



VALIDATION REPORT TRONDER POWER LTD.

VALIDATION OF THE BUGOYE 13.0 MW RUN-OF- RIVER HYDROPOWER PROJECT

REPORT No. **KENYA -VAL/0001/2008**

REVISION No. 01

BUREAU VERITAS CERTIFICATION

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VALIDATION REPORT

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Client: Tronder Power Ltd.	Client ref.: Mr. Jon Einar Vaernes


Summary:

Bureau Veritas Certification has made the validation of the Bugoye 13.0 MW Run-of-River Hydropower Project owned by Tronder Power Ltd. located at the foot of the Rwenzori Mountains in the Kasese District, Western Uganda 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 rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology AMS I.D Version 15 and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: Kenya -val/0001/2008	Subject Group: CDM
Project title: Bugoye 13.0 MW Run-of-River Hydropower Project	
Work carried out by: Ms. Jasmine Tang Xuemei (Team Leader) Mr. Andrew Kinyanjui (Team Member) Mr. Pin Tian (Team Member)	
Work verified by: Robin Wang Jing (Internal Reviewer) 	
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Abbreviations change / add to the list as necessary

BM	Build Margin
BVC	Bureau Veritas Certification
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CH ₄	Methane
CL	Clarification Request
CM	Combined Margin
CO ₂	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EAIF	Emerging Africa Infrastructure Fund
EIA	Environmental Impact Assessment
ERA	Electricity Regulation Authority
ERPA	Emission Reduction Purchase Agreement
FSR	Feasibility Study Report
GHG	Greenhouse Gas(es)
GoU	Government of Uganda
GSP	Global Stakeholders Process
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Countries
LLDC	Landlocked Developing Countries
LoA	Letter of Approval
MoV	Means of Verification
MP	Monitoring Plan
NEMA	National Environment Management Authority
NGO	Non Government Organization
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Participant
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention on Climate Change
UETCL	Uganda Electricity Transmission Company Limited
VVM	Validation & Verification Manual



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1 INTRODUCTION

Tronder Power Ltd. (hereafter called “**the PP**”) has commissioned Bureau Veritas Certification (hereafter called “**BVC**”) to validate its CDM project Bugoye 13.0 MW Run-of-River Hydropower Project (hereafter called “**the Project**”) at the foot of the Rwenzori Mountains in the Kasese District, Western Uganda.

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

1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and 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).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Validation team

The validation team consists of the following personnel:

Ms. (Jasmine) Tang Xuemei	Team Leader,
Bureau Veritas Certification	Climate Change Lead Verifier
Mr. Andrew Kinyanjui	Team Member,
Bureau Veritas Certification	Climate Change Verifier
Mr. Pin Tian	Team Member,
Bureau Veritas Certification	Climate Change Verifier

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and



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Verification Manual, issued by the Executive Board at its 55th meeting on 30/07/2010. The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, 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 completed validation protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The Project Design Document (PDD) submitted by Econ Pöyry and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests Econ Pöyry revised the PDD and resubmitted it on 06/05/2010. The validation findings presented in this report relate to the project as described in the PDD version 04.

2.2 Follow-up Interviews

On 30/10/2008 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of name of the company were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Tronder Power Ltd. (The PP)	<ul style="list-style-type: none"> ➤ Project background information and CDM consideration. ➤ Project technology, operation, maintenance and monitoring capability. ➤ Project monitoring and management plan. ➤ Stakeholder consultation process. ➤ Project approval status (incl. EIA approval, CDM project approval status) ➤ Hydropower development in the area ➤ Government policies related to Hydropower projects
LOCAL Stakeholder	<ul style="list-style-type: none"> ➤ Project background in details ➤ Stakeholder comments ➤ Social and environmental impact of the Project
Econ Pöyry (the consultant) Phone Interviewed	<ul style="list-style-type: none"> ➤ Applicability of selected methodology. ➤ Baseline determination. ➤ Emission reductions calculation. ➤ Emission reduction monitoring plan.



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2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

Corrective Action Requests (CAR) is issued, where:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

The validation team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

2.4 Internal Quality Control

The validation report underwent a technical review before requesting registration of the project activity. The technical review was performed by a qualified technical reviewer.

3 VALIDATION CONCLUSIONS

In the following sections, the conclusions of the validation are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Validation Protocol in Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in **6** Corrective Action Requests (CARs) and **15** Clarification Requests (CLs).

The CARs and CLs were closed based on adequate responses from the Project Participant (s) which meets the applicable requirements. They have been reassessed before their formal acceptance and closure.

The numbers between brackets at the end of each section correspond to the VVM paragraph.

3.1 Approval (49-50)

Letters of approval has been received (Ref-3, Ref-4) and the following support documentation:

✍ Letter of Approval re-issued by DNA of Uganda dated 31/08/2010. authorizing Tronder Power Ltd. as the Project Participant and confirms that Bugoye 13.0 MW Run-of-River Hydropower Project contributes to Uganda's Sustainable development (Ref-3)

✍ Letter of Approval from DNA of Switzerland dated 24/03/2010 authorizing Climate Cent Foundation as the Project Participant for the Project. (Ref-4)



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Bureau Veritas Certification received above letters from Tronder Power Ltd. and does not doubt their authenticity. The letter of approval from Uganda's DNA refers to the PDD version 04 dated 06/05/2010 being submitted for registration.

☞ Complying with para. 49 and 50/VVM, BVC recognizes that the Project is helpful to fulfill the host country's goals of promoting sustainable development. The Project is expected to be in line with host-country specific CDM requirements because of:

- Produce renewable energy and thus reduce GHG emissions;
- Reduce the SO₂, NO_x and particulates associated with power generation from fossil fuels fired plant;
- Diversify Uganda's energy mix, and support main policy goal of the Ministry of Energy and Mineral Development;
- Create job opportunities in local especially during the Project construction and the construction materials will be procured locally;

There are also evidences in various approvals issued by the local government of host country, which are summarized as below,

☞ Support Agreement relating to the development of a small hydropower project at Bugoye in Uganda signed between the Government of Uganda and the PP on 24/01/2008. (Ref-10)

☞ Feasibility Study Report (FSR) of the Project, completed by NORPIAN on 14/03/2006. (Ref-9)

☞ License for Generation and Sale of Electricity, issued by Electricity Regulatory Authority on 20/03/2008 to the PP for the Project. (Ref-8)

☞ Certificate of Approval of Environmental Impact Assessment issued to SN Power AS for the Project by NEMA¹ on 04/10/2006. (Ref-10)

☞ Amendment of Certificate of Approval of Environmental Impact Assessment issued by NEMA on 17/07/2008.² (Ref-11)

☞ Wetland Permit issued by NEMA to SN Power AS for the Project on 17/10/2007. (Ref-12)

☞ Amendment of Wetland Permit issued by NEMA on 17/07/2008.³ (Ref-13)

☞ Dredging License issued to the PP by Minister of Water and Environment on 09/04/2008. (Ref-14)

☞ Water Use Permit issued by NEMA to the PP on 17/06/2008. (Ref-15)

☞ Letter from the Royal Norwegian Embassy regarding financial grant not resulting the diversion of ODA, dated 22/05/2008⁴. (Ref-16)

¹ NEMA: National Environment Management Authority

² The Certificate of Approval of Environmental Impact Assessment was issued initially to SN Power AS and then changes the applicant name to Tronder Power Ltd. (the PP)

³ The Wetland Permit was issued initially to SN Power AS and then changes the applicant name to Tronder Power Ltd. (the PP)

⁴ The Minister of Finance in Norway has provided a grant to the Project. The letter has indicated the funds will not be used to purchase potential CERs for Norway and it does not lead to diversion of ODA from Norway.



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- ✎ Bureau Veritas Certification considers the letters are in accordance with **para45 - 48 /VVM**.
- ✎ 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 the host country.

3.2 Participation (54)

The participation for each project participant has been approved by a Party of the Kyoto Protocol.

The validation team concluded this by referring to the UNFCCC website at

<http://maindb.unfccc.int/public/country.pl?country=UG> and

<http://maindb.unfccc.int/public/country.pl?country=SZ>.

3.3 Project design document (57)

BVC hereby confirms that the PDD complies with the latest forms Project Design Document Form for small-scale project activities (CDM-SSC-PDD) version 03 and guidance documents for completion of CDM-SSC-PDD version 05.

3.4 Changes in the Project Activity

BVC noticed that the title of the Project and the GSP PDD dated 18/08/2008 indicate the Project is a 13MW project. However by checking the actual nameplate and review of equipment contract, the actual installed capacity should be 14.28 MW (two 7.14 MW generators and two 7.228 MW turbines). BVC has assessed the difference through the following actions:

- ✎ request for clarification from the PP
- ✎ request for confirmation from the Uganda DNA Ref-42
- ✎ request for confirmation from ERA regarding validity of the license
- ✎ re-assess the energy output and applicability of the applied methodology and scale of the Project.
- ✓ With regard to the validity of the previous approval and license referring the Project with 13MW capacity, relevant correspondences have been received and verified by BVC, from Uganda DNA and ERA indicating understanding the capacity actual installed (Ref-42).
- ✓ In terms of the estimated energy output of 82,000MWh in the FSR of the Project, a clarification (Ref-43) is provided by the FSR developer confirming that 82,000MWh will not be affected by the implementation the turbines/generators because energy output of this Project was calculated upon effective power output which is 13MW calculated from 2 turbines with rated output of 7.228 MW at a discharge 10m³/s, and also taking into account the losses of transformer and net head reduced due to higher friction losses. BVC has verified this clarification made by the FSR developer.
- ✓ With respect to applicability, the actual installed capacity of the Project is below the threshold of 15MW and the Project still qualifies the small scale methodology AMS I.D Version 15. Hence the actual installed capacity of the Project is deemed acceptable and the PDD has been updated accordingly.

From the above analysis, BVC concludes the change of capacity of the Project from 13MW to 14.28MW in the PDD reflect the actual implementation and is acceptable.



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3.5 Project description (64)

The Project is located at the foot of the Rwenzori Mountains in the Kasese District, Western Uganda, with geographical coordinates:

Diversion intake:	0 20'02.30"N	30 04'27.76"E	
Intake:	0 19'46.58"N	30 04'16.27"E	
Forebay:	0 18'51.93"N	30 05'43.25"E	
Power station:	0 18'25.80"N	30 05'57.57"E	(0.3072 N, 30.099325 E)
Tailrace outlet:	0 18'27.94"N	30 06'07.20"E	

The total installed capacity of the Project is 14.28MW (Ref-20), consisting of 2 horizontal water turbines (2*7.228MW) and generators (2*7.14MW), supplied by Mavel (Ref-17). The annual electricity generation is estimated at 82,000MWh and will feed to the Uganda grid. The Project is expected to produce annual emission reductions of 51,074 tCO₂e during the 10 year fixed crediting period.

The plant load factor (PLF) is calculated as 0.655 using the actual installed capacity of 14.28MW and the annual electricity generation of 82GWh provided in the FSR (Ref-6). The FSR was developed by NORPLAN and has been reviewed and referred in the Support Agreement (Ref-10) of the Project signed between the PP and GOU. Hence the determination of PLF of the Project is in accordance with EB48, Annex11 "Guidelines for the Reporting and Validation of Plant Load Factors".

The Project is a run-of-river hydropower plant and the reservoir area is zero which is stated in the FSR and verified by BVC during the site visit.

According to Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities, "Compendium of guidance on the de-bundling for SSC project activities" (EB 36 Annex 27), BVC was able to verify that there is neither a registered small-scale CDM project activity nor an application to register another small-scale CDM project activity with the same project participant, in the same project category and technology/measure, registered within the previous 2 years and whose project boundary is within 1km of the project boundary of the Project. The Project is therefore is not a debundled component of a large scale project activity.

Complying with para.64/VVM, The DOE hereby confirms that the project description in PDD (Ref-2) is accurate and complete in all respects.

3.6 Baseline and monitoring methodology

3.6.1 General requirement (76-77)

The Project employs the approved consolidated baseline and monitoring methodology AMS I.D Version 15– "Grid connected renewable electricity generation" under Type I Category I.D of Appendix B of the simplified Modality and Procedure for the small scale CDM project activity, valid from 30/10/2009 /1/, Tool to calculate the emission factor for an electricity system version 02 dated 16/10/2009 /3/, Tool to calculate project or leakage CO₂ emission from fossil fuel combustion version 02 dated 02/08/2008 /4/.

Applicability condition (a): The capacity of the project is 14.28MW, not exceed 15MW, and will remain under the limits of small-scale project activity type during the crediting period.

Applicability condition (b): The Project is a run-of-river hydropower project with no reservoir area, generates renewable energy and supplies electricity to Uganda national grid;



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BVC hereby confirms that the selected baseline and monitoring methodology (/1/), tool (/3/ /4/) is previously approved by the CDM Executive Board, and is applicable to the Project, which, complies with all the applicability conditions therein.

BVC hereby confirms that, as a result of the implementation of the proposed CDM project activity, there are no greenhouse gas emissions occurring within the proposed CDM project activity boundary, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology

3.6.2 Project boundary (80)

In line with the latest Tool to calculate the emission factor for an electricity system version 02 dated 16/10/2009 (Hereafter called "Tool-Grid EF"), the spatial extent of the Project boundary should be the Uganda national grid which is the physical, geographical site of Project and all other power plants physically connected to the Project. The main emission source included in the baseline project boundary is only CO₂ from electricity generation in fossil fuel fired power plants in Uganda national grid. This is also in line with the applied AMS I.D Version 15.

