VALIDATION REPORT

TROJES HYDROELCTRIC PROJECT IN MEXICO

REPORT NO. 2004-0050

REVISION NO. 03

VALIDATION REPORT

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Approved by: Michael Lehmann Technical Director	Organisational unit: International Climate Change Services
Client: Impulsora Nacional de Electricidad S.de R.L. de C.V. (INELEC)	Client ref.: Salomon Camhaji

Summary:
Det Norske Veritas Certification Ltd has performed the validation of the "Trojes Hydroelectric Project" in Mexico. This report summarises the findings of the validation, performed on the basis of UNFCCC criteria for small-scale CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.
The project is expected to have a nominal capacity of 8 MW and will utilise water from a dam in the state of Jalisco in the vicinity of the city Coalcomán. It will contribute to sustainable development by displacing fossil fuel with renewable energy. It is confirmed that the project is in line with current sustainable development priorities. Public stakeholder comments have been invited to the project in April-May 2004.
The validation consisted of the following three phases: i) a desk review of the project design, baseline and monitoring plan, 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 project, as described in the project design document version 3 dated 19 April 2006, meets all relevant UNFCCC requirements for the CDM, is eligible as type I.D small-scale CDM project activity and correctly applies the simplified baseline and monitoring methodology AMS-I.D (version 08). Hence, DNV requests the registration of the "Trojes Hydroelectric Project" as a CDM project.

Report No.: 2004-0043	Subject Group: Environment
Report title: Trojes Hydropower project in Mexico	
Work carried out by: Chandrashekara Kumaraswamy, Gustavo Godinez, Mari Grooss Viddal	
Work verified by: Einar Telnes	

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Indexing terms

CDM

Climate Change

Kyoto Protocol

Abbreviations

CDM	Clean Development Mechanism
CAR	Corrective Action Request
CFE	Comisión Federal de Electricidád
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification
DNA	Designated National Authority (for the CDM)
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EIA	Environmental Impact Assessment
GHG	Greenhouse gas(es)
INELEC	Impulsora Nacional de Electricidad, S. de R.L. de C.V.
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non-governmental Organisation
PDD	Project Design Document
PPA	Power Purchase Agreement
SEMARNAT	Secretaría de medio ambiente y recursos naturales
SSC-CDM	Small-Scale Clean Development Mechanism
UNFCCC	United Nations Framework Convention on Climate Change
GWP	Global Warming Potential

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1 INTRODUCTION

Impulsora Nacional de Electricidad S.de R.L. de C.V. (INELEC) has commissioned Det Norske Veritas Certification Ltd (DNV) to perform the validation of the "Trojes Hydroelectric Project" (hereafter called "the project") in Mexico. This report summarises the findings from the validation of this proposed small-scale CDM project, performed on the basis of UNFCCC criteria for small-scale CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consisted of the following personnel:

Mr Einar Telnes	DNV Oslo	Team Leader, Energy sector expert
Mr Gustavo Godinez	DNV Mexico	GHG auditor
Mr Chandrashekara Kumaraswamy	DNV Bangalore	GHG auditor
Ms Mari Grooss Viddal	DNV Oslo	GHG auditor
Mr Michael Lehmann	DNV Oslo	Technical reviewer

1.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is 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 modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project activities and subsequent decisions by the CDM Executive Board, including the approved simplified baseline and monitoring methodology AMS-I.D. The validation team has, based on the recommendations in the Validation and Verification Manual /8/, employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 The Trojes Hydroelectric Project

The project's boundaries are defined by the physical and geographical site of the Trojes project in the municipality of Phiuamo in the State of Jalisco in México. The project is located at the Trojes Dam, which was built by the National Water Commission (CNA) for irrigation purposes but also with the intent to construct a future hydroelectric plant. However, the hydroelectric plant was never built. Taking into account CDM benefits, the project finally succeeded in financing the hydropower plant and commenced construction in January 2002. The hydroelectric plant was completed according to the original plans and started power generation on 1 April 2003. The plant has a nominal capacity of 8 MW, using the existing pattern of irrigation flow releases to generate electricity.

