Project Title	Bujagali Hydropower Project
ERM CVS Project Reference	1883.v1
Report Date	06 October 2011
Client Name	Bujagali Energy Limited
Client Address	P.O. Box 186 8 Kms Kayunga Road, Kikubamutwe Jinja Mukono District Uganda

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Version	Date
Version 01	11 October 2010 (Draft Validation Report)
Version 02	06 October 2011 (Final Validation Report)

Project Title:	**Bujagali Hydropower Project**		
Project Location	The project is Located on Dumbbell Island on the Victoria Nile river, 8km downstream of the Nalubaale and Kiira hydroelectric plants, near the city of Jinja, Uganda		
Country	Uganda		
Project Parties	Uganda The Netherlands		
Project Participants	Bujagali Energy Limited Government of Uganda, Ministry of Energy and Mineral Development		
Methodology used	ACM0002		
Methodology version number	V 12		
Estimated Annual Average Emission Reductions	858,173 tCO_2e		
Crediting Period Dates	01 December 2011 – 30 November 2018		
GSP PDD Version	Date: 16 July 2010 Version Number: 1.0 Start date of GSP: 23 July 2010	Final PDD Version	Date: 06 October 2011 Version Number: 2.0

Summary:

ERM CVS was commissioned by Bujagali Energy Limited to validate the Bujagali Hydropower Project on the basis of UNFCCC criteria for the Clean Development Mechanism (CDM), as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board, including the Validation and Verification Manual. The validation consisted of the following three phases: i) a desk review of the project design documents, ii) site assessment and follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Based on the work performed, it is ERM CVS's conclusion that the project as described in the Project Design Document Version 2.0, dated 06 October 2011, meets all necessary criteria and requirements of the CDM, correctly applies the methodology ACM0002 v12 and is expected to result in real, measurable and long term emission reductions. The DNA of the host Party has confirmed that the project assists in meeting sustainable development criteria.

ERM CVS therefore requests that the CDM Executive Board registers the project as a CDM project activity.

Client:	Bujagali Energy Limited
Client Representative:	Jim McGowan, Senior Vice President - Development, Sithe Global

Report approved by:		Signature
Name: Melanie Eddis		
Date: 06 October 2011		

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Abbreviations

AKFED	Aga Khan Fund for Economic Development
A/R	Afforestation / Reforestation
BEL	Bujagali Energy Limited
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH_4	Methane
CL	Clarification Request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COP	Conference of Parties
CSPG	China Southern Power Grid
DNA	Designated National Authority
DOE	Designated Operational Entity
EIF	Environmental Impact assessment Form
GHG	Greenhouse Gas
GoU	Government of Uganda
GSP	Global Stakeholder Process
FAR	Forward Action Request
FSR	Feasibility Study Report
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of Approval
MOP	Meeting of Parties
MP	Monitoring Plan
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PP	Project Participant
UETCL	Ugandan Electricity Transmission Company Ltd
UNFCCC	United Nations Framework Convention on Climate Change
VVM	CDM Validation and Verification Manual

1. Introduction

1.1. Validation Objective

The purpose of a validation is to provide a thorough independent third party assessment of proposed CDM project activities to ensure that the proposed CDM project activity meets all the identified and applicable criteria for registration of projects under the Clean Development Mechanism. In particular, the project's baseline, additionality demonstration, applicability to an approved CDM methodology, 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 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 the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board. The validation will result in a conclusion as to whether the project should be submitted for registration. The final decision on whether to register the project rests with Executive Board and the Parties involved.

1.2. Scope

The validation scope is defined as an independent and objective review of the Project Design Document (PDD) and associated documentation. The PDD and associated documentation is reviewed against the criteria and requirements stated in the CDM Validation and Verification Manual (VVM) (EB 55) and Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, as well as relevant decisions by the CDM Executive Board. The validation scope also included an assessment of completeness and accuracy of documentation, evaluation of evidences, information and assumptions made in the PDD and supporting documentation.

1.3. CDM Project Description

The Bujagali Hydropower Project (hereafter referred to as the 'project' or 'project activity') developed by Bujagali Energy Limited (hereafter referred to as 'BEL' or 'the project developer') is a proposed hydroelectric power station located at Dumbell Island on the Victoria Nile in the Republic of Uganda. The Project sponsor is Bujagali Energy Limited ('BEL'), a project-specific company established by Sithe Global Power, LLC ('Sithe Global') and Industrial Promotion Services Kenya ('IPS Kenya') which is majority owned by the Aga Khan Fund for Economic Development ('AKFED'). The total installed capacity of the Project will be 250MW, consisting of five 50 MW turbines, which are estimated to supply 1,305 GWh per year to the electricity grid.

The hydropower facility will consist of a 28 m high earth-filled and concrete covered dam and spillway works, and an associated power house. The dam will impound a reservoir that extends upstream to the tailrace area of the Nalubaale and Kiira facilities, inundating Bujagali Falls. The surface area of the reservoir will be 388 ha, including the existing 308 ha surface of the Victoria Nile River, and 80 ha of newly inundated land.

The baseline scenario is that electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system". In Uganda the grid mix consists mainly of hydroelectric power (primarily 2 large hydro power stations, the Nalubaale (Owen Falls) and Kiira (Owen Falls Extension) hydroelectric plants) and a large number of smaller scale diesel and heavy fuel oil powered generation stations. In addition, there are a large number of off-grid backup generators used for power supply to large facilities during periods of load shedding, when the grid supply is unable to meet peak power demand.

The accuracy and completeness of the project description has been validated against the Economic and Financial Evaluation Study performed by Power Planning Associates [DR 21 and DR 03] and against the detailed diagrams of the layout of the project activity [DR 02]. It has been further cross checked against the description of the project in the EIA prepared by RJ Burnside [DR 25].