The DOE validated the project boundary by collecting and analyzing relevant information on official website (Ref-37) of the Electricity Regulatory Authority (hereafter called ERA) of Uganda, as the DNA of Uganda has not published any delineation of the grid.

Based on the above assessment, the DOE hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.

3.6.3 Baseline identification (87-88)

The steps taken to assess the requirement given in paragraph 80 and 81 of the VVM are described below:

The Project is the installation of a newly built and grid-connected renewable power plant, the baseline scenario delineated in the applied methodology AMS I.D Version 15 has been described in the PDD as:

The baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in kWh of electricity produced by the renewable generating unit multiplied by an emission factor.

$$BE_y = EG_{BL,y} * EF_{CO_2}$$

Where:

BE_y Baseline Emissions in year y; t CO₂

$EG_{BL,y}$ Energy baseline in year y; kWh

EF_{CO_2} CO₂ Emission Factor in year y; t CO₂e/kWh

The Emission Factor can be calculated in a transparent and conservative manner as: a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system (Version 02)./3/

Based on the above assessment, BVC hereby confirms that:

[a] All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;



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- [b] All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- [c] Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- [d] Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- [e] The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.6.4 Algorithms and/or formulae used to determine emission reductions (92-93)

The steps taken to assess the requirement outlined in paragraph 88 the VVM are described below:

The emission reductions generated by the Project were calculated in accordance with the baseline methodology AMS I.D Version 15 /1/, Tool-Grid EF /3/, Tool to calculate project or leakage CO₂ emission from fossil fuel combustion version 02 dated 02/08/2008 /4/.

BVC has received and checked the below data used in the PDD and confirms they were valid at the time of the validation,

- ✍ EGM,y, EGj,y, EGk,y: sourced from the ERA website (Ref-37)
- ✍ FCI,m,y, FCI,j,y, FCI,k,y, obtained directly from ERA officers (Ref-38) as data on the thermal plants was not available from the ERA website
- ✍ Data for load duration curves: obtained directly from UETCL officer (Ref-39) due to unavailability of public data.

The calculation was carried out with the employment of the following seven steps:

Step 1.-Identification of the relevant electricity systems.

The DNA of Uganda has not published any delineation of the grid and Ugandan national grid was selected as the project electricity system. The national grids of Kenya and Rwanda are considered connected electricity systems. Electricity transfers from connected electricity systems to the project electricity system are defined as electricity imports.

To determine the CO₂ emission factor(s) for net electricity imports it was selected the emission factor of 0 tons CO₂ per MWh is applied to net import from Rwanda.

- ✍ BVC was able to confirm that the identified electric power systems are appropriate and consistent with the tool /4/.

Step 2.-Decision to include or not off-grid power plants in the project electricity system (optional)

Option I "Only grid power plants are included in the calculation" was chosen.

Step 3.-Selection of a method to determine the operating margin (OM)

The simple adjusted OM emission factor calculation method was chosen; ex ante option was used to calculate the emission factor.

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☞ BVC has checked the data from ERA during 2005-2007, which are the data available at the time of submission of the CDM-PDD to the BVC for validation, were applied correctly.

Step 4.-Calculation of the operating margin emission factor according to the above selected method.

The data on electricity generation from 2005 to 2007 were obtained from ERA website (Ref-37).

The data on different fuel consumptions for power generation from 2005 to 2007 were obtained from ERA officers (Ref-38).

The data for load duration curves were obtained from UETCL officer (Ref-39), as data of the load duration curve 2006 only covers 8455 hours, the UETCL explained in an email that the missing data were not recorded due to installation of a new monitoring system at that time (Ref-40). BVC has divided the available data by full size of all 8760 hours and found the completeness of 96.5% for existing 2006 data is still sound. Also it was confirmed in the email by UETCL is that in Uganda there was no seasonal variation in loading across the year that would affect the curve. BVC has checked the evidence and considered the calculation using existing data is appropriate.

The emission factors and the net calorific values of the fuels adopted were selected from Table 1-2 and Table 1-4 of the "2006 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook".

A 10-year fixed crediting period is adopted for the Project and the OM will be fixed for the crediting period.

☞ , The data sourced are deemed reasonable and BVC confirms that the calculation can be replicated using the data and parameter provided in the PDD.

Step 5.-Identification of the group of power units to be included in the build margin.

The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently (Option b) was properly adopted for the Project.

The data on added capacity in Uganda was confirmed by UETCL in an email dated 08/08/2008 (Ref-41).

☞ BVC hereby confirms that the data source and approaches taken are deemed relatively reliable as data availability in Uganda (Least Developed Country) is considerably limited which complicates the validation process.

Step 6.-Calculation of the build margin emission factor.

The BM emission factor of the power grid was calculated by multiplying the emission factor of the thermal power with the share of the thermal power in the most recent added approach to 20% of total installed capacity.

The emission factor for thermal power is determined based on Table 1-2 and Table 1-4 of the "2006 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook".

☞ BVC hereby confirms that the data sources are deemed reliable and calculation is appropriate.

Step 7.-Calculate the combined margin emissions factor.

According to the "Tool-Grid EF", the default weights: $\omega_{OM}=0.5$ for Operating Margin and $\omega_{BM}=0.5$ for build Margin in the crediting period of hydropower projects were adopted.



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As per baseline methodology AMS I.D Version 15 and “Tool-Grid EF”:

- 1) **Baseline emissions:** baseline emissions BE_y (tCO₂) are equal to baseline emission factor EF_{CO_2} (tCO₂/MWh) times the net electricity supplied to the grid $EG_{BL,y}$ (MWh).
- 2) **Project Emissions:** the project emissions from reservoirs were regarded as zero as the Project is a run-of-river project with no reservoir (Ref-6). The Project will install a diesel generator for emergency use. The emissions from use of the diesel generator are considered and can be calculated according to Tool to calculate project or leakage CO₂ emission from fossil fuel combustion version 02 dated 02/08/2008 /4/ Complying with para.76/VVM, BVC is able to confirm the emissions from emergency use of the diesel generator are expected to contribute less than 1% of the overall expected annual emission reductions, therefore it will not be included in calculation in the validation stage, the consumption of the fossil fuel will be monitored during monitoring period.
- 3) **Leakage:** no leakage has to be considered for the Project since no energy generating equipment is transferred from or to the project site.
- 4) **Emission reductions:**

$$ER_y = BE_y - PE_y - LE_y = BE_y = EF_{CO_2} \times EG_{BL,y}$$

With reference to the Tool-Grid EF, the Simple OM emission factor ($EF_{grid,OM,y}$) was calculated as 0.5685 tCO₂e/MWh. Similarly, the build margin emission factor ($EF_{grid,BM,y}$) was determined ex-ante as 0.6772 tCO₂e/MWh.

Therefore the combined baseline emission, determined ex-ante, will remain fixed during the first crediting period, viz.

$$EF_{grid,CM,y} = 0.5685 \times 0.5 + 0.6772 \times 0.5 = 0.62286 \text{ (tCO}_2\text{e/MWh)}$$

According to the estimated annual electricity delivered to the grid (82,000MWh), the expected 51,074 tCO₂e annual emission reductions of the Project during the crediting period were deemed reasonable.

Based on the above assessment, the DOE hereby confirms that:

- [a] All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- [b] All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- [c] All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- [d] The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- [e] All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

3.7 Additionality of a project activity (96)

The assessment of the Project additionality was performed in accordance with “Information on additionality” (Attachment A to Appendix B of 4/CMP.1 Annex II) /5/, the Guidance on the demonstration and assessment of prior consideration of the CDM (version 03, annex 22 of EB49) /6/, “Non-binding best practice examples to demonstrate additionality for SSC project activities” (annex 34 of EB35) /7/, “Guidelines for objective demonstration and assessment of barriers” (annex 13 of EB50) /8/.


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The steps taken, and sources of information used, to cross-check the information contained in the PDD on this matter are described below:

3.7.1 Prior consideration of the clean development mechanism (103)

It has been demonstrated by the timeline of events of the Project below in **Table 2** that the CDM revenues was seriously considered in the decision to proceed with the Project prior to start of the Project and, the continuing and real action were taken to secure CDM status for the Project in parallel with its implementation:

Table 2 Timeline of the Project Activities

Date	Actions	Reasons or Impacts	Evidences verified
Mar 2006	Feasibility Study Report and EIA report completed for the Project	Undertaken by NorPlan for SN Power AS.	Ref-6✓ Ref-7✓
04/10/2006	EIA approval of the Project	By NEMA, issued to SN Power AS.	Ref-10✓
July 2007	Transfer of project from SN Power AS to TrønderEnergi	The Project has been taken over by TrønderEnergi.	Ref-9✓
Sep. 2007	Investment decision by TrønderEnergi for the Project considering CDM revenue.	TrønderEnergi has approved the investment for the Project and decided to establish Tronder Power Ltd. to implement the Project. CDM revenue is considered.	Ref-21✓
Dec. 2007	Norfund (co-owner of Tronder Power Ltd) investment decision	Investment decision made by Norfund and taken as the <u>final investment decision</u> .	Ref-22✓
15/01/2008	Mobilization for Construction	Based on letter of intent with Noremco for early start-up prior to contract signature. Early construction mobilization is not a real expenditure until the construction contract is signed.	Ref-19✓
24/01/2008	Support Agreement signed between the GOU and the PP.	The implementation of the Project is agreed and supported by the GOU. By providing guarantees to overcome barriers; the GOU will take a share of the CDM benefit as stipulated in the agreement.	Ref-10✓
10/02/2008	CDM consultancy contract	Secure the progress of the CDM development in parallel with the implementation of the Project.	Ref-23✓
07/03/2008	Construction contract	Earliest date among real actions the PP has committed to expenditures related to the implementation or related to the construction of the Project. Hence it is considered as the <u>Project start date</u> .	Ref-18✓


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Date	Actions	Reasons or Impacts	Evidences verified
13/03/2008	Contracts of the turbines and generators with Marvel	Expenditures related to the implementation of the Project	Ref-17✓
20/03/2008	License for Generation and Sale of Electricity	The license issued by ERA to the PP for the Project to supply electricity to the Uganda national grid.	Ref-8✓
May 2008	Loan agreement between the PP and EAIF	The EAIF committed a loan to the Project, considering CDM as an important factor.	Ref-24✓ Ref-25✓
17/07/2008	Amendment of EIA approval	EIA certificate was amended and transferred to the PP	Ref-11✓
02/09/2008	GSP of the PDD on UNFCCC	Secure the progress of the CDM development in parallel with the implementation of the Project.	Ref-1✓
12/05/2009	Letter of Approval from Uganda DNA	Secure the progress of the CDM development in parallel with the implementation of the Project.	Ref-3✓
Feb 2010	Emission Reductions Purchase Agreement (ERPA) signed between the PP and Climate Cent Foundation	Seek the support of CDM to make the Project to be financially feasible.	Ref-26✓
24/03/2010	Letter of Approval from Swiss DNA	Secure the progress of the CDM development in parallel with the implementation of the Project.	Ref-4✓
31/08/2010	Letter of Approval re-issued by Uganda DNA	LoA re-issued upon the latest PDD.	Ref-3✓

From above table, BVC was able to verify that the start date of the Project determined as 07/03/2008 is appropriate (the signed date of Construction Contract), which is the earliest of the dates at which the implementation or construction or real action of the Project began. This is in accordance with the latest CDM glossary /9/.

The Project is an existing project with a start date of 07/03/2008 prior to 02/08/2008, and also prior to the GSP of the PDD on 02/09/2008, therefore, according to “*Guidance on the Demonstration and Assessment of Prior Consideration of the CDM*” version 03 (hereafter called “*Guidance-Prior Consideration*”) /6/, it is not necessary to make a notification to inform DNA nor to UNFCCC in writing of the commencement of the Project.

BVC has checked all documents mentioned in above Table 2 and is able to verify that all documents are substantial and authentic at that situation in the host country. The gaps between the documented evidences are less than two years. Based on the above assessment, BVC hereby confirms that the incentives of CDM were seriously considered prior to the start of the Project and continuing and, real action were taken to secure CDM status for the project in parallel with its implementation, which complies with the “*Guidance-Prior Consideration*” /6/.

☞ According to the latest Glossary of CDM terms Ver. 05 and “*Guidance-Prior Consideration*”, BVC confirms that the start date of the Project in the PDD is appropriate and reasonable at that situation.



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☺ Complying with para.100-103/VVM, BVC has verified this issue, which could significantly influence the additionality of the Project, and confirms that the serious consideration under the context of the Project has been addressed appropriately in accordance with the above guidance. Consequently, the chronological events described with the relevant documented evidences are the objective foundation on which BVC developed its validation opinions.

3.7.2 Identification of alternatives (107)

In line with para.105/VVM, the approved methodology AMS I.D Version 15 that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required.

3.7.3 Investment analysis (114)

In line with para.105/VVM, Investment analysis has not been used to demonstrate the additionality of the proposed CDM project activity.

3.7.4 Barrier analysis (117)

The steps taken to assess the relevant information contained in the PDD against each barrier are described below.