The project serves to impound water mainly utilized for downstream irrigation. It is possible for this project to regulate downstream water volume. The regulating dam can accommodate some degree of varying dam flow releases, thus allowing for increased flexibility in the quantity and the time intervals at which flows are released for hydroelectric generation. The hydroelectric facility is constructed directly downstream from the outlet of the irrigation diversion tunnels within an area previously designated for the placement of a hydroelectric facility. Irrigation demand flows will take priority and will not be modified in anyway as a result of the development of the project.

The project is estimated to result in average annual emission reductions of 20 550 ton of CO_2e and 431 550 ton CO_2e over the crediting period of a maximum of 21 years.

2 METHODOLOGY

The validation consisted of the following phases:

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

In order to ensure transparency, a validation protocol has been customised for the validation of the project, according to the Validation and Verification Manual /8/. This 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 "Trojes Hydroelectric Project" is enclosed in Appendix A to this report.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)**.*	*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.*

Validation Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
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.	*Gives reference to documents where the answer to the checklist question or item is found.*	*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.*	*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.*	*This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below). **Clarification (CL)** is used when the validation team has identified a need for further clarification.*

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

Figure 1 Validation protocol tables

Findings established during the validation can either be seen as 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 future project performance or results;
ii) CDM 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 validation team may also use requests for ***Clarification (CL)***, where additional information is needed to fully clarify an issue.

2.1 Review of Documents

The initial draft Project Design Document (PDD) of August 2003, the PDDs of 7 April 2004 and October 2005 and the final version (version 3) of 19 April 2006 /1/ submitted by INELEC as well as additional background documents /2/-/7/ related to the project design and baseline were assessed.

2.2 Follow-up Interviews

Follow-up interviews were performed in March 2004 with 3 representatives from INELEC, one representative from the Mexican DNA, and one representative each from the Secretaria de energia (Energy Ministry) and the Dirección de energias renovables y medio ambiente (Renewable energy and Environmental department). Following the submission of revisions of the PDD a new process of follow up interviews was conducted in October 2005 and April 2006 in order to confirm updated information.

2.3 Resolution of Clarification and Corrective Action Requests

The initial validation of the project identified some Corrective Action Requests (CARs) and request for Clarification (CLs) and the project participants were invited to provide a response to these CARs and CLs listed.

The project participant's response to DNV's initial findings, which also included the submission of the final PDD of 19 April 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

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

The final validation findings relate to the project design as documented and described in version 3 of the PDD dated 19 April 2006.

3.1 Participation Requirements

The project participant are Impulsora Nacional de Electricidad S. de R.L. de C.V. and Hidroelectricidad del Pacífico S de R.L de C.V. The host Party Mexico meets the requirements to participate in the CDM and the DNA of Mexico has provided approval of voluntary participation /2/.

No participating Annex I Party is yet identified. The World Bank's Prototype Carbon Fund, which was listed as project participant in the PDD of April 2004, eventually withdrew from the project.

No public funding is involved in the project, and the validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Mexico.

3.2 Project Design

The project involves the construction of a grid connected hydropower plant with 8 MW generating capacity utilising an existing dam which was built for irrigation purposes The project design engineering reflects good practice.

Being a renewable energy project activity with an output capacity of less than 15 MW, the project qualifies as a small-scale CDM project activity according to category (i) defined in paragraph 6, subparagraph (c) of decision 17/CP.7 on the modalities and procedures for the CDM.

By promoting renewable energy, the project is likely to contribute to sustainable development in Mexico. The DNA of Mexico has provided a confirmation that the projects assists in achieving sustainable development /2/.

The project ended construction and started to generate electricity 1 April 2003. Construction started January 2002. The starting date of the first renewable 7 years crediting period is 1 April 2003.

3.3 Baseline Determination and Additionality

The project is a *Renewable electricity generation for a grid* project activity (Type I.D) as defined in the simplified modalities and procedures for small-scale CDM project activities. The project applies the simplified baseline methodologies proposed for this project activity category, i.e. AMS-I.D (version 08) /9/. The baseline is the kWh produced by the hydroelectric plant multiplied by an emission coefficient calculated in a transparent manner as the average of the approximate operating margin and the build margin. The baseline methodology AMS-I.D

(version 8) has been applied correctly and the assumptions made for the selected baseline scenario are sound. The input to the baseline emission calculations has been verified during the interviews in Mexico.