1.4. Validation Personnel

Validation Team	Role	Coverage of sectoral scope	Coverage of technical area	Host country expertise	Participated in site visit?
Jonathan Avis	Lead Validator	√	√		√
Mandy Momberg	Validator	√	√	√	√
Miguel Cortes	Validator	√	√		

Technical Review	Role	Coverage of sectoral scope	Coverage of technical area
Bilal Anwar	Technical Reviewer	√	√

Jonathan Avis is CDM Business Manager for ERM CVS, and a GHG Auditor and Technical Reviewer with over 5 years experience in the carbon market. Mr. Avis holds an MSc in Environmental Management from the University of Oxford. His previous work experience includes screening and due diligence of carbon projects, Project Design Document (PDD) development, quality assurance and technical review of CDM project documentation, the development of carbon monitoring plans, and management of carbon projects through the validation, registration and verification stages. He has worked on the development and quality control of carbon projects in numerous sectors including hydroelectricity, wind energy, landfill gas,

waste gas and heat, coal mine methane, biomass-to-energy and composting. Since joining ERM CVS Jonathan has worked as a Technical Reviewer and GHG auditor on numerous CDM validations. Jonathan's experience in the renewable energy sector includes due diligence and carbon assessment of renewable energy investments, development of Project design Documents, monitoring plans and emission reduction calculations for renewable energy projects in the CDM, and revision of methodologies in the renewable energy scope. Jonathan has completed an independent training course in renewable energy (wind and hydroelectric) technologies.

Mandy Momberg has over 20 years' experience in climate change, environmental sustainability and biodiversity related matters, which includes the validation and verification of Clean Development Mechanism (CDM) projects, climate change risk assessments and greenhouse gas inventories. Mandy underwent CDM training with PricewaterhouseCoopers (SA) in 2007 where she was appointed DOE Manager, and she joined ERM (South Africa) in October 2009 and underwent further CDM training with ERM CVS in June 2010. In addition, Mandy spent two years in the mining industry and gained experience in land stewardship, waste management, closure liabilities and environmental management systems. Mandy is a qualified and experienced ISO14001 Environmental Management Systems auditor and has further training in various environmental matters, including environmental law, environmental risk assessments, environmental auditing, air pollution control, water pollution control and waste management.

Miguel Cortes is has five years of experience in CDM projects, nine years as Environmental Manager in the Cement Industry and two years of academic research in Environmental Studies. Miguel is highly qualified for technical assessment and handling of GHG emission reduction and carbon offset projects in Energy and Manufacturing Industries, Mining and Waste Water Management. He has as in-depth knowledge of Organisational Environmental Management Systems including air emission and waste water monitoring, air quality and noise characterisation, audit processes for legal compliance and performance, community stakeholder relationship management and land-cover restorations. Miguel is an expert in the design of Clean Development Mechanism (CDM) methodologies and the administration of technical, professional and economic resources for environmental projects. His CDM experience includes:

- Design and development of CDM methodology AM0040 "Baseline and monitoring methodology for project activities using alternative raw materials that contain carbonates in clinker manufacturing in cement kilns" (The methodology was consolidated with AM0033 under ACM0015)
- Conducting many GHG and CDM project analyses in China, Mexico, Brazil, India, Argentina, Colombia, Bolivia, Macedonia, Egypt, Thailand and the Middle East
- Experience as a Technical Reviewer of coal mine methane, waste heat recovery and hydroelectric CDM projects

Bilal Anwar has ten years' of professional experience in the area of International Climate Change Policy, Regulatory aspects of the Global Climate Regime, setting-up of the global accreditation system under the CDM and technical and methodological aspects relating to projects for reducing GHG emissions. This experience has been gained in the Secretariat for the United Nations Framework Convention on Climate Change (UNFCCC) by supporting the CDM regulatory regime. In this role Bilal developed a profound understanding of all aspects of the project based mechanisms (CDM & JI) namely: regulatory, methodological, technical, legal and procedural. Bilal had been closely involved in the development of methodological and technical frameworks, including baseline and monitoring methodologies, standards for CDM projects, regulatory and technical requirements and associated procedural frameworks.

2. Methodology

The validation was carried out in accordance with the VVM, version 01.2 (EB 55). The validation process employed standard auditing techniques and undertook necessary cross-checks and follow-up actions to ascertain the correctness of the information. The validation team included staff with experience in the relevant sectoral scopes and technical areas within the sectoral scope, and included local host country expertise and sectoral knowledge. The validation report and associated documents have undergone a thorough technical review by ERM CVS before being submitted to the CDM Executive Board for registration. The validation consisted of the following key phases:

I. Upload of the PDD for Global Stakeholder Process (GSP), receipt of any comments from stakeholders (GSP started on 23 July 2010)
II. Desk review of documentation including PDD, methodology and key supporting documents and references
III. A visit to the project site, including interviews with personnel responsible for developing the project (the site visit took place on 24-27 August 2010)
IV. Development of a draft validation report, identifying non-compliances including Corrective Action Requests (CARs) and Clarification Requests (CLs), taking into account findings of the GSP, desk review and site visit / interviews
V. Resolution of outstanding issues (CARs and CLs) and development of a final validation report and validation opinion

2.1. Global Stakeholder Process consultation

The PDD version 01 dated 16 July 2010 was uploaded for global stakeholder comments. Relevant information can be found at: http://cdm.unfccc.int/Projects/Validation/DB/JXV07TLO7KBYTY9LPCX5JHSR8HRYT0/view.html

One comment was received from International Rivers, a non-governmental organisation whose aim is to protect rivers and defend the rights of communities that depend on them. The full text of the comment is available here: http://cdm.unfccc.int/Projects/Validation/DB/JXV07TLO7KBYTY9LPCX5JHSR8HRYT0/view.html

What comments were made: The comment states that the project is not additional since it is claimed that the project would be developed anyway in the absence of carbon credit revenues. The comment substantiates this by explaining that the construction of the project is already well advanced. The comment states that the project is the least cost option for energy provision in Uganda and hence should be considered not additional. The comment also challenges claims made in the GSP PDD as false and misleading.