Barrier due to access-to-finance; barrier due to prevailing practice and institutional barriers have been used to demonstrate additionality of the Project.

Barrier due to access-to-finance:

According to Guideline 7 in Guidelines for objective demonstration and assessment of barriers, EB50 annex 13. /8/, the Project in Least Developed Countries (LDCs) is not bound by the provisions in the guidelines. The Project is located in Uganda, which is recognized as one of the LDCs and Landlocked Developing countries (LLDCs) which describes as "Lack of territorial access to the sea, remoteness and isolation from world markets and high transit costs continue to impose serious constraints on the overall socio-economic development of landlocked developing countries". (Ref-27) Furthermore, in 2007 Uganda's global ranking in the World Bank Doing Business indicators fell from 107th to 116th (out of 175 countries), the business environment in Uganda is ranked 159 out of 183 countries on "getting credit". (Ref-28, Ref-29). The African Economic Outlook stated in Uganda "The commercial banks' average lending rate remained very high at 19 per cent in 2007 compared to the time deposit rate of 11 per cent." (Ref-29) Based on the above reasons, BVC agrees there exists real barrier of access-to-finance that will consequently prevent the implementation of the Project activity in Uganda.

BVC also found evidences/facts that could further validate the barrier being overcome by CDM. On 24/01/2008 a Support Agreement has been signed between the PP and GoU, in acknowledging the environmental benefit of the Project, this agreement allows GoU will get 60% of the revenue stream from CERs and the PP will get 40%, besides the GoU is willing to provide guarantee to repay lenders on default (Ref-5). With this Support Agreement, the PP has successfully applied loan from the only lender - Emerging Africa Infrastructure Fund (EAIF) for the Project. A confirmation letter sent by EAIF to BVC on 08/05/2009 (Ref-24) proves that because of the clauses regarding CDM benefit and the guarantee by GoU in the Support Agreement, EAIF agreed to provide loan to the Project. Hence without the CDM revenue, the Project would face the access-to-finance barrier.

Complying with para.118/VVM and "Non-binding best practice examples to demonstrate additionality for SSC project activities" /7/



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- ✎ International statistics/ independent research (Ref-27) (Ref-28) and objective evidences (Ref-5) (Ref-24) has been checked by BVC to assess the barrier.
- ✎ “Barrier due to access-to-finance” is chosen as the **most relevant barrier** in the PDD. Through the analysis above, BVC considers the choice appropriate and acceptable.

Barrier due to prevailing practice

The PP that made investment on the Project is a private owned company in Uganda, however, by Dec. 2007 when the investment decision of the Project was made, successful private invested hydropower projects in Uganda were exemplified by West Nile HPP supported by World Bank and already registered as a CDM project (Ref-30) and Mubuku 3 HPP invested by KCCL which was formed as a corporate entity with the GoU (Ref-31). The PP of the Project is privately owned and the Project is not publicly financed hence is not a prevailing practice in Uganda.

In 2006 Annual Report of the Ministry of Energy and Mineral Development, a generation expansion plan was described to deal with the power deficit in Uganda, which stated that the short term measures include the installation of fossil fuel based thermal generation, efficient utilisation of electricity and curbing energy losses. (Ref-32) This can be confirmed by the news report regarding the power shortage in Uganda and short-term tax waiver on diesel used to run generators in Oct. 2006 (Ref-33). Thereby BVC concludes that the energy policy at that time would have led to implementation of a technology with higher emissions.

Complying with **para.118/VVM**:

- ✎ Public information (Ref-30) (Ref-31) and official publications (Ref-32) (Ref-33) has been checked by BVC to assess the barrier.

Institutional barriers

Uganda is subject to armed fighting across its borders to Congo, Rwanda and Sudan (Ref-34). Such risk could pose threat to private investment such as the Project. Furthermore Uganda scores 2.8 out of 10 and ranks 111 out of 179 countries in the 2007 corruption perceptions index published by Transparency International (Ref-35). Therefore it is deemed such barrier is real and could prevent the project activity. In the Support Agreement (Ref-5), the GoU will share CDM benefit and is willing to provide assistance to the Project therefore alleviate such institutional barrier.

Complying with **para.118/VVM**:

- ✎ Public information (Ref-34) (Ref-35) and official documents (Ref-5) has been checked by BVC to assess the barrier.

To concludes complying with. **Para.115,116,118/VVM** and in line with “Guidelines for objective demonstration and assessment of barriers” /8/, BVC is able to confirm:

- ✎ Issues that have a clear direct impact on the financial returns of the project activity are not considered barriers.
- ✎ The analysed barriers will prevent implementation of the proposed project but will not prevent the baseline scenario which is continuation of the current situation.
- ✎ The overall analysis of the barrier analysis is credible.

BVC is able to conclude the barrier analysis performed is credible, the project activity would not have occurred anyway due to at least one of the analyzed barriers, hence the Project is additional.

3.7.5 Common practice analysis (121)

Common practice analysis is not required for the Project.



3.8 Monitoring plan (124)

The Project applies the approved consolidated monitoring methodology AMS I.D Version 15 for grid-connected electricity generation from renewable sources.

Applicability of this methodology is justified in PDD as it involves grid connected renewable power generation using hydro energy. Applicability has been discussed in Section 3.5.1 above.

The emission factor is determined ex-ante based on the most recent information available. Accordingly, the monitoring plan consists of metering the net electricity supplied by the Project to the grid. The quantity of net electricity generation supplied to the grid will be monitored by two meters. The main meter and the check meter will be installed at 33kV side of the transformer at the power station. The main meter's accuracy is 0.2s and the maximum error allowed for the check meter shall not exceed by $\pm 0.2\%$. Both meters shall be calibrated annually for accuracy according to the appropriate industry standards. Measurement results shall be cross-checked with records for sold electricity. Detailed monitoring procedures should be also in line with the special requirements from UETCL attached in the PDD.

In case the emergency diesel generator is used, complying with AMS I.D Version 15 and Tool to calculate project or leakage CO₂ emission from fossil fuel combustion version 02 dated 02/08/2008, the quantity, NCV and emission factor of the fuel will also be monitored. Fuel consumption will be monitored on the counter on control panel and can be verified against annual diesel fuel purchase invoices from the financial records.

As per AMS I.D Version 15 no leakage needs to be considered for the Project since no energy generation equipment is transferred from or to the site, viz. $LE_y=0$.

Operational management for the Project is comprehensively detailed in PDD and the description of responsibility, training, procedure reference, equipment details, calibration frequency and maintenance needs are clearly mentioned. Achievement of the records was indicated and BVC believes that the retrievability of relevant CDM project activity records is pro-actively considered.

☞ Complying with para.124/VVM, BVC hereby confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design and the project participants are able to implement the monitoring plan.

3.9 Sustainable development (127)

The host Party's DNA confirmed the contribution of the project to the sustainable development of the host Party. Refer to item 3.1 of this report.

3.10 Local stakeholder consultation (130)

During January to August 2005, the Project was introduced to local stakeholders and comments were invited from the local stakeholders prior to the publication of the PDD on the UNFCCC website dated 02/09/2008. The actions were comprehensive, including public meetings, household visits, focus group discussion and surveys. The consulted local stakeholder included local residents, council members, and local government.

Comments from the above consultation were complied and categorized into issues/concerns, for each issue/concern, due actions that have been taken are also described. BVC interviewed the local stakeholders during the on-site visit of the validation process and responses are satisfactory (in Appendix, Exhibit 2 the person interviewed are listed). Furthermore, BVC verified the adequacy of the consultation process by assessing the questionnaires answered by the stakeholders.



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The stakeholders have recognized the contribution of the Project to local environment and social economy. Their views were endorsed by the local stakeholders interviewed during the site visit of the validation activity.

During the on-site visit, BVC has conducted an interview with local stakeholders and confirms that the stakeholders impacted had been invited in a transparent manner. The interview with stakeholders and review of returned questionnaires shows that the summary of the comments received has been completely provided in the PDD and due account of the comments has been described in the PDD. BVC hereby confirms that the process of local stakeholder consultation is observed to be adequate.

☞ Complying with **para.130/VVM**, BVC hereby confirms that the local stakeholder consultation was properly performed. According to the findings, the Project is beneficial to the local sustainable development and negative effects on the local stakeholders have been properly resolved.

3.11 Environmental impacts (133)

The PP have undertaken an analysis of environmental impacts and BVC confirms that the Environmental Impact Assessment report of the Project (Ref-7) was completed by NorPlan Uganda Ltd. on Mar. 2006, and approved conditional by the NEMA on 04/10/2006 (Ref-10). The EIA approval has been transferred to the PP on 17/07/2008 (Ref-11).

The environmental impact caused by the Project have been identified and analyzed in the PDD. By checking the EIA report, BVC is able to guarantee that the environment impacts identified in the report are mainly due to resettlement, and limited impact on local life. Recommendation is also suggested in the EIA.

In the EIA approval, it has stated the Project have significant environmental impacts and the mitigation measures were identified hence the approval is condition precedent. Specified conditions include: compensation, permit on water use, and permit on wetland. These conditions have been met and relevant official approvals have been verified by BVC (Ref-45), (Ref-12), (Ref-14). Evidence has been checked by BVC regarding the PP's actions on environment mitigation under which the proposed project is permitted by the EIA to carry out the project activity (Ref-44).

Furthermore, Letter of Approval issued by DNA of Uganda (Ref-3) confirmed that the Project contributes to Uganda's Sustainable development.

☞ Complying with **para.133/VVM**, BVC hereby confirms that, the Project has met the conditions required in the EIA approval and impacts on the environment have been mitigated by means of measures of pollution avoidance and control as well as ecological recovery.

3.12 Comments by Parties, Stakeholders and NGOs

According to the modalities for the Validation of CDM projects, the DOE shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

☞ Complying with **para.174/VVM**, BVC published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 02/09/2008 and invited comments prior to 01/10/2008 by Parties, stakeholders and non-governmental organizations.

No comments were received during this period.



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4 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Bugoye 13.0 MW Run-of-River Hydropower Project in Uganda. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

Project participant/s used the “Information on additionality” (Attachment A to Appendix B of 4/CMP.1 Annex II), the Guidance on the demonstration and assessment of prior consideration of the CDM (version 03, annex 22 of EB49), “Non-binding best practice examples to demonstrate additionality for SSC project activities” (annex 34 of EB35), “Guidelines for objective demonstration and assessment of barriers” (annex 13 of EB50) to demonstrate the additionality of the Project. In line with these tools, the PDD provides barriers analysis to determine that the project activity itself is not the baseline scenario. The latest “Tool to calculate the emission factor from an electricity system” version 02 is also applied to determine the emission factor of Uganda national grid. Latest “Tool to calculate project or leakage CO₂ emission from fossil fuel combustion” version 02 is used for determining the project emission.

By synthetic description of the project, the project is likely to result in reductions of GHG emissions partially. An analysis of the investment and technological barriers demonstrates 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. Given that the project is implemented and maintained as designed, the project is expected to achieve the average annual emission reductions of 51,074 tCO₂e over the chosen 10-year crediting period.

The review of the project design documentation (version 04) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification thus requests registration of ‘Bugoye 13.0 MW Run-of-River Hydropower Project’ as CDM project activity.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

5 REFERENCES

Category 1 Documents:

Documents that relates directly to the GHG components of the project.