The barriers which the project faces are clearly described in the PDD. These relate to several conditions: Investors reluctance to finance small hydropower projects with no backing of the national utility, the prevailing practice with thermal-based electricity generation, and the institutional barriers represented by small power-producers selling electricity to commercial users and municipalities outside the CFE electricity domain. The validation has confirmed investors' reluctance to finance small electricity projects without PPAs or with electricity off-take by municipalities that are not used to deal with small power-producers and that this represents a barrier for investment to many investors. The carbon finance component and the interaction with potential CER buyers seem to have removed or alleviated these project implementation barriers. The most convincing argument relates to the fact that despite the existing dam and the intention to construct a hydroelectric plant at the time the dam was built, no hydroelectric plant was implemented until carbon finance was backing this investment. Moreover, recent additions to the Mexican grid indicate that this project would not be a likely business as usual scenario for capacity expansion.

DNV was also able to confirm that CDM benefits have already been considered in the decision to implement the project and that the project was conceived as a CDM project activity already in 2002 /4/.

3.4 Monitoring Plan

The project applies the simplified monitoring methodology AMS-I.D /9/. The monitoring plan will give opportunity for real measurements of achieved emission reductions. The electricity generated by the hydroelectric power plant (net of parasitic consumption) and supplied to the local grid (CFE) will be monitored. Procedures for archiving baseline emission data and calibration are defined to ensure later verification of CERs.

3.5 Calculation of GHG Emissions

The calculations are transparently documented and appropriate assumptions regarding expected amounts of electricity generated have been used to forecast emission reductions in alignment with the selected small-scale methodology.

Project emissions are zero. Baseline emissions are calculated based on actual data on the fuel mix of power generation within Mexico. A grid electricity emission coefficient of 0.531 tCO_2/MWh is determined ex-ante in accordance with AMS-I.D and remains fixed during the first renewable crediting period. The operating margin and build margin emission coefficients have been determined using data for the years 2002-2004 on electricity generation and CO_2 emissions published by Mexican Energy Secretariat (SENER) /5/-/7/. 2002-2004 data were the most recent statistics available at the time of submission of the final PDD of 19 April 2006. For some power plants operated by independent power producers no CO_2 emissions and fuel consumption data are publicly available and a proxy for these plants' emission factor has been determined, using conservative assumptions for the efficiency of these plants.

Since the renewable energy technology does not represent equipment transfer from another activity, leakage calculations are not required for category I.D project activities.

Given that the project will be able to produce the anticipated amount of electricity the project is likely to achieve the emission reductions stated in the PDD.

3.6 Environmental Impacts

The proposed hydropower plant has identified the variability in discharge flow (hydrology), impacts on flora and fauna and the construction of transmission lines as potential environmental impacts. An EIA has been prepared for the project, and this has been approved by SEMARNAT.

3.7 Comments by Local Stakeholders

Consultations have been planned and arranged with local stakeholders, such as the farmers who use the water stored in the dam and affected landowners along the route of the transmission line. A report from these consultations has been made available /3/. An agreement has been reached in terms of the transmission line design. No other issues of concern to the local public have been identified. The developer is currently designing a website to inform the public about the EIA's and INELEC projects umbrella.

As the project in not expected to have considerable social and environmental impacts, the local stakeholder consultation process carried out for the project is deemed sufficient.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD of 7 April 2004 was made publicly available on DNV's climate change website (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 23 April to 23 May 2004. One comment was received. This comment, given in unedited form in Appendix B, addressed the same initial concerns as DNV had with regard to the additionality of hydro-electric projects in Mexico and the described barriers. However, the validation process has confirmed the main claims of the PDD:

- This project will not have been able to secure financing and become implemented without carbon finance;
- Although hydro may seem an attractive option, prevailing practise shows that the preferred capacity extension in Mexico in the past years has been thermal based;
- This project would not have started construction without the backing of foreign investors.