Implication for compliance with the CDM rules: The comments suggest that the project should not be considered compliant with the CDM rules concerning additionality and CDM consideration. As such the comments suggest that the project is not additional due to the fact that it is claimed that it does not need carbon credit revenues in order to be developed.

How have these comments been addressed: ERM CVS has seriously considered all the issues raised in the submitted comments. The comments relate to aspects of the CDM rules contained in the VVM, tool for the demonstration and assessment of additionality, and the Guidelines on the prior consideration of the CDM, all of which are elements that the DOE is required to validate in detail. The following report contains ERM CVS's assessment of the project's compliance against these requirements. In summary, the comments are addressed as follows:

> Comment: Construction of the project is already at an advanced stage.
> Response: ERM CVS can confirm, based on the site visit, that construction of the project is indeed at an advanced stage. At the time of the site visit (August 2010) the dam construction was nearing completion and the turbine housing was in the process of being constructed. However this is not in violation of the CDM rules. According to the VVM, paragraph 98 "*If the project activity start date is prior to the date of publication of the PDD for stakeholder comments it shall be demonstrated that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity*" therefore the CDM rules allow for the project activity to start development and construction in advance of the validation or registration of the project, in anticipation of expected revenues. ERM CVS has confirmed that the start date of the project activity is in accordance with the "Glossary of CDM terms". ERM CVS has determined that it is an existing project activity in accordance with VVM paragraph 102 and that sufficient evidence has been demonstrated to show that the project developer was aware of 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 – please refer to section 3.6 of this report and section 7.1 and 7.2 of the validation protocol (Appendix B). Furthermore, reliable evidence from the project participants indicates that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Please refer to section 3.6 of this report and section 7.4 of the validation protocol (Appendix B). It should be noted that there was an unsuccessful attempt to develop the project from 1996 onwards, culminating in the withdrawal of AESNP, the previous project sponsor, in 2003, illustrating the real barrier to the development of the project in the absence of CDM. These are discussed in detail in the additionality section of the report (section 3.6) below.

> Comment: The claim that the investors and developers only went ahead with the project because of the potential for CDM income is misleading.
> Response: ERM CVS has verified key documentation used in the investment decision by the equity financers, Blackstone, that demonstrates that they would not have considered financing the project without the additional financial incentive and security rendered by the carbon credit revenue stream. This is assessed in detail in section 3.6 of this report and in CL 13.

Comment: The project is the least cost option for providing energy to Uganda.
Response: ERM CVS can confirm that according to the Economic and Financial Evaluation Study [DR 03, 21] the project is considered to be the least cost option for Uganda for providing electricity over the long term. However this does not imply that the project is attractive to investors nor that it would actually be constructed. ERM CVS can confirm based on its local and sectoral knowledge and extensive document review that the energy sector in Uganda suffers from chronic under-investment, and that there is a significant gap between electricity demand and the ability of the grid to meet the demand, hence more costly options such as off grid generators and smaller scale diesel and HFO generators on short term PPAs are developed. Due to the lack of available capital (Uganda is a least developed country and the PP has also demonstrated that an investment barrier is present) generation options with higher operating costs, but lower up-front investment costs are favoured. Several thermal plants on short terms PPAs have recently been added to the grid, including Agrekko Kiira thermal plant (operated from 2006-2008) Agrekko Lugogo emergency thermal generation (2005-2008), Jakobsen emergency thermal generation plant (2008-onwards), Aggreko-Mutundwe (2008-onwards), Tonya thermal power plant (2010-onwards) and Tororo thermal power plant (under development) [DR 06]. As shown in the build margin calculations in the PDD, the build margin, based on 2009 data, consisted of 150MW of thermal capacity, 12MW of biomass capacity and 5MW of hydro capacity. This illustrates the fact that even though large hydro may be considered the least cost option in the long run, it is not being invested in due to the existence of the barriers outlined in the PDD. ERM CVS has confirmed based on its sectoral expertise that smaller diesel and fuel oil plants would provide lower investment risks for investors – please refer to section 3.6 below concerning barriers and to CL 12. In addition, the PDD does not employ a financial analysis to prove additionality but instead demonstrates that real and preventative barriers exist to the development of the project despite the economic returns and benefits to the host country. These barriers include the lack of access to capital as demonstrated by the fact that equity financing was only secured due to the benefits of the CDM – see section 3.6 and CL 13.

Comment: The February 2007 Economic and Financial Evaluation Study (EFES) assessed the impact of receiving carbon credit income and concluded "The greenhouse gas benefits are . . . not significant in the economic justification of the project" (p.15).
Response: ERM CVS can confirm that this statement is included in the document [DR 03, 21]. However the report describes this in the context of the probability of the IRR being above certain thresholds (11.5% and 21.9%) and shows that the probability of the IRR being above these thresholds is not substantially altered by the addition of CDM revenues at the time of writing the report. However it does not demonstrate that the IRR is not influenced by the CDM revenue at all, nor does it specify the required thresholds of the actual investors or equity financers of the project (since these investment decisions were taken later). Furthermore it does not elaborate the other benefits including increased security of revenues and the mitigation of the risks related to the Government of Uganda (GoU) that CDM revenues bring - CER revenues ameliorate the risk of default by the GoU on its commitments to purchase electricity since proceeds of CER commercialisation are controlled by BEL, and can be used to offset unmet payments by GoU [DR 50]. In addition, the carbon credit revenues were a key factor in the GoU's continued support of the project, as evidenced by the fact that the GoU undertook extensive negotiations with multiple revisions to the implementation agreement to secure CER revenues [DRs 50, 62-63, 64]. Revenues in US dollars or Euros from CER sales will be important to the GoU to offset the foreign currency exchange risks associated with meeting the electricity payments (in US dollars) [DR 117] that it faces. Please see the barriers analysis section of this report, below, for further details of how CDM revenues are necessary for the development of the project. From the evidence sources reviewed and based on sectoral knowledge, ERM CVS can conclude that the project would not have received equity financing without the additional benefits from the CDM [DR 49, 57, 74, 75] and hence the loan financing would not have been granted (it was conditional upon the project receiving equity financing [DR 76]) and therefore the project would not have been built. Please see CL 13 and CL 33 for further details. It is noted that the PDD does not present an investment analysis and rather demonstrates barriers associated with developing a large scale private sector renewable energy investment in a least developed country.