Ref-1	PDD Version 01 dated 18/08/2008 GSP period 02/09/2008-01/10/2008 Weblink http://cdm.unfccc.int/Projects/Validation/DB/QSITHCKNSOSGOGKJF8O50FVCGW0KUR/view.html
Ref-2	PDD Version 04 dated 06/05/2010



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Ref-3	Renewed Letter of Approval from DNA of Uganda dated 31/08/2010, authorizing Tronder Power Ltd. as the Project Participant of the Project as per the PDD version04 dated 06/05/2010, which superseding LoA issued on 12/05/2009 for PDD version01 dated 02/09/2008.
Ref-4	Letter of Approval from DNA of Switzerland dated 24/03/2010 authorizing Climate Cent Foundation as the Project Participant for the Project.
Ref-5	Support Agreement relating to the development of a mini hydropower project at Bugoye in Uganda signed between the Government of Uganda and the PP, dated 24/01/2008. * The Support Agreement has referred to the project FSR submitted to GoU on 21/3/2006
Ref-6	Feasibility Study Report (FSR) for the Project completed in Mar. 2006 by NorPlan, acknowledged by GoU in Support Agreement on 24/01/2008
Ref-7	EIA report completed in Mar. 2006 by NorPlan Uganda Ltd., for SN Power AS.
Ref-8	License for Generation and Sale of Electricity, issued by Electricity Regulatory Authority on 20/03/2008 to the PP for the Project.
Ref-9	Purchase Agreement between SN Power & TronderEnergi dated Jul. 2007.
Ref-10	Certificate of Approval of Environmental Impact Assessment issued to SN Power AS for the Project by the National Environment Management Authority (NEMA) on 04/10/2006
Ref-11	Amendment of Certificate of Approval of Environmental Impact Assessment issued by NEMA on 17/07/2008.
Ref-12	Wetland Permit issued by NEMA to SN Power AS for the Project on 17/10/2007.
Ref-13	Amendment of Wetland Permit issued by NEMA on 17/07/2008.
Ref-14	Dredging License issued to the PP by Minister of Water and Environment on 09/04/2008.
Ref-15	Water Use Permit issued by NEMA to the PP on 17/06/2008.
Ref-16	Letter from Royal Norwegian Embassy regarding financial grant dated 22/05/2008
Ref-17	Contract of the turbines and generators of the Project signed with Marvel dated 13/03/2008
Ref-18	Construction contract dated 07/03/2008.
Ref-19	Project startup meeting minutes
Ref-20	Photos of nameplates of the turbines and generators installed at the project site.
Ref-21	TrønderEnergi board meeting minutes of investment decision dated Sep. 2007
Ref-22	Norfund (co-owner of Tronder Power Ltd) board meeting minutes of investment decision dated Dec. 2007
Ref-23	CDM consultancy contract with Econ Pöyry dated 10/02/2008
Ref-24	Confirmation letter sent to BVC from EAIF regarding intention of loan committed to the Project taking into account CDM benefits, dated 08/05/2009
Ref-25	Loan agreement between EAIF and the PP dated 23/05/2008
Ref-26	ERPA signed with Climate Cent Foundation dated 24/02/2010



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Ref-27	Uganda is on the UN list of LDCs and LLDCs http://www.un.org/special-rep/ohrls/ldc/list.htm
Ref-28	Uganda on Economy Rankings http://www.doingbusiness.org/economyrankings/?direction=Asc&sort=6
Ref-29	African Economic Outlook 2008 http://www.oecd.org/dataoecd/13/3/40578334.pdf
Ref-30	Project 0775 : West Nile Electrification Project http://cdm.unfccc.int/Projects/DB/SGS-UKL1163762379.92/view
Ref-31	KCCL profile http://www.kccl.co.ug/about.htm
Ref-32	Annual Report 2006, Ministry of Energy and Mineral Development
Ref-33	Report on Uganda electricity power production. http://myafrica.wordpress.com/2006/10/01/uganda-electric-power-production-has-dropped/
Ref-34	CIA world fact book- Uganda https://www.cia.gov/library/publications/the-world-factbook/geos/ug.html
Ref-35	Transparency International 2007
Ref-36	World Economic Forum's Global Competitiveness Report for 2007-08
Ref-37	ERA website (www.era.or.ug)
Ref-38	Letter of actual historical energy production and fuel consumption data from ERA dated 15/10/2009
Ref-39	Data for load duration curves from UETCL dated 16/10/2009 for validation purpose, requested by BVC
Ref-40	Email of confirmation on incomplete data of the load duration curve 2006, dated 20/05/2008
Ref-41	Email of confirmation on Aggreko units, dated 08/08/2008
Ref-42	Correspondences acknowledging the actual installed capacity from Uganda DNA dated 13/01/2010 and ERA dated 02/11/2009
Ref-43	confirmation letter from NORPLAN regarding the power/energy output of the Project, dated 07/01/2010
Ref-44	Environmental and social action plan and management system, Bugoye hydropower project, Uganda, completed by Norfund, dated Apr. 2008
Ref-45	Compensation approval for the Project, dated 27/11/2006

Category 2 Documents:

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

/1/	AMS I.D Version 15 valid from 30/10/2009
/2/	Validation and Verification Manual version 01.1 dated 04/12/2009, EB51 Annex 3
/3/	Tool to calculate the emission factor for an electricity system version 02 dated 16/10/2009
/4/	Tool to calculate project or leakage CO2 emission from fossil fuel combustion version



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	02 dated 02/08/2008
/5/	Appendix B of the simplified modalities and procedures for small-scale CDM project activities Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories
/6/	Guidance on the demonstration and assessment of prior consideration of the CDM version 03, EB49 Annex 22
/7/	Non-binding best practice examples to demonstrate additionality for SSC project activities, EB35 Annex 34
/8/	Guidelines for objective demonstration and assessment of barriers, EB50 annex 13.
/9/	Glossary of CDM terms version 05
/10/	Paragraph 54 of EB 38 dated 14/03/2008.
/11/	Guidelines for the Reporting and Validation of Plant Load Factors version 01 (EB48, Annex11)

Persons interviewed:

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

- Gunnar Salseggen - Managing Director for Tronder Power
- Irene Sylvia Nakiwu - consultant at New Plan Uganda and have been responsible for the RAP (resettlement Action Plan)
- Mr. Nwkrize – Resettled Villager
- Mr. Bwambale - Resettled Villager



6. CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

Ms. Jasmine Tang	BVC, China	<p>Team Leader, Climate Lead Change Verifier</p> <p>She holds a Master Degree in Environmental Engineering. Before joining BV in 2008, she gained two years of CDM technical working experience in P.R China. She obtained the certificate of CDM Lead Verifier, Lead Auditor for ISO 14001 and ISO 14064.</p>
Mr. Andrew Kinyanjui	BVC, Kenya	<p>Team Member, Climate Change Verifier</p> <p>He holds a Diploma in Chemical Engineering. He has 5 yrs experience in Industrial production of plastics and soft drinks products before joining BV. He has obtained 6 years experience in management systems audits and two years experience in CDM validation / verification at BV. He obtained the certificate of CDM Lead Verifier and Lead auditor for ISO 14001.</p>
Mr. Pin Tian	BVC, China	<p>Team Member, Climate Change Verifier.</p> <p>He holds a MEng in Industrial Engineering and a MSc in Product Lifecycle Management. Before joining BV in 2009, he gained two years working experience in project management in various industrial sectors. He obtained the certificate of CDM Verifier, Lead Auditor for ISO 14001 and has successfully completed the course assessment for ISO 14064.</p>
Mr. Robin Wang	BVC, China	<p>Internal Reviewer, Climate Change Lead Verifier</p> <p>He holds a Bachelor Degree in Gas & Heating Engineering. He was a Gas Engineer with over 10 years' experiences in oil & gas sector and building technologies in P.R. China. Before joining BV in 2007, he gained two years of CDM audit experience in P.R China. He obtained the certificate of CDM Verifier and Lead Auditor for ISO 14001 and has successfully completed the course assessment for ISO 14064.</p>



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APPENDIX A: COMPANY CDM PROJECT VALIDATION PROTOCOL

Table 1 Validation requirements based on the Validation and Verification Manual Version 01.2 (EB55 Annex 01)

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl.	Final Concl.
1. Approval			COUNTRY A (Uganda)	COUNTRY B (Switzerland)		
1.1. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval?	VVM	45	Yes. The Letter of Approval from DNA of Uganda has been provided.	CAR-1 Letter of Approval from DNA of Switzerland should be provided. LoA from Swiss DNA has been checked and found satisfactory. Hence CAR-1 is closed.	CAR-1	OK
1.2. Does the letter of approval from DNA of each Party confirm that : - The Party is a Party of the Kyoto Protocol - The participation is voluntary - In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country - Refers to the precise proposed CDM project activity title in the PDD being submitted for registration	VVM	45	Uganda has ratified the Kyoto Protocol on 25/03/2002, refer to http://maindb.unfccc.int/public/country.pl?country=UG	Refer to CAR-1 . Switzerland has ratified the Kyoto Protocol on 09/07/2003, refer to http://maindb.unfccc.int/public/country.pl?country=CH	Pending	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl.	Final Concl
1.3. Is(are) the letter(s) of approval unconditional with respect to (i) to (iv) above?	VVM	46	No, the LoA is conditional on the version of the PDD.	Refer to CAR-1 Yes. It is unconditional.	Pending	OK
1.4. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA)? If there is doubt with respect to (1.2) above, was verified with the DNA that the letter of approval is valid for the proposed CDM project activity under validation?	VVM	47	CAR-2 The LoA has to be renewed due to the updated version of the PDD. LoA from Uganda DNA specifying the final PDD has been checked and found satisfactory. Hence CAR-2 is closed.	Refer to CAR-1 By Federal Office for the Environment (FOEN) as Swiss DNA.	CAR-2	OK
2. Participation						
2.1. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	Tronder Power Ltd.	Refer to CAR-1 Climate Foundation Cent	Pending	OK
2.2. Does the DOE have a contractual relationship with the project participants?	VVM	51	Yes	No	OK	OK
2.3. Is the information in section A.3 consistent with the contact details provided in Annex 1 of the PDD?	VVM	52	Yes	Refer to CAR-1 Yes.	Pending	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl.	Final Concl
2.4. Has the participation of each of the project participants been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation?	VVM	52	Yes	Refer to CAR-1 Yes	Pending	OK
2.5. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	No		OK	OK
2.6. Has the approval of participation issued from the relevant DNA?	VVM	53	Yes	Refer to CAR-1 Yes	Pending	OK
3. Project design document						
3.1. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?	VVM	55	<p>CL-1a)The latest template of SSC PDD should be complied with table in A4.3, B.6.2 and B.6.4 are not consistent with the template in guideline.</p> <p>CL-1b)Please use internationally accepted standard format in PDD for values where 1,000 represents one thousand and 1.0 represents one. ex. 54,349.</p> <p>a) Related tables have been revised and are in line with the PDD guideline.</p> <p>b) The figure format has been adjusted in the PDD and excel sheet. All figures in these sections are now under international format</p> <p>Hence CL-1 is closed.</p>		CL-1	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.2. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56	Refer to CL 4. Yes.	Pending	OK
3.3. Does the DOE conducted physical site visit to assess the Project? - If the DOE does not undertake a physical site inspection, this should be appropriately justified.	VVM	62	Yes. The on-site visit was conducted on 30/10/2008.	OK	OK
3.4. In CDM-SSC-PDD section A.1 , are the following provided? - Title of project - Current version number and date of document	EB 34	Ann 09	Yes. Bugoye 13.0 MW Run-of-River Hydropower Project. PDD is in line with current version 04 dated 06/05/2010	OK	OK
3.5. In CDM-SSC-PDD section A.2 , are following provided?	EB 34	Ann 09			
3.5.1. Does the PDD contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation?	VVM	58	Yes. The objective of the Project is to construct a small-scale run-of-river hydropower project and utilize the hydrological resources of river Isya and Mubuku for power generation. The electricity to supply to the national grid will contribute to alleviate the current energy crisis in Uganda.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
<p>3.5.2. Is the description of the proposed CDM project activity as contained in the PDD:</p> <ul style="list-style-type: none"> - Sufficiently covering all relevant elements - Accurate - Providing the reader with a clear understanding of the nature of the proposed CDM project activity 	VVM	59	<p>CL-2 The capacity of 2*6.5 MW turbines and generators is indicated in the PDD and FSR. It is not consistent with 2*7.228 MW turbines and 2*7.14 MW generators specified on the equipment contract and on the nameplate at the project site.</p> <p>Relevant correspondence from the DNA and Electricity Regulatory Authority in Uganda has been received and verified. The installed capacity of the project is corrected as 14.28MW in the PDD.</p> <p>The Energy output is estimated to be 82GWh, based on an effective power output of 13MW. This is evidenced by a confirmation letter from NORPLAN, the developer of the Project FSR.</p> <p>Hence CL-2 is closed.</p>	CL-2	OK
3.5.3. Is the proposed CDM project activity in existing facilities or or utilizing existing equipments?	VVM	60	No. The proposed CDM project activity will build a new hydro power plant.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
<p>3.5.4. Is the CDM project activity one of the following types?</p> <p>I. Large scale?</p> <p>II. Non-bundled small scale projects with emission reductions exceeding 15,000 tonnes per year?</p> <p>III. Bundled small scale projects, each with emission reductions not exceeding 15,000 tonnes?</p>	VVM	60	The CDM project activity is of Type II, a non-bundled small scale project with emission reductions exceeding 15,000 tonnes per year.	OK	OK
<p>3.5.5. If yes to 3.5.3 and 3.5.4 above, was a physical site inspection conducted to confirm that the description in the PDD reflects the proposed CDM project activity, unless other means are specified in the methodology?</p>	VVM	60	Yes. The physical site visit was conducted on 30/10/2008.	OK	OK
<p>3.5.6. If yes to 3.5.4 (III) above, was the number of physical site visits base on samping? And the sampling size appropriately justified through statistical analysis?</p>	VVM	60	N/A	OK	OK
<p>3.5.7. For all other proposed CDM project activities not referred to in paragraphs 59-61, and for other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, was a physical site inspection conducted?</p>	VVM	62	N/A	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.5.8. Does the proposed CDM project activity involve the alteration of an existing installation or process?	VVM	63	No. this project will install a new facility.	OK	OK
3.5.9. Explanation on how the GHG emission reductions are effected	EB 34	Ann 09	To produce renewable energy and thus reduce GHG emissions per year in its crediting period.	OK	OK
3.5.10. The PP's views on the contribution of project activity to sustainable development	EB 34	Ann 09	<p>According to the PDD, the contribution to sustainable development is demonstrated through following items.</p> <ul style="list-style-type: none"> To produce renewable energy and thus reduce GHG emissions; To contribute to a reduction in other emissions than GHG emissions related to conventional electricity generation, like emissions of sulphur dioxide, nitrogen oxides and particulates; To diversify Uganda's energy mix according to Annual report 2006, Ministry of Energy and Mineral Development (MEMD), page 32. and to support main policy goal of the Ministry of Energy and Mineral Development. To create job opportunities in local especially during the Project construction and the construction materials will be procured locally. 	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.6. In CDM-SSC-PDD section A.3 are following provided in the tabular format? I. List of project participants and parties II. Identification of Host Party III. Indication whether the Party wishes to be considered as project participant	EB 34 VVM	Ann 09 51,52	CAR-3 The project participants and parties should be listed as per CDM-SSC-PDD guidelines. A.3 has been revised and found satisfactory. Hence CAR-3 is closed.	CAR-3	OK
3.7. In CDM-SSC-PDD section A.4.1 are following provided?	EB 34	Ann 09			
3.7.1. Technical description, location, host party(ies) and address as required	EB 34	Ann 09	Yes. Project is located at the foot of the Rwenzori Mountains in the Kasese District, Western Uganda. Host party provided as Republic of Uganda.	OK	OK
3.7.2. Detailed physical location with unique identification of the project activity (eg. Longitude/latitude) – not to exceed one page	EB 34	Ann 09	Yes. Diversion intake: 0 20°02.30"N 30 04'27.76"E Intake: 0 19°46.58"N 30 04'16.27"E Forebay: 0 18°51.93"N 30 05'43.25"E Power station: 0 18°25.80"N 30 05'57.57"E Tailrace outlet: 0 18°27.94"N 30 06'07.20"E	OK	OK
3.8. In CDM-SSC-PDD section A.4.2 , are the following provided?	EB 34	Ann 09			