In DNV's opinion, there is sufficient evidence to confirm that the project is additional and thus eligible as a CDM project.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd initiate a first review in the period June 2003 to March 2004 and finally performed a validation of the "Trojes Hydroelectric Project" in the state of Jalisco, Mexico, proposed for registration as small-scale CDM project activity. The validation is performed on the basis of UNFCCC criteria for CDM project activities, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The project participant are Impulsora Nacional de Electricidad S. de R.L. de C.V. and Hidroelectricidad del Pacífico S de R.L de C.V. The host Party Mexico meets the requirements to participate in the CDM and the DNA of Mexico has provided approval of voluntary participation and confirmation that the projects assists in achieving sustainable development. No participating Annex I Party is yet identified.

The project includes the construction of a hydropower plant with electricity generation capacity of 8 MW that utilises the irrigation water flow from an existing irrigation dam. Being a renewable energy project activity with an output capacity of less than 15 MW, the project qualifies as category I.D small scale CDM project activity.

An analysis of the presented barriers and explanation why the project has already been constructed and commenced operations demonstrate 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 simplified baseline methodology AMS-I.D (version 08). The selected business as usual baseline in the Mexican capacity expansion plan represents a likely baseline scenario, and recent additions to the Mexican grid indicate that this project would not be a likely business as usual scenario for capacity expansion.

The monitoring plan provides for the monitoring of electricity generated by the project. A grid electricity emission coefficient of 0.531 tCO_2/MWh is determined ex-ante in accordance with AMS-I.D and remains fixed during the first renewable crediting period.

By displacing fossil-based electricity with hydropower electricity, the project results in reductions of CO_2 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.

Local stakeholders were consulted and the PDD has been published and comments by Parties, stakeholders and UNFCCC accredited NGOs were invited through the CDM website. One comment was received and considered in this validation.

In summary, it is DNV's opinion that the project, as described in the project design document version 3 dated 19 April 2006, meets all relevant UNFCCC requirements for the CDM, is eligible as type I.D small-scale CDM project activity and correctly applies the simplified baseline and monitoring methodology AMS-I.D (version 08). Hence, DNV requests the registration of the "Trojes Hydroelectric Project" as a CDM project.

REFERENCES

Documents provided by the project participants that relate directly to the GHG components of the project.

/1/ INELEC: *Project design document for the "Trojes Hydroelectric Project"*, Version of 7 April 2004, version 2 of October 2005 and version 3 of 19 April 2006.

/2/ Ministry of Environment and Natural resources (DNA of México*): Letter of Approval*, 20 April 2006

/3/ HIDROELECTRICIDAD DEL PACIFICO, S.A. DE C.V.: *Evaluación de Impacto Ambiental Suplementaria Requerimiento del IFC*. July 2001

/4/ PCF: *PCN Cover Note: Mexico: INELEC Hydro Projects: Trojes, El Gallo, Trojes and Benito Juaréz*, 26 September 2002.

/5/ Secretaría de energía (SENER): *Prospectiva del Sector Electrico 2005-2014, 2004-2013 and 2003-20012*, http://www.sener.gob.mx/wb2/SenerNva/iiPro514 last time accessed on 13 September 2006

/6/ Secretaría de Energía (SENER): *Emisiones del Sector Eléctrico (CFE Y LFC)*, http://www.sener.gob.mx/wb2/SenerNva/ibEse last time accessed on 13 September 2006

/7/ Comisión Federal de Electricidad (CFE): *Listado de centrales generadoras*, http://www.cfe.gob.mx/es/LaEmpresa/generacionelectricidad/listcentralesgeneradoras/ last time accessed on 2 May 2006

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

/8/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*, http://www.vvmanual.info

/9/ CDM Executive Board: *Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories - AMS-I.D I.D. Grid connected renewable electricity generation*, version 08 of 3 March 2006

/10/ CDM Executive Board: *Attachment A to the simplified modalities and procedures for small–scale CDM project activities*, Version 06: 30 September 2005

/11/ Organization chart of the four projects

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

/12/ Ing Carlos Jinich Ripstein - COMEXHIDRO

/13/ Ing Salomon Camhaji - COMEXHIDRO

/14/ Jacobo Mekler Waisburd - COMEXHIDRO

/15/ Miguel Angel Cervantes Sánchez - Mexican DNA

/16/ Juan Cristóbal Mata - SENER – Secretaria de energia (Energy Ministry)

/17/ Ubaldo Inclan Gallardo- Dirección de energias renovables y medio ambiente (Renewable energy and Environmental department)