Comment: AES Nile Power (AESNP) withdrew from the project because of a range of factors, not just the inability to secure an emissions reductions purchase agreement with the Dutch Government.
Response: The failed development of the project in 2003, as highlighted in the GSP comments, and in other documents [DR 110, 125] illustrates the impact of the barriers faced by the project and serves to highlight the risks of investing in the Ugandan energy sector. According to the sources reviewed, the previous attempt to develop a hydroelectric project at the Bujagali site failed due to economic reasons connected with the delays faced by developing a project of this nature in a least developed country [DR 125]. The Bujagali Project's financing plan as originally proposed prior to 2003 envisioned an equity contribution of US$111.3 million from a private sponsor, the AES Corporation, as well as contributions from other financers such as the African Development Bank (AfDB) (US$55 million) and export credit agencies (US$219.5 million) [DR 38]. The withdrawal of the equity financers meant the project development did not go ahead because other developers/ equity financers were not available [DR 125]. This therefore illustrates the impact of the investment barrier – inability to secure financing. As per the Guidelines on the objective demonstration of barriers, guideline 3 "*The evidence of presence of the barrier for other project(s) under similar circumstances, using reputed sources, makes them much more objective and therefore makes a strong argument that a project is additional*". In this case, the failure of the previous attempt to develop a hydroelectric project at the Bujagali site is considered to be evidence in support of the stated barriers. The barriers analysis is validated in more detail in section 3.6.

Conclusion to GSP comments: In conclusion, the comments are pertinent to the validation of the project and raise issues that were assessed in detail in the assessment of the claims made in the PDD, especially the barriers analysis. However ERM CVS has reviewed a large number of third party sources in order to confirm the existence of the stated barriers and can therefore

determine that they are real and preventative. ERM CVS has applied the Guidelines for the objective demonstration of barriers (EB 50 annex 13) and can conclude that the additionality of the project has been sufficiently demonstrated in line with the VVM, paragraphs 94-121. This is described in further detail in section 3.6, below.

2.2. PDD and Additional Documentation Review

A detailed desk review of the PDD, methodology and all other associated documentation and references took place in advance of the site visit, and additional documents that were not available for the desk review were requested for review during the site visit. Additional information can be required to complete the validation, which may be obtained from other public and reliable sources or through telephone and face-to-face interviews with key stakeholders (including the project developers and where necessary Government and NGO representatives in the host country).

A list of all documents reviewed or referred to in the course of this validation is included in Appendix A.

2.3. Site visit and Interviews

Interviews took place on site, via telephone or via email and include relevant stakeholders in the host country, personnel responsible for project design and implementation, and other stakeholders as applicable.

The site visit took place on 24-27 August 2010. ERM CVS staff attending the site visit included Jonathan Avis (lead validator) and Mandy Momberg (validator). The site visit included a tour of the physical project site, including the dam and turbine hall under construction, as well as site offices and the location of the reservoir.

Staff from BEL (project owner), Climate Focus (CDM consultant) and other stakeholders were interviewed, and document review took place at the site offices. A list of interviewees, and the main topics discussed with each can be found in Appendix A.

2.4. Reporting

A checklist ('validation protocol') of the key requirements for validation is included as Appendix B. It serves the following purposes:

- It organises, details and clarifies the requirements a CDM project activity 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.
- It must also list project components/issues not covered in the validation engagement

The Protocol describes the following:

Checklist Question	Reference	Comment	Draft Conclusion	Final Conclusion
The requirements that the project should meet	The documents used to check the answer to the checklist question	This section is used to elaborate and discuss the conformance to the checklist question, and to explain the conclusion reached. It includes the means of validation, which explains how conformance with the checklist is justified. For example document review (DR) or interview (I). N/A means not applicable	This is either acceptable based on evidence provided (OK), or a *Corrective Action Request* (CAR) is required due to non-compliance with the checklist question. A request for *Clarification* (CL) is used when the validation team has identified a need for further clarification. A 'Minor Issue' may be recorded for typographical errors or similar minor errors that do not have an impact on the compliance of the project to the CDM rules but nevertheless should be corrected to improve clarity. A *Forward Action Request* (FAR) could be raised for issues to be addressed during first verification that do not form part of the registration requirements	Indicates whether the CAR or CL has been closed out (OK).

Remediation Form

Clarification Requests (CL), Corrective Action Requests (CAR) and Forward Action Requests (FAR), plus minor issues are raised in the draft validation protocol and detailed in a separate form using Table 3 (Appendix C). In this form, note is made of actions taken by the Project Proponent to close outstanding CARs and respond to CLs and Forward Action Requests:

Draft report corrective action, clarification, or forward action requests, or minor issues	Reference to CDM Validation Protocol Checklist	Summary of project participants' response	Final conclusion
List of CARs, CLs and FARs (and minor issues)	Reference to the validation protocol checklist question	Summary of response during the communication with the validation team	Summary of validation team responses and final conclusion.

Clarification Requests (CL): Where insufficient or unclear information is available and clarification or new information is required. A CL is raised specifying what additional information is required.

Corrective Action Requests (CAR): Where a non-conformance arises the Assessor shall raise a Corrective Action Request (CAR). A CAR is issued, where:

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

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

Forward Action Requests (FAR): FARs shall be raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

A 'Minor Issue' may be recorded for typographical errors or similar minor errors that do not have an impact on the compliance of the project to the CDM rules but nevertheless should be corrected to improve clarity.

2.5. Internal Quality Control

The process of validation and decision of the validation team has been subject to an independent Technical Review. The scope of the Technical Review process is to independently assess that all procedures have been followed, necessary requirements have been met, and all conclusions are justified. The final validation decision is based on the findings and conclusions of the validation team, assessing the compliance of the project activity with the CDM requirements, and the technical evaluation of the independent technical reviewer. The final report is then approved and signed off by the qualified signatory / final decision maker within ERM CVS.