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.8.1. Type and categories of the project activities.	EB 34	Ann 09	The proposed project utilizes renewable energy and supplies electricity to the grid with a capacity less than the 15 MW threshold value, hence it is: Type I: Renewable energy projects Category I.D: Grid Connected renewable electricity generation	OK	OK
3.8.2. Technology and measure of the project activities	EB 34	Ann 09	CL-3 Technology transfer to the host country and Plant Load Factor should be described. The description of technology transfer is added and regarded complete. PLF has been added in the PDD and Proof letter from Norplan has been checked by BVC. BVC confirms the PLF is appropriate. Hence CL-3 is closed.	CL-3	OK
3.9. In CDM-SSC-PDD section A.4.3 , is the estimation of emission reductions provided, as requested, in a tabular format?	EB 34	Ann 09	CL-4 The total estimated emissions are not correctly summed up in the table. The total estimated emissions are corrected in those tables. Hence CL-4 is closed.	CL-4	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.10. In CDM-SSC-PDD section A.4.4 , is information regarding Public funding provided?	EB 34	Ann 09	<p>Yes.</p> <p>The Project has received public funding from Annex I country (Norway). The declaration of embassy of Norway demonstrates that the funding is not a diversion of ODA, in addition, this funding is not to acquire GHG emission reductions from the project.</p> <p>The declaration from Royal Norway Embassy is attached to PDD as Annex 2.</p> <p>CL-5 Details of the (c) non-recourse loans from IFC and EAIF need to be provided, such as loan contract or letter of intention. And the ratio of equity/grant fund/debt needs to be provided.</p> <p>The letter of funding from EAIF (with CDM consideration) is provided and attached as annex in the PDD. It is confirmed in the letter that CDM revenue is an important factor for EAIF to provide the funding. This has been presented in the analysis of access to finance barrier.</p> <p>Hence CL-5 is closed</p>	CL-5	OK
3.11. In CDM-SSC-PDD section A.4.5 are following provided?	EB 34	Ann 09			
3.11.1. Confirmation that the small-scale project activity is not a debundled component of a larger project activity.	EB 34	Ann 09	It's not debundled, it has been checked and verified during the onsite visit.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
<p>3.11.2. Indication if there is a registered small-scale project activity under the CDM or an application to register another small-scale project activity under the CDM.</p> <ul style="list-style-type: none"> - With the same project participants - Registered within the period of 2 years - Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity under the CDM at the closest point 	EB 34	Ann 09	<p>The project participant does not own any more hydro power projects registered within the previous 2 years whose project boundary is within 1 km of the project boundary of the proposed activity.</p> <p>It has been checked and verified during the onsite visit. No projects have been identified according to the criteria.</p>	OK	OK
3.12. In CDM-SSC-PDD section B.1 , is the approved baseline and monitoring methodology and version number correctly quoted?	EB 34 VVM	Ann 09 65-67	<p>Pending on close of CL-6 AMS I.D Version 15 'Grid connected renewable electricity generation'.</p>	Pending	OK
3.13. In CDM-SSC-PDD section B.2 , are the following provided?	EB 34	Ann 09			
3.13.1. Is the choice of project category justified	VVM	71	Yes.	OK	OK
3.13.2. Are the applicability conditions of the methodology met?	VVM	71	<p>The proposed project activity is a run-of-river hydropower project not exceeding 15MW.</p> <p>The proposed project activity meets the requirements of (1) The capacity of a project should be less than 15 MW; (2) The project should concern renewable power generation; and the electricity generated from the proposed project supply to a grid.</p>	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.14. In CDM-SSC-PDD section B.3 , are following provided?	EB 34	Ann 09			
3.14.1. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity?	VVM	78	The definition and the result of the project electricity system are demonstrated in the section B.3 in PDD. Project boundary is clearly identified that includes the physical, geographical site of the project activity and all the plants connected physically to the Uganda National Grid where the Project is connected to.	OK	OK
3.14.2. Is the delineation in the PDD of the project boundary correct and in accordance with the requirements of the selected baseline?	VVM	79	Yes.	OK	OK
3.14.3. Have all sources and GHGs required by the methodology been included within the project boundary?	VVM	79	Yes. CO ₂ emissions by fossil fuel fired power plants for electricity generation that are displaced due to the project activity is taken into account.	OK	OK
3.15. In CDM-SSC-PDD section B.4 , are following provided?	EB 34	Ann 09			



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.15.1. Does the PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?	VVM	81	<p>Yes. As per AMS I.D Version 15. The baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in kWh of electricity produced by the renewable generating unit multiplied by an emission factor.</p> $BE_y = EG_{BL,y} * EF_{CO2}$ <p>Where:</p> <p>BE_y Baseline Emissions in year y; t CO2</p> <p>$EG_{BL,y}$ Energy baseline in year y; kWh</p> <p>EF_{CO2} CO2 Emission Factor in year y; t CO2e/kWh</p> <p>The Emission Factor can be calculated in a transparent and conservative manner as: a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system (Version 02).</p>	OK	OK
3.15.2. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	82	Yes.	OK	OK
3.15.3. Does the selected methodology require use of tools to establish the baseline scenario?	VVM	82	No. AMS I.D Version 15 has prescribed the baseline scenario.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.15.4. Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	VVM	83	No.	OK	OK
3.15.5. Are the documents and sources referred to in the PDD correctly quoted and interpreted and are they cross checked with other verifiable and credible sources, such as local expert opinion, if available? (identify the sources)	VVM	84	Yes.	OK	OK
3.15.6. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	85	Yes	OK	OK
3.15.7. Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM	85	N/A	OK	OK
3.15.8. Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	VVM	86	Yes. The baseline scenario is the same as the scenario in absence of the project.	OK	OK
3.16. In CDM-SSC-PDD section B.5 , are following provided?	EB 34	Ann 09			



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.16.1. Explanation and Justification of how and why this project activity is additional and therefore not the baseline scenario in accordance with the selected baseline methodology	EB 34	Ann 09	Yes. Barrier analysis is used to demonstrate additionality of the proposed project.	OK	OK
3.16.2. Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, if the starting date of the project activity is before the date of validation.	EB 41	Ann 12	A "Support Agreement" (Annex(6) of PDD) dated 24/01/2008 signed between the PP and Government of Uganda (GOU) has been provided. It has demonstrated sharing of CERs revenue between the parties.	OK	OK
3.17. in PDD Section B.6.1 , are the following provided?	EB 34	Ann 09			
3.17.1. Explanation how the procedures, in the approved methodology to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity	EB 34	Ann 09	CL-6 Latest version of AMS I.D and "Tool to calculate the emission factor from an electricity system" should be applied. The PDD has been revised as per AMS I.D Version 15 and latest tool ver 2.0 has been applied. Hence the CL-6 is closed.	CL-6	OK
3.17.2. Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring methodology?	VVM	89	Pending close of the CL-6. Yes.	Pending	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.17.3. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	90	Pending close of the GL-6 . Yes.	Pending	OK
3.17.4. Does the methodology provide for selection between different options for equations or parameters?	VVM	90	Yes.	OK	OK
3.17.5. If yes, has adequate justification been provided and correct equations and parameters been used in accordance with the methodology selected?	VVM	90	Pending close of the GL-6 . Yes.	Pending	OK
3.17.6. Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity?	VVM	91	No. The emission factor is determined ex-ante.	OK	OK
3.17.7. If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions: I. Appropriate and correct II. Be applicable to the proposed CDM project activity III. Will result in a conservative estimate of the emission reductions.	VVM	91	Pending on close of GL-6, GL-7, CAR-5 . Yes.	Pending	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.17.8.If data and parameters will be monitored on implementation and hence become available only after validation of the project activity, are the estimates provided in the PDD for these data and parameters are reasonable?	VVM	91	Yes. The energy output estimated as 82GWh in the FSR is outcome of analysis of long term hydrological statistics in the project area. The use of emergency diesel generator is estimated as 100 hours and can be verified by the reading the gauge on the equipment.	OK	OK
3.18. In CDM-SSC-PDD section B.6.2 , are following provided?	EB 34	Ann 09			
3.18.1.A compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period AND that are available when validation is undertaken	EB 34	Ann 09	Yes. Fixed parameters used for calculating the emission reductions have been presented in B.6.2 of PDD.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.18.2. Explanation and justification for the choice of the source of data	EB 34	Ann 09	<p>CL-7 The public or official data source need to be provided for the load duration curves 2005 to 2007, F_{Ci,m,y}, F_{Ci,j,y}, F_{Ci,k,y}, and E_{Gm,y}, E_{Gj,y}, E_{Gk,y} (Annex 3) as per "<i>Tool to calculate the emission factor for an electricity system</i>" required.</p> <p>Sources or official confirmation of the data has been provided by the PP and checked by BVC. BVC considers the data is acceptable under guidance in annex 13 of EB50.</p> <p>Hence CL-7 is closed.</p>	GL-7	OK
3.18.3. Clear and transparent references or additional documentation in Annex 3	EB 34	Ann 09	Yes. Additional documentation is included in Annex 3.	OK	OK
3.18.4. Where values have been measured, a description of the measurement methods and procedures (e.g. which standards have been used), indicated the responsible person/entity having undertaken the measurement, the date of measurement(s) and the measurement results	EB 34	Ann 09	N/A	OK	OK
3.19. In CDM-SSC-PDD section B.6.3 , are following provided?	EB 34	Ann 09		OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
<p>3.19.1.A transparent ex ante calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved methodology.</p>	<p>EB 34</p>	<p>Ann 09</p>	<p>CL-8a) The thermal plant generation in table 2 on page 25 does not conform to the total electricity generation in table 3 in page 28 which has several inconsistencies with table 8. CL-8b) The process of emission reductions calculated as the outcome of B.6.3 ex. ER, BE, PE, LE is not fully presented.</p> <p>a) The data applied in emission reductions calculation have been checked against the original data sources, namely ERA website and referred ERA letters dated 15/10/2009 and found consistent. Relevant data in the PDD has been updated and deemed correct.</p> <p>b) The B.6.3 has been revised and it is now regarded complete.</p> <p>Hence CL-8 is closed.</p> <p>CAR-5 In the EF calculation, formula applied in calculating λ of year 2006 and 2007, is found incorrect, resulting a bigger OM, which is neither accurate nor conservative.</p> <p>Formulas in calculating λ have been revised. The result is now correct.</p> <p>Hence CAR-5 is closed.</p>	<p>CL-8 CAR-5</p>	<p>OK</p>



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.19.2. Documentation how each equation is applied, in a manner that enables the reader to reproduce the calculation	EB 34	Ann 09	Yes	OK	OK
3.19.3. Additional background information and/or data in Annex 3, including relevant electronic files (i.e. spreadsheets)	EB 34	Ann 09	Yes. Additional information has been included in Annex 3 of PDD.	OK	OK
3.20. In CDM-SSC-PDD section B.6.4 are, the results of the ex ante estimation of emission reductions for all years of the crediting period, provided in a tabular format?	EB 34	Ann 09	Yes.	OK	OK
3.21. In CDM-SSC-PDD section B.7.1 , are following provided?	EB 34	Ann 09			



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
<p>3.21.1. Specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity</p>	<p>EB 34</p>	<p>Ann 09</p>	<p>CL-9a) The demonstration of QA/QC in section B.7.1 need to be added, in particularly measurement results should be cross-checked with records for sold electricity.</p> <p>CL-9b) “Net” amount electricity, hourly measurement and monthly recording are required for EGy as per AMS I.D Version 15. Location and calibration frequency of the meters should be described.</p> <p>a) The QA/QC has been added as per requirement in the AMS I.D version 15.</p> <p>b) The use of the “tool to calculate project or leakage CO2 emission from fossil fuel combustion ver 2” has been included in Section B.1 and B.6.4. The required monitoring parameters have been added in Section B7.2. The calibration frequency and location of meters has been specified in line with latest EB’s guidance.</p> <p>The B.7.1 and B.7.2 has been revised.</p> <p>Hence CL-9 is closed.</p>	<p>CL-9</p>	<p>OK</p>
<p>3.21.2. For each parameter the following below information, using the table provided:</p>	<p>EB 34</p>	<p>Ann 09</p>			