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APPENDIX A

SMALL-SCALE CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirements for Small S le Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion	Cross Reference / Comment
1. 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. Assist non-Annex I Parties in achieving sustainable development and the project has obtained confirmation by the host country that the project assists in achieving sustainable development	Kyoto Protocol Art. 12.2, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	OK	Table 2, Section A.3 The project assists Mexico as non-Annex I party, and this has been confirmed by the Mexican Department of Energy.
3. Assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC?	Kyoto Protocol Art. 12.2.	OK	
4. The project has the written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	OK	Formal approval by the Mexican DNA, including a confirmation that the projects assists in achieving sustainable development, has been provided.
5. The emission reductions should 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.4.4
6. Reduction in GHG emissions must 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. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	OK	Table 2, Section B.2.1 The investigation shows that the reasons for commencing project construction and operations are justifiable.
7. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding 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.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	.OK	No public funding involved.
8. Parties participating in the CDM shall designate a	Marrakesh Accords (CDM	OK	The Mexican DNA has been established on 23

Requirement	Reference	Conclusion	Cross Reference / Comment
national authority for the CDM	modalities§ 29)		January 2004.
9. The host country is a Party to the Kyoto Protocol	Marrakesh Accords (CDM modalities§ 30)	OK	Mexico ratified the Kyoto Protocol on 7 September 2000
10. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK	Table 2, Section A.1
11. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	OK	The document is as per version 02 of CDM-SSC PDD.
12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK	Table 2, Section A.1.3 and B.1 The project conforms to Type I, category I.D of the simplified M&P for SSC CDM
13. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	OK	Table 2, Section G
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK	Table 2, Section F
15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	OK	The PDD of 7 April 2004 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 23 April to 23 May 2004. One comment was received.