3. Validation Findings

3.1. Main changes between the PDD version published for the global stakeholder comment period and the final version submitted for registration:

- A more detailed description of the baseline/current scenario and the project technology was provided
- The timeline of project development was clearly elaborated in the revised PDD
- A flow diagram illustrating the project boundary has been added to the PDD
- The description of the project boundary was updated
- The starting date has been stated correctly and consistently throughout the PDD
- The barriers analysis section was re-written and further evidence sources were cited for the statements made. The means by which registration as a CDM project helps to mitigate the stated barriers was also described in further detail
- Information was provided on how the identified barriers have actually prevented the implementation of similar projects
- The scale of other hydropower projects considered to be similar in scale to the project activity was defined in the common practice analysis and evidence was cited to support the statements made in the analysis
- The calculation of emission reductions has been described in more detail in the PDD
- The grid emissions factor calculations were revised using more appropriate data, and off grid generators were excluded from the calculations
- Additional ex-ante parameters were listed in the PDD 'Data and parameters that are available at validation' section (B.6.2) and parameters not relevant to the project were removed. the information contained in the tables has been improved to provide clear descriptions and data sources where relevant
- The monitoring plan was revised, including exclusion of parameters not required to be monitored for hydroelectric projects according to ACM0002, addition of parameters that are required, clarification how parameters will be monitored and further elaboration of monitoring and QA/QC procedures
- Reference to project emissions of CO_2 removed, in line with the methodology which does not include such emissions for hydropower projects. Potential emissions from this source were assessed and found to be insignificant – much less than 1% of emission reductions – please see CL 7
- Corrections and improvements to wording, spelling and grammar to improve the readability of the document
- Annex 1 Party added – The Netherlands
- Crediting period dates updated
- Other changes related to the issues raised in the CARs and CLs (Appendix C)

3.2. Approval and Participation Requirements

The project participants are Bujagali Energy Limited, authorised by the Republic of Uganda and The Netherlands, and the Government of Uganda, Ministry of Energy and Mineral Development, i.e. the Host party, Uganda, wishes to be considered as a Project Participant. The host Party, Uganda, and Annex I Party, The Netherlands, have both ratified the Kyoto Protocol. Both Parties have established their respective Designated National Authorities (DNA) as per the participating requirements for CDM under the Kyoto Protocol.

The host Party LoA was originally issued by the Ministry of Water and Environment, acting as the DNA of Uganda, based on an earlier draft of the PDD, on 12th January 2010. The LoA was re-issued on 22 June 2011 [DR 122]. The LoA was received from the Project Participants and its authenticity was confirmed by interviews with the DNA during the site visit (Interviews 8 and 9). The letter confirms that:

- The host country has ratified the Kyoto Protocol on 25 March 2002
- The Government of Uganda is voluntarily participating in the project
- The proposed project contributes to Sustainable Development in the host country
- The LoA makes reference to the precise project title in the PDD

The Annex 1 Party LOA [DR 152] was issued by the Ministry of Infrastructure and Environment of the Netherlands on 22 August 2011. The LoA was received from the PPs and its authenticity is not doubted. The letter confirms that:

- The Netherlands ratified the Kyoto Protocol on 31 May 2002
- It participates voluntarily in the project
- Bujagali Energy Ltd is authorised as a project participant
- The LoA makes reference to the precise project title in the PDD

Neither LoA contains any additional specifications or conditions regarding the project activity, or references a specific version of the Validation Report or PDD.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding. ERM CVS has reviewed letters from the lenders associated with Annex 1 parties involved in the project confirming that the project does not result in the diversion of ODA [DR 126-133].

3.3. Project Design

Conformance of the PDD with EB guidelines

The PDD submitted for registration has been checked against the latest 'Guidelines for developing the Project Design Document' (version 7) and the latest template for the Project Design Document (version 3) available on the CDM website. It is confirmed that the final PDD is in compliance with the template and guidelines.

Conformance of the project design in the PDD with source documents such as the FSR

The project will have a total installed capacity of 250 MW, consisting of 5 units with a unit capacity of 50MW. Each unit consists of a vertical Kaplan turbine generator unit. The hydropower facility will consist of a 28 m high earth-filled dam and spillway works, and an associated power station housing the turbines. It is located at Dumbbell Island, approximately 8 km downstream (north) of the Town of Jinja. The dam will impound a reservoir that extends upstream to the tailrace area of the Nalubaale and Kiira facilities, inundating Bujagali Falls. The reservoir will be 388 ha in surface area, comprised of the existing 308 ha surface of the Victoria Nile River and 80 ha of newly inundated land. The project is estimated to generate 1,305 GWh (net) per year to the electricity grid via a new interconnection line being built by UETCL named the 'Bujagali Interconnection Project', making the load factor 60%. The load factor has been determined by an independent third party contracted by the project participants – Power Planning Associates – in the Economic and Financial Evaluation Study [DR 03, 21], which was also submitted to banks and/or equity financiers while applying for project financing. The Power Planning Associates Economic Evaluation report [DR 03, 21] provides analysis of the expected hydrology and annual energy production. It presents a low hydrology case (river flow of 687cm, electricity generation of 1,198 GWh) and a high case (river flow of 1,247cm, electricity generation of 2,132 GWh), along with a probability of each: low (79%) and high (21%). BEL calculated a weighted average value of electricity generation based on the high and low scenario and the probability of each. The calculated average output is 0.185x250MW=149 MW. Multiplying this by 8760 h/yr (assuming 100% availability), gives 1305 GWh/yr [DR 03, 21].

The project design and technical description of the project activity has been cross checked against the description of the project in the Economic and Financial Evaluation Study [DR 03, 21], the Social and Environmental Assessment [DR 05], and the project layout diagrams [DR 02] all of which were prepared by independent third parties, and concluded to be consistent. The project design in the PDD was also cross checked against the physical layout of the project during the site visit.