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.21.2.1. The source(s) of data that will be actually used for the proposed project activity (e.g. which exact national statistics). Where several sources may be used, explain and justify which data sources should be preferred.	EB 34	Ann 09	Yes The net electricity delivered to the grid is required to be monitored. Operating hours of diesel generator is also chosen to be monitored.	OK	OK
3.21.2.2. Where data or parameters are supposed to be measured, specify the measurement methods and procedures, how the measurement is undertaken: (i) A description of the QA/QC procedures (if any) that should be applied; (ii) Where relevant: any further comment.	EB 34	Ann 09	Pending on close of GL-9. As the PDD described, the metering equipment will be installed in compliance with the Uganda Electricity Transmission Company Ltd (UETCL) requirements and industry standards.	Pending	OK
3.22. In CDM-SSC-PDD section B.7.2 , is a detailed description of the monitoring plan provided?	EB 34	Ann 09	Yes.	OK	OK
3.23. In CDM-SSC-PDD section B.8 , are following provided?	EB 34	Ann 09			
3.23.1. Date of completion of the application of the methodology to the project activity study in DD/MM/YYYY	EB 34	Ann 09	Yes. The date of completion of baseline study is indicated on 30/01/2008	OK	OK
3.23.2. Contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity	EB 34	Ann 09	Yes.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.23.3. Indication if the person/entity is also a project participant listed in Annex 1	EB 34	Ann 09	CL-10 It should be indicated in the PDD if the persons responsible for the application of the baseline and monitoring methodology to the project activity is also a project participant and a more specific contact description is required. The B.8 has been revised as per requirement and is now complete. Hence CL-10 is closed.	CL-10	OK
3.24. In CDM-SSC-PDD section C.1.1 , is the starting date clearly defined and evidenced?	EB 34	Ann 09	CAR-6 The starting date of the project activity should be re-defined to comply with the latest Glossary of CDM terms. The contract has been verified by BVC. BVC can confirm that the date of 07/03/2008 is the starting date of the project. Hence CAR-6 is closed.	CAR-6	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.25. In CDM-SSC-PDD section C.1.2 , is the expected operational lifetime of the project activity in years and months provided?	EB 34	Ann 09	CL-11 The origin of 20 year operational period should be clarified. The operational period is actually stated as 25 years, not 20 years, which is line with the license agreement The license is provided by the PP and checked by BVC. The description in the PDD has been revised as per 25 years indicated in the license. Hence CL-11 is closed.	CL-11	OK
3.26. In CDM-SSC-PDD section C.2 , is it stated whether the project activity will use a renewable or a fixed crediting period and is C.2.1 or C.2.2 completed accordingly?	EB 34	Ann 09	Yes. The 10 year fixed crediting period is selected for the project. The date is in correct format.	OK	OK
3.27. In CDM-SSC-PDD section C.2.1 , is it indicated that each crediting period shall be at most 7 years and may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the Executive Board that the original project baseline is still valid or has been updated taking account of new data where applicable?	EB 34	Ann 09	N.A.	OK	OK
3.28. In CDM-SSC-PDD section C.2.1.1 , are dates in the following format: (DD/MM/YYYY) provided?	EB 34	Ann 09	N.A.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.29. In CDM-SSC-PDD section C.2.1.2 , is the length of the first crediting period in years and months provided?	EB 34	Ann 09	N.A.	OK	OK
3.30. In CDM-SSC-PDD section D , are the conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the Host Party, if environmental impacts are considered significant by the project participants or the Host, provided?	EB 34	Ann 09	<p>EIA is required by host country. And approval of the EIA is attached in Appendix 5 to PDD.</p> <p>A list of positive and negative impacts is listed in section D.2 of PDD. And the reasonable mitigation measures are put into place to the negative impacts.</p> <p>EIA approval is given certificate number NEMA/EIA/1124, by Ministry of Lands and Minerals valuation report is given. According to EIA, certain mitigation measure to be carried out to minimize the negative impacts during construction.</p> <p>EIA approval stipulates conditions under which project is allowed to run e.g. approval by Directorate of Water Development for water abstraction, NEMA permit for project components in protected river zone, institute a monitoring plan to detect and avert any undesirable incidents of soil erosion during construction, operation, maintenance and decommissioning of the project.</p> <p>CL-12 Evidence is not provided for implemented environment conditions/mitigation actions under</p>	CL-12	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
			<p>which the proposed project is permitted by the EIA to carry out the project activity.</p> <p>The report submitted by the PP with respect to the environment mitigation progress during project implementation has been checked and found satisfactory.</p> <p>Hence CL-12 is closed.</p>		
3.31. In CDM-SSC-PDD section E.1 , are the following provided?	EB 34	Ann 09			
3.31.1. The process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted.	EB 34	Ann 09	Yes. Public meetings/household visits/ focus group discussion/ interview/survey have been conducted among stakeholders.	OK	OK
3.31.2. The project activity is described in a manner, which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures.	EB 34	Ann 09	Yes. The project activities have been introduced to local stakeholders by several means and deemed sufficient.	OK	OK
3.31.3. The local stakeholder process has been completed before submitting the proposed project activity to the DOE for validation.	EB 34	Ann 09	Yes. The consultation was carried out as part of the process of EIA.	OK	OK
3.32. In CDM-SSC-PDD section E.2 , are following provided?	EB 34	Ann 09			



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.32.1. Identification of local stakeholders that have made comments	EB 34	Ann 09	Yes. Stakeholders from affected areas have been identified.	OK	OK
3.32.2. A summary of this comments.	EB 34	Ann 09	Yes. Comments have been compiled and presented in categories.	OK	OK
3.33. In CDM-SSC-PDD section E.3 is the explanation of how due account have been taken of comments received from local stakeholders provided?	EB 34	Ann 09	Yes. Measures of due account have been presented in correspondence with the comments received.	OK	OK
3.34. In CDM-SSC-PDD Annex 1 , are the following provided?	EB 34	Ann 09			
3.34.1. Contact information of project participants	EB 34	Ann 09	Yes.	OK	OK
3.34.2. For each organisation listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail	EB 34	Ann 09	Yes.	OK	OK
3.35. In CDM-SSC-PDD Annex 2 , is information from Parties included in Annex I on sources of public funding for the project activity which 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 those Parties provided?	EB 34	Ann 09	Yes. Funding from Norway is provided to the proposed project and a confirmation letter from Norwegian embassy is attached indicating full compliance with relevant CDM requirement.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
3.36. In CDM-SSC-PDD Annex 3 , is the background information used in the application of the baseline methodology provided?	EB 34	Ann 09	Yes. Relevant data used in calculation have been presented in tables.	OK	OK
3.37. In CDM-SSC-PDD Annex 4 , is the background information used in the application of the monitoring methodology provided?	EB 34	Ann 09	Yes. Special requirements from UECTL for monitoring power supply have been attached.	OK	OK
4. Additionality of a project activity					
4.1. General checklist for additionality					
4.1.1. Does the CDM-PDD state the latest version of the additionality tool being used?	VVM	94	Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities and annex 34 "Non-binding best practice examples to demonstrate additionality for SSC project activities" has been used.	OK	OK
4.1.2. Has the PP demonstrated additionality by explaining Investment barrier, Access-to-finance barrier, Technological barrier, Barrier due to prevailing practice or other barriers?	EB 35	ANN 34	Barrier due to access-to-finance; barrier due to prevailing practice and institutional barriers have been used to demonstrate additionality of the project.	OK	OK
4.1.3. If Investment barrier has been explained, is it demonstrated that financially more viable alternative to the project activity would have led to higher emissions?	EB 35	ANN 34	N.A.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.1.4. If Access-to-finance has been explained, is it demonstrated that the project activity could not access appropriate capital without consideration of the CDM revenues? Please explain.	EB 35	ANN 34	<p>Uganda is recognized as one of the least developed countries. Its financial market is under developed therefore is not easy to access.</p> <p>By acquiring CER revenues, the PP is able to obtain fundings to support the project.</p> <p>By sharing CER revenues with the GOU, the PP is able to get necessary government assistance to develop the project in Uganda.</p> <p>“Support Agreement” (Annex(7) of PDD) has been provided. It has demonstrated that the sharing of CERs revenue is a pre-requisite.</p> <p>EAIF is the only lender. A letter of confirmation from EAIF to the Project by has been verified by BVC.</p>	OK	OK
4.1.5. If technological barrier has been explained, is it demonstrated that a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions? Please explain.	EB 35	ANN 34	N.A.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.1.6. If prevailing practise barrier has been explained, is it demonstrated that the prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions? Please explain.	EB 35	ANN 34	<p>Yes. Before the proposed project, private investment in energy projects In Uganda is evidently not common. More recently, share of fossil fired power plant has been increasing and led to higher emissions, which further indicate the proposed hydro project is not a prevailing practice. Therefore among listed recently-built power projects, the proposed project is rare in its nature and can argue it faces barrier due to prevailing practice which is building large fossil fired plant by government/private owner.</p> <p>CL-13 The PDD mentions that the project activity is arguably first-of-its kind in Uganda in terms of privately financed small-scale hydropower project relying solely on the sale of electricity to the grid. However, the proposed project is unlikely to meet criteria with respect to “first of its kind” described in MP34 Annex10.</p> <p>Although the privately owned small scale hydro project is not a common practice in Uganda. The project does not fully comply with the criteria of the “first of its kind”. The description of “first of its kind” is now removed.</p> <p>Hence CL-13 is closed.</p>	CL-13	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl.
4.1.7. If other barrier has been explained, is it demonstrated that Other barriers such as institutional barriers or limited information, managerial resources, organizational capacity, or capacity to absorb new technologies would prevent the project activity any way?	EB 35	ANN 34	Yes. <u>Institutional barrier</u> has been discussed. It is not politically and socially stable both in and around Uganda, such uncertainties result in high risks for private investment. Domestically there is high corruption in Uganda and obvious inadequacies in law, infrastructure, health and etc. Therefore it is deemed reasonable that such factors above could prevent the project activity.	OK	OK
4.1.8. Have the project participants identified the most relevant barrier?	EB 35	ANN 34	CL-14 The most relevant barrier should be analysed. Access-to finance barrier is assessed by BVC and considered the most relevant barrier. Relevant description has been added and is now regarded sufficient. Hence CL-14 is closed.	CL-14	OK
4.1.9. Have the project participants provided transparent and documented third party evidence such as national/international statistics, national/provincial policy and legislation, studies/surveys by independent agencies etc. to demonstrate the most relevant barrier?	EB 35	ANN 34	Yes. References to the international statistics/ national policy/ independent research have been used in supporting/verifying the discussed barriers.	OK	OK
4.2. Prior consideration of the clean development mechanism					



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.2.1. Is the project activity start date prior to the date of publication of the PDD for stakeholder comments?	VVM	98	Pending on close of CAR-6 Yes. It is prior to the GSP date on 02/09/2008.	Pending	OK
4.2.2. If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	VVM	98	Yes. CDM benefits were considered as a pre-requisit for the proposed project, evidenced in the supporting agreement dated 24/01/2008.	OK	OK
4.2.3. Is the start date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms", which states that "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins"?	VVM	99	Pending on close of CAR-6. Yes.	Pending	OK
4.2.4. Does the project activity require construction, retrofit or other modifications?	VVM	99	Yes The project activity requires construction of a new hydro plant.	OK	OK
4.2.5. If yes, is it ensured that the date of commissioning cannot be considered as the project activity start date?	VVM	99	Pending on close of CAR-6. Yes.	Pending	OK
4.2.6. Is it a new project activity (a project activity with a start date on or after 02 August 2008) or an existing project activity (a project activity with a start date before 02 August 2008)?	VVM	100	The proposed project start date is before 02/08/2008 so it is an existing project activity.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.2.7. For a new project, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the CDM Executive Board before the project activity start date, had the PP informed the Host Party DNA and/or the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? (Provide reference to such confirmation from Host Party DNA and/or UNFCCC secretariat).	VVM	101	N/A	OK	OK
4.2.8. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	102			



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.2.8.1. Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project, including minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity?	VVM	102	<p>CL-15a) A complete project timeline of implementation and CDM development needs to be represented in B.5 of PDD. And relevant evidences are required to be presented to audit team, in particular approval of the FSR by authority of Uganda.</p> <p>CL-15b) It is not clear when the final investment decision was made and whether it depended on the values in the FSR. The evidence of the final investment decision needs to be provided.</p> <p>a) The timeline has been added in the PDD and checked by BVC. Relevant evidence has been provided by the PP.</p> <p>ERPA has been received and verified by BVC.</p> <p>License has been provided and checked. FSR is considered valid for the project.</p> <p>b) Relevant evidence has been checked by BVC and the explanation is regarded appropriate.</p> <p>Hence CL-15 is closed.</p>	CL-15	OK
4.2.8.2. Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation	VVM	102	Yes.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.3. Identificatoin of alternatives					
4.3.1. Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	VVM	105	Yes. AMS I.D Version 15 has prescribed the baseline scenario i.e. the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO ₂ e/kWh) calculated in a transparent and conservative manner as: a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system".	OK	OK
4.3.2. If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	VVM	105	N/A	OK	OK
4.3.3. Does the list of alternatives given in the PDD ensure that: I. One of the options that the project activity is undertaken without being registered as a proposed CDM project activity II. The list contains all plausible alternatives III. The alternatives comply with all applicable and enforced legislation.	VVM	106	N/A	OK	OK
4.4. Investment analysis					