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A. Project Description *The project design is assessed.*					
A.1. Small scale project activity *It is assess whether the project qualifies as small scale CDM project activity.*					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/1/	DR	Yes. The project qualifies as renewable energy project with a nominal capacity generation of 8 MW. It involves the installation of a small scale hydro electric plant in an existing irrigation dam, and which electricity output will be fed into the national electricity grid.		OK
A.1.2. The small scale project activity is not a debundled component of a larger project activity?	/1/	DR	This project is not a debundled component of a larger project activity.		OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	/1/	DR	The project confirms to Type I, Category I.D.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.2. Project Design *Validation of project design focuses on the choice of technology and the design documentation of the project.*					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/ A4	DR	The project boundaries have been defined and are limited to the hydroelectric facility to be put up downstream of the point where the irrigation water exits the dam. The powerhouse is located at the Trojes Dam located on the Barreras river in the state of Michoacán, 50 kilometers south-east of the city of Colima.		OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/ A4	DR	Yes. This is a hydropower project based on renewable energy and displaces emissions from fossil fuel fired plants.		OK
A.2.3. Does the project design engineering reflect current good practices?	/1/ A4	DR	Yes. The project involves putting up a standard hydropower facility, with a nominal capacity of 8 MW.		OK
A.2.4. Will the project result in technology transfer to the host country?	/1/ A4	DR	Yes. The turbines and generators are being supplied by Alstom Power and VA Tech.		OK
A.2.5. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?	/1/ A4	DR	Though not specifically indicated in the PDD, no extensive initial training and maintenance efforts are expected to be necessary for this type of standard hydropower project.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed*					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	/1/ A4	DR	The project reduces emissions from fossil fuel fired plants and generates electricity in a rural area.		OK
A.3.2. Will the project create any adverse environmental or social effects?	/1/ A4	DR	Unlikely. The facility is coming up at an area previously designated for hydroelectric power generation. Irrigation demand flows will take priority. Developer has established legal agreement with CNA in this regard. Transmission lines are not expected to cause any resettlements and Rights of Way (ROW) have been negotiated and granted. An EIA has also been carried out.		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/ A4	DR	At present, no specific Mexican CDM criteria are established.	~~CL.1~~	OK
A.3.4. Is the project in line with relevant legislation and plans in the host country?	/1/ A4	DR	The approval of the project by the Ministry of Energy implies that relevant criteria are met.	~~CL.1~~	OK
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category?	/1/ B2	DR I	Yes. The project applies one of the simplified baseline methodologies proposed for project activity category I.D, i.e. option A - the average of the approximate operating margin and the build margin.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.1.2. Is the baseline methodology applicable to the project being considered?	/1/ B2	DR I	Yes. The methodology is for Type I, Category I.D – Renewable electricity generation for a grid.		OK
B.2. Baseline Determination *It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.*					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	/1/ B3	DR I	The project proponents have chosen barriers due to prevailing practise and other barriers to demonstrate the project itself is not a likely baseline scenario, i.e., primarily related to institutional issues, structure of the electricity market and the power sector in Mexico, to demonstrate additionality of the project. The validation team has further investigated these barriers. The presented analysis of the carbon finance's effect on the viability of the project and the current market opportunities and threats demonstrate that the designation of the project as a CDM project and the contribution of foreign investors have helped to overcome or decrease the barriers. Nonetheless, it remains to be more clearly demonstrated that the project would not have occurred anyway due to barriers.	~~CL.2~~	OK
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	/1/ B3, E	DR I	Yes. Clear and transparent.		OK
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	/1/ B3, E	DR I	National policies appear to favour renewable energy development.		OK
B.2.4. Is the baseline selection compatible with the	/1/ B3,	DR	Yes. Data used to determine the baseline have been verified against Sener (Secretaria de Energia) data for		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
available data?	E		2002 to 2004.		
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	/1/ B3, E	DR I	see B.2.1.	CL.2	OK
C. Duration of the Project / Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Are the project's starting date and operational lifetime clearly defined?	/1/ C1	DR	The construction work commenced in January 2002 and electricity generation commenced on 1 April 2003. The operational lifetime of the project is expected to be 50 years.		OK
C.1.2. Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)?	/1/ C2	DR	Seven years, with the starting date of the first crediting period being 01 April 2003.		OK
D. Monitoring Plan *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate monitoring methodology.*					
D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category?	/1/ D1	DR	Monitoring is restricted to metering of the electricity generated by the renewable technology.		OK
D.1.2. Is the monitoring methodology applicable to the project being considered?	/1/ D1	DR	The proposed monitoring methodology complies with the monitoring methodology proposed for category I.D projects.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.1.3. Is the application of the monitoring methodology transparent?	/1/ D1	DR	Yes. The application is transparent.		OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	/1/ D	DR	Yes.		OK
D.2. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.2.1. Are the choices of project emission indicators reasonable?	/1/	DR	No significant project emissions are expected.		NA
D.3. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
D.3.1. If applicable, are the choices of leakage indicators reasonable?	/1/	DR	Since the renewable energy technology does not represent equipment transfer from another activity, no leakage calculations are required for category I.D project activities.		NA
D.4. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.4.1. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/ D1	DR	Yes. This is in line with the small-scale methodologies accepted by the CDM EB.		OK
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	/1/ E	DR	Yes		OK
D.4.3. Do the measuring technique and frequency	/1/ D3	DR	Yes, on a continuous basis		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
comply with good monitoring practices?					
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	/1/ D3	DR I	Two years and the duration of the project crediting period in files. However, the provisions for archiving baseline emission data need to be clarified and elaborated.	~~CL.3~~	OK
