clearly an inadequate and misleading comparison, as the "without project" scenario is not a realistic prospect, ie it will not and was never going to happen and as such is not a valid basis for comparison. As a result, to validate El Canada would not only not reduce emissions within the project boundary but would lead to an increase globally, as the spurious credits it generates would allow an Annex I country to avoid making real reductions.

In this case we believe that the project must address Annex B4 and demonstrate how emissions would be affected "in the absence of the registered CDM project activity". As our above argument shows, this would provide a realistic picture of the impact on emissions that will be caused by El Canada's registration as a CDM project.

#### Baseline

Lastly, the choice of baseline is problematic for numerous reasons. El Canada is comparable in size to other plants that are proposed for addition to the Guatemalan grid. Therefore it should be assumed that the project affects the timing of the development of other new power plants rather than displaces marginal power production. Only very small projects can be assumed to displace marginal power production, without changing the overall capacity of the grid. This issue of size is acknowledged in the proposed baseline methodology (section 1 note 2) "The methodology is best applied in situations where small (relative to overall system capacity) and/or few CDM projects generate electricity that is injected into the same grid but which have little if any effect on overall capacity expansion." "Small" must be defined as some size smaller than many of the plants that are expected to be built, and relatively insignificant compared to annual expected capacity increases.

The baseline also doesn't take into account the fact the SEIPAC project is expected to be completed before the end of the CER crediting period. The baseline will no longer be valid after the SEIPAC project is completed and another baseline proposal is needed for this period, taking into account the entire connected grid.

We urge DNV not to validate this project as it is non-additional and would welcome its guidance on the use of the phrase "environmental additionality".

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