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.4.1. Has investment analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	108	No. The PP has not presented the investment analysis due to the complex circumstances and lack of relevant reliable and credible information in Uganda. This is regarded reasonable as per guideline 7 in EB50 Annex13.	OK	OK
4.4.2. Investment analysis to determine that the proposed project activity is either: I. Not the most economically or financially attractive? or II. Not economically or financially feasible?	EB 39 VVM	Ann 10 108	N.A.	OK	OK
4.4.3. Was this shown by one of the following approaches?	VVM	109			
4.4.3.1. The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity.	VVM	109	N.A.	OK	OK
4.4.3.2. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative.	VVM	109	N.A.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.4.3.3. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	VVM	109	N.A.	OK	OK
4.4.4. Was a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices conducted?	VVM	111	N.A.	OK	OK
4.4.5. Were the parameters cross-checked against third-party or publicly available sources, such as invoices or price indices?	VVM	111	N.A.	OK	OK
4.4.6. Were feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?	VVM	111	N.A.	OK	OK
4.4.7. Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur and the likelihood of these conditions assessed?	VVM	111	N.A.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
<p>4.4.8. To determine this, was it assessed whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by:</p> <p>I. Assessing previous investment decisions by the project -participants involved?</p> <p>II. Determining whether the same benchmark has been applied?</p> <p>III. Determining if there are verifiable circumstances that have led to a change in the benchmark?</p>	VVM	112	N.A.	OK	OK
4.4.9. Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities?	VVM	113	N.A.	OK	OK
4.4.10. If yes:	VVM	113			
4.4.10.1. Has the FSR been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed?	VVM	113	N.A.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.4.10.2. Are the values used in the PDD and associated annexes fully consistent with the FSR? If not, was the appropriateness of the values validated?	VVM	113	N.A.	OK	OK
4.4.10.3. On the basis of its specific local and sectoral expertise, is confirmation provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?	VVM	113	N.A.	OK	OK
4.5. Barrier analysis					
4.5.1. Has barrier analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	115	Yes.	OK	OK
4.5.2. If yes, does the PDD demonstrate that the proposed CDM project activity faces barriers that: a. Prevent the implementation of this type of proposed CDM project activity? b. Do not prevent the implementation of at least one of the alternatives?	VVM	115	Yes. The analysed barriers will prevent implementation of the proposed project but will not prevent the baseline scenario which is continuation of the current situation.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
<p>4.5.3. Issues that have a clear direct impact on the financial returns of the project activity cannot be considered barriers and shall be assessed by investment analysis, except for</p> <p>a. Risk related barriers, for example risk of technical failure, that could have negative effects on financial performance; or</p> <p>b. Barriers related to the unavailability of sources of finance for the project activity.</p>	VVM	116	<p>Issues that have a clear direct impact on the financial returns of the project activity are not considered as barriers in the PDD.</p>	OK	OK
4.5.4. Are the barriers listed in the PDD real?	VVM	117	Yes.	OK	OK
<p>4.5.4.1. If yes, has the existence of barriers been</p> <p>a. Substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics?</p> <p>b. assessed by available evidence and/or interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary)?</p> <p>c. prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives in particular the identified baseline scenario.</p>	VVM	117	<p>Yes.</p> <p>The analysed barriers are supported by independent sources of data and have been assessed against available evidence.</p> <p>The existence of the presented barriers would not prevent the baseline scenario.</p>	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.5.5. While demonstrating barriers related to the lack of access to capital, information should include nature of company, organization and its ownership and financial information?	EB 50	ANN 13	Referring to Guideline 7 of EB 50 ANN13 (also in 4.5.8), the Project is located in LDC and is not bound by the provision. Nevertheless. The PP is a private owned company.	OK	OK
4.5.6. Demonstrate in an objective way how the CDM alleviates each of the identified barriers to a level that the project is not prevented anymore from occurring by any of the barriers. Provide transparent and documented evidence, and offer conservative interpretations of this documented evidence. Anecdotal evidence can be included, but alone is not sufficient proof.	EB 50	ANN 13	EAIF (the fund provider) has provided a confirmation letter which clearly stated that considering the clauses regarding CDM benefit and the guarantee by GoU in the Support Agreement, EAIF decided to provide loan to the Project. Hence the CDM alleviates the access-to-finance barrier. BVC has verified the evidences and can confirm the above conclusion.	OK	OK
4.5.7. Barriers that can be mitigated by additional financial means can be quantified and represented as costs and should not be identified as a barrier for implementation of project while conducting the barrier analysis, but rather should be considered in the framework of investment analysis.	EB 50	ANN 13	Refer to 4.5.3.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
4.5.8. For projects in Least Developed Countries it is sufficient to transparently describe the relevant barriers, as less stringency is needed with regards to data availability in the actual demonstration of barrier, as compared to the projects in other countries. Projects in Least Developed Countries are not bound by the provisions in this guideline and may use other approaches that are more adapted to the local circumstances.	EB 50	ANN 13	Uganda is recognized as one of the Least Developed Countries (LDCs) http://www.un.org/special-rep/ohrls/ldc/list.htm	OK	OK
5. Monitoring plan					
5.1.1. Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	122	Yes.	OK	OK
5.1.2. Does the monitoring plan contains all necessary parameters?	VVM	123	Yes.	OK	OK
5.1.3. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	123	Yes.	OK	OK
5.1.4. Are the means of implementation of the monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified?	VVM	123	Pending on close of CL-9 Beside the CDM monitoring plan, special monitoring requirements from Uganda Electricity Transmission Company Ltd (UETCL) is attached in the PDD.	Pending	OK
6. Sustainable development					



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl.
6.1. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	125	Yes.	OK	OK
6.2. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	VVM	126	Yes. Indicated in the DNA approval.	OK	OK
7. Local stakeholder consultation					
7.1. Were local stakeholders (public, including individuals, groups or communities affected, of likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?	VVM	128	Yes. Stakeholders of affected areas were consulted by the PP in 2005 before GSP of the PDD on 02/09/2008	OK	OK
7.2. Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity been invited?	VVM	129	Yes. Comments were summarized and regarded relevant.	OK	OK
7.3. Is the summary of the comments received as provided in the PDD complete?	VVM	129	Yes. It is provided and regarded complete.	OK	OK
7.4. Have the project participants taken due account of any comments received and described this process in the PDD?	VVM	129	Yes. It includes compensation, valuation, employment, water supply scheme, safety/health, resettlement, infrastructure and affected graves	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl.	Final Concl
8. Environmental impacts					
8.1. Have the project participants submitted documentation on the analysis of the environmental impacts of the project activity?	VVM	131	Yes. EIA reports are provided and checked.	OK	OK
8.2. Have the project participants undertaken an analysis of environmental impacts?	VVM	132	Yes.	OK	OK
8.3. Does the host Party require an environmental impact assessment?	VVM	132	Yes. EIA approval certificate number NEMA/EIA/1124, Ministry of Lands and Minerals valuation report is given.	OK	OK
8.4. If yes, have the environmental impact assessment approved by local government?	VVM	132	<p>Pending on GL-12</p> <p>Yes.</p> <p>According to EIA a certain mitigation measure to be carried out to minimize the negative impacts during construction.</p> <p>EIA approval stipulates conditions under which project is allowed to run e.g. approval by Directorate of Water Development for water abstraction, NEMA permit for project components in protected river zone, institute a monitoring plan to detect and avert any undesirable incidents of soil erosion during construction, operation, maintenance and decommissioning of the project.</p>	Pending	OK



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Table 2 Specific validation activities

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
1. <i>Project design of small-scale clean development mechanism project activities (delete this table if the project activity is not a small scale project activity)</i>					
1.1. Does the proposed small-scale project activity meet the requirements of the simplified modalities and procedures for small-scale CDM project activities?	VVM	135	Yes. The proposed project is a renewable energy project with a output capacity not exceeding 15MW.	OK	OK
1.2. Does the project activity qualify within the thresholds of the three possible types of small scale project activities? [Type (i) project activities: renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts; Type (ii) project activities: energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 60 gigawatt hours per year; Type (iii) project activities: other project activities that both reduce anthropogenic emissions by sources and directly emit less than 60 kilotonnes of carbon dioxide equivalent annually.]	VVM	136	Yes. The proposed project qualifies Type (i).	OK	OK
1.3. Does the project activity conform to one of the approved small-scale categories?	VVM	136	Yes. Type I: Renewable Energy Project. Category I.D: Grid connected renewable electricity generation.	OK	OK
1.4. Does the project activity apply the relevant tool and	VVM	136	Yes.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
methodology?			AMS I.D Version 15, Tool to calculate the emission factor for an electricity system version 02 dated 16/10/2009 and Tool to calculate project or leakage CO2 emission from fossil fuel combustion version 02 dated 02/08/2008		
1.5. Are the small-scale methodologies applied in conjunction with the general guidance to the methodologies, which provides guidance on equipment capacity, equipment performance, sampling and other monitoring-related issues?	VVM	136	No.	OK	OK
1.6. Is the project activity a debundled component of a large-scale project, i.e., is there a registered small-scale CDM project activity or an application to register another CDM project activity: (a) with the same project participants; (b) in the same project category and technology/measure; and (c) registered within the previous 2 years; and (d) whose project boundary is within 1 km of the proposed boundary of the proposed small-scale activity at the closest point?	VVM	136	No. The proposed project is not a debundled project and verified during site visit.	OK	OK
1.7. Is an assessment of the environmental impacts of the proposed CDM project activity required by the host Party?	VVM	136	Yes. EIA is required and relevant evidence is provided and checked.	OK	OK
1.8. Is the project additional?	VVM	137	Yes. As proved in the presented barriers	OK	OK



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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 1	Summary of project owner response	Validation team conclusion
CAR-1 Letter of Approval from DNA of Switzerland should be provided.	1.1 1.2 1.3 1.4 2.1 2.3 2.4 2.6	Letter of approval has been provided by DNA of Switzerland.	LoA from Swiss DNA has been checked and found satisfactory. Hence CAR-1 is closed.
CAR-2 The LoA has to be renewed due to the updated version of the PDD.	1.4	Updated LoA has been provided.	LoA from Uganda DNA specifying the final PDD has been checked and found satisfactory. Hence CAR-2 is closed.
CAR-3 The project participants and parties should be listed as per CDM-SSC-PDD guidelines.	3.6	The project participants and parties have been corrected as per CDM-SSC-PDD guidelines, and table reformatted.	A.3 has been revised and found satisfactory. Hence CAR-3 is closed.
CAR-4 The IPCC default values at the lower limit of the uncertainty at a 95% confidence interval should be applied for NCV and $EF_{CO_2,i,y}$ instead of the IPCC default values.	3.18.2	The IPCC default values at the lower limit of the uncertainty at a 95% confidence interval have now been applied for NCV and $EF_{CO_2,i,y}$ and emission reductions have been amended accordingly	The correct IPCC value has been applied and the revised calculation has been checked and considered correct. Hence CAR-4 is closed.
CAR-5 In the EF calculation, formula applied in calculating λ of year 2006 and 2007, is found	3.19.1	The correction for λ of year 2006 and 2007 has been made, and λ for these	Formulas in calculating λ have been revised. The result is now



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
incorrect, resulting a bigger OM, which is neither accurate nor conservative.		two years is now 0.4% and 0.5% respectively and not zero.	correct. Hence CAR-5 is closed.
CAR-6 The starting date of the project activity should be re-defined to comply with the latest Glossary of CDM terms.	3.24 4.2.1 4.2.3 4.2.5	Starting date has been redefined as 07 March 2008 when project developer signed the contract for civil works with Noremco	The contract has been verified by BVC. BVC can confirm that the date of 07/03/2008 is the starting date of the project. Hence CAR-6 is closed.
CL-1 a) The latest template of SSC PDD should be complied with table in A4.3, B.6.2 and B.6.4 are not consistent with the template in guideline. b) Please use internationally accepted standard format in PDD for values where 1,000 represents one thousand and 1.0 represents one. ex. 54,349.	3.1 3.2	a) Latest template applied to tables in A4.3, B.6.2 and B.6.4. b) Internationally accepted standard format for values has been used throughout	a) Related tables have been revised and are in line with the PDD guideline. b) The figure format has been adjusted in the PDD and excel sheet. All figures in these sections are now under international format Hence CL-1 is closed.
CL-2 The capacity of 2*6.5 MW turbines and generators is indicated in the PDD and FSR. It is not consistent with 2*7.228 MW turbines and 2*7.14 MW generators specified on the equipment contract and on the nameplate at	3.5.2	Two horizontal synchronous turbines will be installed, each with a capacity of 7.228 MW, and two generators with a unit capacity of 7.14 MW giving a total capacity installed of 14.28 MW. The power output for supply to the grid,	Relevant correspondence from the DNA and Electricity Regulatory Authority in Uganda has been received and verified. The installed capacity of the project is corrected as