D.5. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.5.1. Is the authority and responsibility of project management clearly described?	/1/	DR I	The project is developed by INELEC, but it remains to be clarified whether this organisation also will operate the hydropower plant. The authority and responsibility for project operation, monitoring and reporting must be described to ensure later verification of CERs.	~~CAR 2~~	OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	/1/	DR I	The MP does not include a description of the authorities and responsibilities for monitoring and reporting.	~~CAR 2~~	OK
D.5.3. Are procedures identified for training of monitoring personnel?	/1/	DR	No procedures for training of monitoring personnel are described, but the project only requires limited monitoring, which is part of normal operations.		OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No GHG emission relevant emergency situations are expected to occur.		OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR I	The MP does not describe procedures for calibration of electricity meters. Procedures for calibration must be defined to ensure later verification of CERs.	~~CAR 3~~	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	No procedures for maintenance of equipment are described, but the project only requires limited maintenance which is part of normal operations.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	No detailed procedures for monitoring are described, but the project only requires limited monitoring which is part of normal operations.		OK
D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	The project only requires limited monitoring, which is part of normal operations. Electricity generation of the Trojes hydropower plant is recorded daily and data are achieved electronically.		OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	Uncertainties are expected to be minimal, considering the nature of the project. Such procedures are not imperative to the project.		OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	/1/	DR I	No procedures for internal audits are described.	~~CAR 4~~	OK
D.5.11. Are procedures identified for project performance reviews?	/1/	DR	No procedures for project performance reviews are described, but such procedures are not imperative to the project.		OK
D.5.12. Are procedures identified for corrective actions?	/1/	DR	After internal audits performed by ASERGEN, Myocen will implement corrective actions according to the response of INELEC and section A.4.3 of PDD		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E. Calculation of GHG emission *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.*					
E.1. Project GHG Emissions *The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	/1/	DR	No significant project emissions are expected.		NA
E.2. Leakage *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.*					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	/1/	DR	Since the renewable energy technology does not represent equipment transfer from another activity, no leakage calculations are required for category I.D project activities.		NA
E.3. Baseline GHG Emissions *The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources	/1/	DR	The baseline emissions are defined in accordance with AMS-I.D.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
for baseline emissions?					
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	/1/	DR	All direct baseline emissions are captured. Indirect baseline emissions are immaterial.		OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	/1/	DR	Yes		OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	/1/	DR	The methodology complies with one of the approaches proposed for category I.D project activities.		OK
E.3.5. Are the calculations documented in a complete and transparent manner?	/1/	DR	Yes		OK
E.3.6. Have conservative assumptions been used?	/1/	DR	Yes. Wherever applicable.		OK
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	/1/	DR	Yes. Baseline is likely to change at the end of the first and second crediting periods, due to addition of GCCT, replacement of ageing plants etc. baseline will have to be subsequently re-established.		OK
E.4. Emission Reductions *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 case?	/1/	DR	The project will partly displace fossil fuel-based electricity generation. While the project emissions are zero, baseline emissions are calculated to be 0.531 kg CO_2 per kWh.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
F. Environmental Impacts *It is assessed whether environmental impacts of the project are sufficiently addressed.*					
F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	/1/ F	DR	The EIA has been officially approved by the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT).		OK
F.1.2. Does the project comply with environmental legislation in the host country?	/1/ F	DR	The EIA has been approved by the SEMARNAT.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/ F	DR	No impact on flora and fauna. Legal agreement has been established with the CNA for irrigation.		OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	/1/ F	DR	The environmental impacts of the project are sufficiently assessed.		OK
G. Comments by Local Stakeholder *Validation of the local stakeholder consultation process.*					
G.1.1. Have relevant stakeholders been consulted?	/1/ G	DR	The stakeholder consultation process needs to be completed with respect to: - identified stakeholders consulted - summary of the comments received - report of the due account of the comments received	~~CL.4~~	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ G	DR	Yes. Through direct consultations.		OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation	/1/ G	DR	The EIA has been officially approved by SEMARNAT and the developer is currently designing a web-site to inform the public about the EIAs and the INELEC		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
process been carried out in accordance with such regulations/laws?			Projects Umbrella.		
G.1.4. Is a summary of the comments received provided?	/1/ G	DR	See G.1.1	~~CL.4~~	OK
G.1.5. Has due account been taken of any comments received?	/1/ G	DR	See G.1.1	~~CL.4~~	OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 1 Written confirmation is required from the government of Mexico regarding contribution to sustainable development. The project must have written approval of voluntary participation from the DNA of Mexico.		The DNA of México provided a Letter of Approval dated 20 April 2006	OK
CAR 2 The authority and responsibility for project management, monitoring, measurement, review and reporting has not been clearly established in the PDD.	D.5.1 D.5.2	There are four agreements between INELEC and MyOcen (operator company contracted). All the responsibilities mentioned in CAR 2 are included into the agreement. For further clarification see organization Chart described by COMEXHIDRO (Annex I of this report)	OK
CAR 3 Procedures for calibration of the monitoring equipment have not been identified.	D.5.5	Monitoring will be related to measure of electricity generation and this is a responsibility of the CFE (COMISION FEDERAL DE ELECTRICIDAD) who is a company with ISO 9001 and calibration is under their procedures	OK
CAR 4 The following procedures need to be addressed/established: - Internal auditing of GHG project compliance with applicable operational requirements. - Corrective actions for future monitoring and reporting	D.5.10 D.5.1	Internal Audits actions will be responsibility of ASERGEN for operation and financing as well as the follow up in order to close the non conforming. Implementation of corrective action will be performed by Myocen (see annex I)	OK