Timeline and operational status of the project

At the time of validation the project is still under construction, and is expected to be completed in 2012. Construction started after 21 December 2007 when the Full Notice to Proceed was issued [DR 121], and the construction contract with Salini Hydro Ltd. and Salini Costruttori S.p.a. [DR 120] entered into force. No factors were identified during the site visit that could have unmanageable adverse delays on the construction of the project.

The expected operational lifetime of the project activity is at least 60 years with an added requirement that no structural element shall require refurbishment or replacement within the first 30 years. This is in line with the Economic and Financial Evaluation Study [DR 03, 21] and is considered reasonable for a hydroelectric project built to current international best practice according to ERM CVS's sectoral knowledge.

Permits and approvals:

ERM CVS has confirmed that the project has all the necessary permits and approvals to be developed in the host country by interviews with the Ministry of Energy and Mineral Development [interviews 3 and 4], the Electricity Regulatory Authority [interviews 6 and 7], the DNA [interviews 8 and 9], and the National Environmental Management Authority [interviews 18 and 19].

Project location

The Project site is located on the Victoria Nile River 8 km downstream of the Nalubaale and Kiira hydroelectric plants (near the town of Jinja) in the eastern region of Uganda. The geographical coordinates are correctly stated in the PDD. The location of the project was confirmed on site and by review of the Project layout diagrams [DR 02].

3.4. Baseline

Applicability of selected methodology

The project applies methodology ACM0002, Consolidated methodology for grid-connected electricity generation from renewable sources, Version 12. In addition, the Tool for the demonstration and assessment of additionality, Version 5.2 and the Tool to calculate the emission factor for an electricity system, Version 02 are applied. These are the correct tools required by the methodology for this type of project (hydroelectric project). The correct version of the methodology and tools at the time of validation are applied and ERM CVS has confirmed against the actual text of the methodology and tools on the CDM website.

The project meets the applicability conditions of the methodology as follows:

Applicability conditions	Reference	Means of validation
This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	Site Visit DR 03, 21	The project activity is a grid-connected renewable power generation project to install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity. This was confirmed based on the Economic and Financial Evaluation Study [DR 03, 21] and site visit.
The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit	Site Visit DR 03, 21	The project activity is the new installation of a hydro power plant with a reservoir. This was confirmed based on the Economic and Financial Evaluation Study [DR 03, 21] and site visit.
In the case of capacity additions, retrofits or replacements: the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity	Site Visit DR 03, 21	Not applicable. The project activity is a Greenfield project. This was confirmed based on the Economic and Financial Evaluation Study [DR 03, 21] and site visit.
In case of hydro power plants, one of the following conditions must apply: • The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m^2; or ▪ The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m^2	DR 05	The project activity results in a new reservoir. The installed capacity of the project is 250MW and the reservoir area is 388 ha, resulting in a power density of 64.4 W/m2. This was confirmed based on the Social and Environmental Assessment [DR 05].
The methodology is not applicable to the following: • Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; • Biomass fired power plants; • Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m^2	Site Visit [DR 03, 21]	The project activity does not involve switching from fossil fuels to renewable energy sources at the site of the project activity. This was confirmed based on the Economic and Financial Evaluation Study [DR 03, 21] and site visit. The project is not a biomass project. The power density is greater than 4W/m^2, as discussed above.

Project boundary

The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the Project is connected to, i.e. the national grid of Uganda. This is correctly defined in the PDD in accordance with the methodology. The sources and gases included in the PDD are in accordance with the methodology. The project boundary has been confirmed against the design of the project in the Economic and Financial Evaluation Study [DR 03, 21], and during the site visit. The identified boundary and the selected sources and gases are considered to be justified for the project activity and in accordance with the applied methodology.

The project activity is a hydroelectric project, and there is no fossil-fuelled generation for power supply to the grid as part of the project. This has been verified during the site visit – please see section 6.3 of the validation protocol below (Appendix B). It may be noted that two stand-by diesel generators are installed only for emergency purposes (they will not supply electricity to the grid and will operate only when both the grid and the project are unable to supply power to emergency systems on site) which are expected to consume an estimated 12, 757 litres of diesel annually. ERMCVS checked the estimation of annual diesel consumption and found it reasonable and that the source is much less than 1% of emission reductions.
Hence, the project activity is not expected to result in emissions other than those allowed by the methodology, and based on the site visit and the validation activities undertaken, there are no greenhouse gas emissions occurring within the proposed CDM

project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology (please see CL 7 for further details).

Details of emission sources and gases included in the project boundary are illustrated below in the table:

Table 2: Emission sources and gases included in the project boundary

	GHGs involved	Source
Baseline emissions	CO_2	Grid
Project emissions	CH_4	Project emissions are regarded as zero as the project is a renewable energy (hydro) project with a power density above 10 w/m^2.
Leakage	n/a	No leakage needs to be considered when applying this methodology for hydro projects.

Baseline

As per VVM paragraph 105, no alternative analysis is required if the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario. As per the *Tool for the demonstration and assessment of additionality* (Version 05.2), paragraph 4, "Project activities that apply this tool in context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity".
The project activity is the installation of a new grid-connected renewable power plant, thus the baseline scenario is prescribed by ACM0002 as follows: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the 'Tool to calculate the emission factor for an electricity system'. This has been verified through the information and project activity details given in the PDD and the Economic and Financial Evaluation Study [DR 03, 21].

The baseline is considered to be a true representation of what would otherwise take place in the absence of the project activity. The combined margin calculations have been checked by ERM CVS – see section 3.7. The baseline of the project activity in the PDD correctly follows the methodology.

3.5. Monitoring Plan

The project activity applies approved monitoring methodology ACM0002 v12. The methodology is applied correctly and transparently, and provides for accurate measurement of the emission reductions ex-post. The monitoring plan is in accordance with the methodology. For a newly built hydroelectric project, the methodology requires the net quantity of electricity supplied by the project activity to the grid to be monitored, as well as the surface area of the reservoir after the implementation of the project when the reservoir is full, and the installed capacity of the hydro plant after the project is implemented.