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the project site.		<p>however, has to include system losses. The rated output to the grid for combined operation of the two turbines at discharge 10m³/s, taking into account losses in the generator and transformer, is 13MW (or 2*6.5MW), as confirmed by a third party (project engineer). This is the source of the discrepancy, which has been highlighted to both the DNA and the Electricity Regulatory Authority in Uganda. The former has confirmed that this is of no consequence to them, and the latter has confirmed that the license is still valid.</p> <p>All references to 2*6.5 MW in the PDD have been removed and replaced with 2*7.14MW. It should be noted that the installed capacity was always planned to be 14.28MW in order to provide a rated output to the grid of 13 MW, taking into consideration losses. The annual power generation of 82 GWh/year has therefore always been based on an installed capacity of 14.28 MW giving a rated output to the grid of 13 MW.</p>	<p>14.28MW in the PDD.</p> <p>The Energy output is estimated to be 82GWh, based on an effective power output of 13MW. This is evidenced by a confirmation letter from NORPLAN, the developer of the Project FSR.</p> <p>Hence CL-2 is closed.</p>



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CL-3 Technology transfer to the host country and Plant Load Factor should be described.	3.8.2	<p>Mention of technology transfer is made in A2 and A4.2. First, project developer will utilize modern technology and expected to be of a higher standard than other power plants currently existing in Uganda. Further, project developer will train both skilled and unskilled local workers.</p> <p>The plant load factor = avg. annual energy / (max capacity * 8760). The avg. annual energy and max capacity is given in the letter from Norplan (third party documentation, provided to DOE) as 82 GWh and 14.28 MW resp. This gives a plant load factor of 65.55%.</p>	<p>The description of technology transfer is added and regarded complete.</p> <p>PLF has been added in the PDD and Proof letter from Norplan has been checked by BVC. BVC confirms the PLF is appropriate.</p> <p>Hence CL-3 is closed.</p>
CL-4 The total estimated emissions are not correctly summed up in the table.	3.9	Sum of total estimated emissions has been corrected and updated in the table	<p>The total estimated emissions are corrected in those tables.</p> <p>Hence CL-4 is closed.</p>
CL-5 Details of the (c) non-recourse loans from IFC and EAIF need to be provided, such as loan contract or letter of intention. And the ratio of equity/grant fund/debt needs to be provided.	3.10	The financial scheme has changed and only EAIF will provide loan. The letter of funding from EAIF (with CDM consideration) is provided and attached as annex 9 in the PDD.	The letter of funding from EAIF (with CDM consideration) is provided and attached as annex in the PDD. It is confirmed in the letter that CDM revenue is an



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		Details of the loan contract have been sent to the validator, as has the ratio of equity/grant fund/debt.	important factor for EAIF to provide the funding. This has been presented in the analysis of access to finance barrier. Hence CL-5 is closed
CL-6 Latest version of AMS I.D and “Tool to calculate the emission factor from an electricity system” should be applied.	3.17.1 3.17.2 3.17.3 3.17.5 3.17.7 3.12	AMS I.D Version 15 is the valid version on the UNFCCC site at this date (25/02/10) and has now been applied throughout. “Tool to calculate the emission factor from an electricity system” version 2.0 has now been applied throughout	The PDD has been revised as per AMS I.D Version 15 and latest tool ver 2.0 has been applied. Hence the CL-6 is closed.
CL-7 The public or official data source need to be provided for the load duration curves 2005 to 2007, F _{Ci,m,y} , F _{Ci,j,y} , F _{Ci,k,y} , and E _{Gm,y} , E _{Gj,y} , E _{Gk,y} (Annex 3) as per “Tool to calculate the emission factor for an electricity system” required.	3.18.2 3.17.7	Public or official validated data used for all values as follows: F _{Ci,m,y} , F _{Ci,j,y} , F _{Ci,k,y} : Electricity Regulatory Authority (ERA), letter validating data from 15.10.09 supplied to DOE E _{Gm,y} , E _{Gj,y} , E _{Gk,y} : Data obtained from ERA website (www.era.or.ug) Data for load duration curves supplied by ERA, letter validating data from	Sources or official confirmation of the data has been provided by the PP and checked by BVC. BVC considers the data is acceptable under guidance in annex 13 of EB50. Hence CL-7 is closed.



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		16/10/2009 supplied to DOE. Reference is also made to annex 13 of EB50 in relation to data availability in LDCs.	
<p>CL-8</p> <p>a) The thermal plant generation in table 2 on page 25 does not conform to the total electricity generation in table 3 in page 28 which has several inconsistencies with table 8. Besides, data in table 8 in Annex 3 is not fully consistent with table 'Plants ERA' in calculation in the excel.</p> <p>b) The process of emission reductions calculated as the outcome of B.6.3 ex. ER, BE, PE, LE is not fully presented.</p>	3.19.1	<p>a) All figures in tables in main body of PDD now conform with each other, and with tables in Annexes. The difference was due to the data having originally been obtained from ERA officers, and differed slightly from the data which was eventually placed on the ERA website. The preferred source for data used is the ERA website, as this is considered to be the most up to date and most publically available and therefore verifiable source. All data on the hydro power plants was obtained from this source. Data on the thermal plants was not available from the ERA website, and was therefore obtained directly from ERA (letter dated 15.10.09). The data used for the load duration curves was obtained directly from UETCL officers as this information is not available on any publically accessible website. Sources of data have been referenced on the calculation spreadsheet.</p>	<p>a) The data applied in emission reductions calculation have been checked against the original data sources, namely ERA website and referred ERA letters dated 15/10/2009 and found consistent. Relevant data in the PDD has been updated and deemed correct.</p> <p>b) The B.6.3 has been revised and it is now regarded complete.</p> <p>Hence CL-8 is closed.</p>



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		b) Process of emission reductions calculated as the outcome of B.6.3 is now fully presented i.e. $ERy = BEy - PEy - LEy$	
<p>CL-9</p> <p>a) The demonstration of QA/QC in section B.7.1 need to be added, in particularly measurement results should be cross-checked with records for sold electricity.</p> <p>b) “Net” amount electricity, hourly measurement and monthly recording are required for EGy as per AMS I.D Version 15. Location and calibration frequency of the meters should be described.</p>	<p>3.21.1</p> <p>5.1.4</p>	<p>a) QA/QC procedures now given for parameters read as follows:</p> <p><i>EGy</i>: Measurement results shall be cross-checked with records for sold electricity (to UETCL).</p> <p><i>FC_{i,j,y}</i>: cross-checked by an annual energy balance and also verified against annual diesel fuel purchase invoices from the financial records.</p> <p>b) Net amount of electricity will be monitored, as now indicated in the PDD. Calibration frequency of the meters now stated in section B.7.2. Main and Check meter shall be calibrated annually. Both meters are to be installed at the 33 kV side of the transformer at the power house. Hourly measurement and monthly recording will be undertaken as now indicated in the PDD</p>	<p>a) The QA/QC has been added as per requirement in the AMS I.D version 15.</p> <p>b) The use of the “tool to calculate project or leakage CO2 emission from fossil fuel combustion ver 2” has been included in Section B.1 and B.6.4. The required monitoring parameters have been added in Section B7.2. The calibration frequency and location of meters has been specified in line with latest EB’s guidance.</p> <p>The B.7.1 and B.7.2 has been revised.</p> <p>Hence CL-9 is closed.</p>



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<p>CL-10 It should be indicated in the PDD if the persons responsible for the application of the baseline and monitoring methodology to the project activity is also a project participant and a more specific contact description is required.</p>	3.23.3	<p>More specific contact details are given in section B.8. on persons responsible for the application of the baseline and monitoring methodology. Person/entity is not a project participant.</p>	<p>The B.8 has been revised as per requirement and is now complete.</p> <p>Hence CL-10 is closed.</p>
<p>CL-11 The origin of 20 year operational period should be clarified.</p>	3.25	<p>The operational period is actually stated as 25 years, not 20 years, which is line with the license agreement (see annex 6)</p>	<p>The license is provided by the PP and checked by BVC. The description in the PDD has been revised as per 25 years indicated in the license.</p> <p>Hence CL-11 is closed.</p>
<p>CL-12 Evidence is not provided for implemented environment conditions/mitigation actions under which the proposed project is permitted by the EIA to carry out the project activity.</p>	3.30 8.4	<p>Evidence for implemented environment conditions/mitigation actions have been provided to DOE</p>	<p>The report submitted by the PP with respect to the environment mitigation progress during project implementation has been checked and found satisfactory.</p> <p>Hence CL-12 is closed.</p>
<p>CL-13 The PDD mentions that the project activity is arguably first-of-its kind in Uganda in terms of privately financed small-scale hydropower project relying solely on the sale of electricity</p>	4.1.6	<p>Reference to the project being first of its kind has now been removed.</p>	<p>Although the privately owned small scale hydro project is not a common practice in Uganda. The project does not fully</p>



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to the grid. However, the proposed project is unlikely to meet criteria with respect to “first of its kind” described in MP34 Annex10.			comply with the criteria of the “first of its kind”. The description of “first of its kind” is now removed. Hence CL-13 is closed.																		
CL-14 The most relevant barrier should be analysed.	4.1.8	The project has identified “(b) Access-to-finance barrier” as the most relevant barrier, as described in section B.5. However other barriers have also relevant been identified as relevant barriers, and these are also outlined.	Access-to finance barrier is assessed by BVC and considered the most relevant barrier. Relevant description has been added and is now regarded sufficient. Hence CL-14 is closed.																		
<p>CL-15</p> <p>a) A complete project timeline of implementation and CDM development needs to be represented in B.5 of PDD. And relevant evidences are required to be presented to audit team, in particular approval of the FSR by authority of Uganda.</p> <p>b) It is not clear when the final investment decision was made and whether it</p>	4.2.8.1	<p>a) a complete project timeline has now been included in B.5, and is summarised below:</p> <table border="1" data-bbox="1066 1054 1592 1342"> <thead> <tr> <th>Date</th> <th>Milestone</th> </tr> </thead> <tbody> <tr> <td>Jan 2006</td> <td>Site permit</td> </tr> <tr> <td>Mar 2006</td> <td>Feasibility Study & EIA completed</td> </tr> <tr> <td>May 2006</td> <td>Project company registered in Uganda</td> </tr> <tr> <td>Aug 2006</td> <td>First tender for supply of equipment</td> </tr> <tr> <td>July 2007</td> <td>Transfer of project from SN Power to TrønderEnergi</td> </tr> <tr> <td>Sept 2007</td> <td>Updated price offers from contractors</td> </tr> <tr> <td>18 Sept 2007</td> <td>TrønderEnergi investment decision</td> </tr> <tr> <td>Dec 2007</td> <td>Norfund investment decision</td> </tr> </tbody> </table>	Date	Milestone	Jan 2006	Site permit	Mar 2006	Feasibility Study & EIA completed	May 2006	Project company registered in Uganda	Aug 2006	First tender for supply of equipment	July 2007	Transfer of project from SN Power to TrønderEnergi	Sept 2007	Updated price offers from contractors	18 Sept 2007	TrønderEnergi investment decision	Dec 2007	Norfund investment decision	<p>a) The timeline has been added in the PDD and checked by BVC. Relevant evidence has been provided by the PP.</p> <p>ERPA has been received and verified by BVC.</p> <p>License has been provided and checked. FSR is considered valid for the project.</p> <p>b) Relevant evidence has been</p>
Date	Milestone																				
Jan 2006	Site permit																				
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<p>depended on the values in the FSR. The evidence of the final investment decision needs to be provided.</p>		<table border="1" data-bbox="1070 443 1599 719"> <tr> <td>Jan 2008</td> <td>Signing of support agreement</td> </tr> <tr> <td>15 Jan. 2008</td> <td>Mobilization for construction</td> </tr> <tr> <td>7 Mar. 2008</td> <td>Contract for civil works signed (project start date)</td> </tr> <tr> <td>13 Mar 2008</td> <td>Contract signed for supply, erection and commissioning of turbine and generator equipment and auxiliaries with Mavel AS</td> </tr> <tr> <td>May 2008</td> <td>Loans signed</td> </tr> <tr> <td>Feb 2010</td> <td>ERPA signed</td> </tr> </table> <p>All relevant supporting documents for the above supplied to DOE</p> <p>According to Ugandan legislation, the FSR does not need to be approved by GoU, so no approval is available. However, the license to operate the new facility has been granted by the GoU based on the data presented in the FSR. Granting of the license for the Bugoye hydropower plant can therefore be considered indirect approval of the FSR.</p> <p>b) Final investment decision from Tronder Energi made on 18 September 2007, as evidenced by "Certificate of Secretary" provided to DOE. Final investment decision based on FSR with respect to technical options, but updated</p>	Jan 2008	Signing of support agreement	15 Jan. 2008	Mobilization for construction	7 Mar. 2008	Contract for civil works signed (project start date)	13 Mar 2008	Contract signed for supply, erection and commissioning of turbine and generator equipment and auxiliaries with Mavel AS	May 2008	Loans signed	Feb 2010	ERPA signed	<p>checked by BVC and the explanation is regarded appropriate.</p> <p>Hence CL-15 is closed.</p>
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		figures on investment costs, which have been provided to DOE, along with full explanations of changes in investment costs.	