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL.1 It is not clear whether the project is in line with the Mexican Governments' CDM requirements and information linking the project activity to the current sustainable development policies.	A.3.3 A.3.4	The DNA of México provided a Letter of Approval dated 20 April 2006 and confirmed that the project assists in achieving sustainable development.	OK
CL.2 It remains to be more clearly demonstrated that the project would not have occurred anyway due to barriers.	B.2.1 B.2.5	This issue is now further elaborated in the April 2004, October 2005 and 19 April 2006 versions of the PDD and has also been confirmed during interviews in Mexico.	OK. Reasonable argumentation has been presented to sustain the project additionality claim with regard to the project already being implemented.
CL.3 The PDD indicates two years for archiving baseline emission data and the duration of the project crediting period in files. This needs to be clarified and elaborated.	D.4.4	The time indicated means that the construction of the project will be two years. In addition to that, Comexhidro has data bases with daily generation, as well as monthly and annual.	OK. Data will be archived for two years following the end of the crediting period.
CL.4 The stakeholder consultation process needs to be completed with respect to: - identified stakeholders consulted - summary of the comments received - report of the due account of the comments received	G.1.1 G.1.4 G.1.5	This is now contained in the stakeholder consultation report and referred to in the PDD	OK

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APPENDIX B

STAKEHOLDER COMMENTS

Comment by: Barbara Haya, International Rivers Network
Inserted on: 2004-05-24
Subject: Comments on Trojes, Benito Juarez and Chilatan Hydroelectric projects

I have common concerns regarding the additionality of the three Mexican hydropower projects under public review ending May 23: the Trojes, Benito Juarez, Chilatan hydroelectric projects. Almost identical additionality discussions are used for these three projects, so I will address my concerns with these three projects in one comment.

The additionality arguments are unconvincing because of two combined reasons: 1. the Trojes project is already completed and the Chilitan project has already begun construction, and 2.hydropower is a common technology on the Mexican grid. Though the argument that the involvement of the PCF in the project helped lend credibility and confidence to these small-scale projects is indeed plausible, it is unverified; any project developer can make this claim.

First, even for small projects, if a project has started construction at the time that the PDD is submitted, the project should be assumed to be non-additional, and stronger evidence must be provided showing why the project would only have gone ahead with the CDM. Adequate evidence is not provided to verify the additionality claims. Also, according to the PDDs, each of these three projects are built onto an existing dam constructed with the intent to construct future hydroelectric plants on-site. This indicates a clear intent to build each of these or similar hydropower facilities at some point, and adequate reason is not given in the PDD as to why such hydropower plants would actually likely not be built.

Second, the above-discussed additionality arguments are especially suspect given that hydropower is a common technology on the Mexican grid. 15% of capacity in Mexico is from hydropower, including 34 small hydro plants currently in operation in Mexico (2001 Hydropower & Dams World Atlas). According to the PDD, plenty of new hydropower development is being planned, composing 10% of expected new capacity additions. Also, hydropower is described by the hydropower industry to be cost effective in Mexico. According to the 2003 Hydropower & Dams World Atlas, the amount of economically feasible hydropower in Mexico totals over 75% of total current installed capacity on the grid of all technologies, and the cost for hydropower is lower than most other type of power plants (US 2.77 cents instead of 3.06 per kWh on average). Furthermore, expanding existing hydro projects is frequently one of the most cost-effective methods of adding new generation capacity to a grid – especially where the relevant dam has been designed to allow for such expansion. This makes the additionality claim even less credible. It is difficult to make convincing additionality claims for a project using such a common and least-cost technology.

In sum, considering that hydropower is common on the grid and is evaluated by the hydropower industry itself to be economically feasible and a least cost option, it seems unlikely that most hydropower projects should be able to receive CDM credits in Mexico. Also, projects that have started construction, even small-scale projects, should require more substantial evidence that they are only going ahead because of the CDM and without evidence, be considered non-additional.

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