The following parameters are monitored:

Table 3: Parameters Monitored

Parameter	Description	Measurement methods
$EG_{facility,y}$	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	Measured by 2 factory calibrated digital meters. Continuous onsite measurement and monthly recording.
Cap_{PJ}	Installed capacity of the hydro power plant after the implementation of the Project Activity	Through performance logs of the generators and turbines at the power plant
A_{PJ}	Area of the reservoir measured in the surface of the water, after the implementation of the Project Activity, when the reservoir is full	The measurement will comprise photometric mapping, ground control and hydrographic survey at the Bujagali site. Aerial photography shall compliment the measurements when needed.

The parameters are clearly described in the PDD and the means of monitoring in the PDD complies with the requirements of the methodology.

Equipment

Two meters (one main meter and one cross check meter) will be installed for each generator, at the switchyard control room, to form the export/import (revenue) metering. The measuring CT/CVT (Computed Tomography/Continuous Variable Transmission) devices used will be located at the generator bay side of the switchyard.
The metering equipment will have sufficient accuracy so that any error resulting from such equipment will not exceed 0.5% of full scale rating. The metering equipment will be checked periodically and in case of any discrepancy the equipment will be calibrated for accuracy. The calibration procedure will follow IEC Class 0.2S accuracy standard. Calibration will be carried out by qualified staff according to manufacturer's recommendations. Both meters will remain sealed according to requirements of the power purchase agreement. This equipment setup is considered sufficient to carry out the monitoring requirements of the methodology, and the appropriate standards have been followed. The frequency of calibration has not yet been specified however it will be in line with the IEC Class 0.2S accuracy standard.

Data

All documents including maps, diagrams, engineering and environmental assessments will be kept in a central place, together with the monitoring plan. All information will be stored by the monitoring group and all material will have a copy for backup. Record keeping will be maintained for a period of not less than 2 years after the end of the crediting period or the last issuance of CERs, whichever occurs later. The data management procedures are considered appropriate to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified.

Organisation

The PDD describes the monitoring responsibilities including the requirements of the PPA and responsibilities of the plant operator and the power plant owner and annex 4 contains an illustrative description of the specific reporting requirements in order to implement the monitoring plan. The organisational structure is considered appropriate to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified.

Quality Assurance and Quality Control

The PDD contains information on how quality will be controlled and assured in the monitoring of emission reductions. Meters will be calibrated according to the international standards and the power plant operator will establish a quality assurance/control program in accordance with ISO 9001 which will encompass among other provisions, monitoring, data management, and reporting. Sales documents from the grid company will be used for cross checking purposes.

Feasibility of the monitoring plan

The measurement methods, recording procedures, meter maintenance and quality control procedures described in the monitoring plan are standard for hydropower projects of this type. The power plant will be operated by an experienced company appointed by the project owner that will have experience in operating and monitoring projects of this type, and the monitoring will be specified in the agreements with the operating company and in the conditions of the PPA. Given that accurate monitoring of electricity supplied to the grid is also required by the grid company purchasing the electricity, the monitoring plan is considered feasible.

The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

3.6. Additionality

Start date

The starting date is identified as 21 December 2007, which is the date that the full notice to proceed with the implementation of the project was issued [DR 121] and is also the date that the construction contract with Salini, the equipment procurement and construction contractor, entered into force [DR 120]. ERM CVS has reviewed the provided documentary evidence sources. This is the earliest real action on the project activity in line with the Glossary of CDM terms since this was the first point at which the project developer actually committed funds and made a legal commitment to build the project. It may be noted that the proposed project has been planned and in the development process for a long time. In order to confirm whether the start date was correctly determined ERM CVS has validated the various steps taken in the development of the project. ERM CVS has checked the following documents to confirm that the date given is the earliest starting date of the project activity:

Date	Milestone	Validation
1996	The GOU and AES Nile Power Ltd (AESNP) first discuss the development of hydropower in Uganda	GoU 'Request for Proposals/Prospectus' dated 16 Jan 2004, page 5 under background information, indicates that the GOU and AES Nile Power Ltd first discussed the development of hydropower in Uganda in 1996. [DR 31]
1997 – 2002	AESNP carries out numerous studies and preparatory activities to plan the project	ERM CVS has reviewed the AES EIA prepared by WS Atkins (March 2001) [DR 19], and the Resettlement and Community development action plan (March 2001) [DR 20] The Social and Environmental Assessment Report by R.J. Burnside (December 2006) [DR 05] details the history of project planning, including the fact that assessment of hydrological conditions and possible project configurations were carried out between 1998 and 2000, and the fact that initial environmental and social assessment documentation was submitted to the

Date	Milestone	Validation
		GoU in 1999.
September 2002	AESNP participates in the CDM procurement programme of the Dutch government to sell CERs from its project	ERM CVS has reviewed the Baseline report submitted to the CERUPT programme (Certified Emission Reduction Units Procurement Tender) in September 2002 [DR 18]
2003	The project was rejected by the CERUPT programme	ERM CVS has reviewed the Joint Implementation Quarterly, Vol 9, No. 1. 'Cerupt First Round Concluded' [DR 149]. The project was rejected due to apparent over-estimation of the emission reductions.
2003	Withdrawal of AESNP from the project and GOU terminates the development of the project by AESNP	ERM CVS has reviewed the Social and Environmental Assessment Report prepared by R.J. Burnside International Ltd [DR 05] which confirms that AESNP withdrew from the project in 2003; and the Project Appraisal Document from the World Bank [DR 48] which confirms that AESNP withdrew from the project which led to a termination of the agreements by the GOU in September 2003.
16 January 2004	GOU launches a Request for Proposals / Prospectus in relation to the Development of the Bujagali Hydropower Project	ERM CVS has reviewed the request for proposals / prospectus issued by the GOU on 16 January 2004 [DR 31]
23 February 2005	GOU issues a revised version of the Request for Proposals / Prospectus, the Proposal Evaluation Criteria, the draft Implementation Agreement and the draft Power Purchase Agreement	ERM CVS has reviewed the 'Request for proposals/prospectus (first revision) in relation to the development of the Bujagali Hydroelectric Project' issued by GoU on 23 Feb 2005 [DR 124]
23 March 2005	GOU receives three proposals for the development of the Project	ERM CVS have reviewed a Memorandum from the Aga Khan Fund for Economic development (AKFED) formally giving final notification to submit a bid for the project, dated 22 March 2005 [DR 49] and 'Evaluation of Proposals in relation to the development of the Bujagali Hydroelectric Project' issued by GoU 04 April 2005, showing evidence of the other two proposals received for the development of the project [DR 119] It is noted that the submission of a proposal for the development of the project did not indicate a final decision by any of the bidders to actually build the project, nor did it legally commit any of the bidders to build the project, therefore it is not considered as the starting date of the project activity [DR 119].
April 2005	GOU selects the consortium led by IPS(Kenya) (which included a commitment from Sithe Global) to start negotiations on development of the Project	'Evaluation of Proposals in relation to the development of the Bujagali Hydroelectric Project' issued by GoU 04 April 2005 [DR 119]. Not considered the starting date since the selection did not commit the developer to actually build the project and no real actions were taken.
January 2006 – February 2007	Power Planning Associates carries out the Economic and Financial Evaluation Study by order of the International Finance Corporation	ERM CVS has reviewed the Economic and Financial Evaluation Study by Power Planning Associates (February 2007) [DR 03, 21]
January 2006 –	R.J. Burnside International Limited	ERM CVS has reviewed the Social and

Date	Milestone	Validation
December 2006	carries out the Social and Environmental Assessment	Environmental Assessment Report by R.J. Burnside (December 2006) [DR 05]
April 2007 – December 2007	Project lenders and guarantors approve the financing package of the Project. Lenders and/or guarantors include the World Bank Group (IFC & MIGA), European Investment Bank, African Development Bank, Proparco, AFD, DEG, KfW and commercial banks	ERM CVS has reviewed an extract of the common terms agreement in relation to the financing of the project signed between BEL and the lenders dated 14 December 2007 [DR 52] Not considered the starting date since this consisted only of the debt portion of the financing, and the debt financing was conditional upon the project securing sufficient equity financing. No real actions were taken.
25 May 2007	Implementation Agreement and Power Purchase Agreement signed between Bujagali Energy Limited and the GOU	ERM CVS has reviewed an extract of the Amended and restated implementation agreement signed between GOU and BEL dated 25 May 2007 [DR 64]. Not considered the starting date since the agreement did not commit the developer to actually build the project without full financing and a construction contract being in place, and no real actions were taken.
25 May 2007	Construction contract with Salini Hydro Ltd. signed, and Initial ground activities began after a bridge loan issued from the GOU	ERM CVS has reviewed an extract of the 'Construction, procurement and related services contract' between BEL and Salini dated May 2007 (contraction contract) [DR 120]. Not considered the starting date since the construction contract did not commit the project developer to build the project until financial closure and full notice to proceed were issued. Initial ground activities were not funded by the project developer and were undertaken by the GoU in order to speed up later development of the project, however at this point there was no guarantee the project would go ahead because financial closure had not yet been reached.
06 December 2007	Amended and Restated Implementation Agreement and Power Purchase Agreement signed between Bujagali Energy Limited and Uganda Electricity Transmission Company Limited	ERM CVS has reviewed an extract of the Amended and Restated Implementation Agreement signed between BEL and GOU dated 6 December 2007 [DR 50], and an extract of the Amended and Restated PPA signed between BEL and GOU dated 6 December 2007 [DR 51]. Not considered the starting date since the agreement did not commit the project developer to build the project unless financial closure was reached.
21 December 2007	Financial closure achieved.	ERM CVS has reviewed loan agreement documents between BEL and the project lenders (AFD, Absa, Standard Chartered, FMO, Proparco, IFC, DEG, EIB and AfDB dated 21 Dec 2007 [DR 118]. This is the same date as the project starting date – see below.
21 December 2007	Project Starting date. Full Notice to Proceed issued, and construction contract with Salini Hydro Ltd. and Salini Costruttori S.p.a. entering into force	ERM CVS has reviewed the full Notice to proceed signed between BEL and Salini dated 21 Dec 2007 (starting date of the project activity) [DR 121] and 'Construction, procurement and related services contract' between BEL and

Date	Milestone	Validation
		Salini dated May 2007 (contraction contract) that entered into force once the full notice to proceed was issued.

The starting date is therefore in line with the Glossary of CDM terms.

Prior consideration of the CDM and timeline of real and continuing actions to secure CDM status

The project activity is an existing project with a starting date before 02 August 2008. The start date was 21 December 2007 (see above), and the project had not published its PDD for stakeholder comments prior to the start date. Therefore, in accordance with the *Guidelines on the demonstration and assessment of prior consideration of the CDM*, ERM CVS has validated that the project participant was aware 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, i.e. serious consideration of CDM was taken before the start date, and that real and continuing actions were taken to secure CDM status. The following table illustrates the prior consideration steps (before the project start date) and the continuing actions to secure CDM after the project start date:

Date	Milestone	Validation
September 2002	Baseline report submitted to the CERUPT carbon credit purchasing programme of the Dutch Government	ERM CVS has reviewed the document. It demonstrates the carbon credit generation by the project and shows consideration of carbon credit sales in parallel to the early planning of the previous attempt to develop the project by AESNP.
20 August 2005	Draft version of the PPA	ERM CVS has reviewed an extract of the Draft version of the PPA, which includes a proposal on allocation of the CER revenues in section 15.18
February 2007	Economic and Financial Evaluation Study completed by Power Planning Associates	The study provides an assessment of the potential carbon dioxide emissions avoided, and assess the impact of the revenue from potential emissions credit sales on the rate of return of the project. The study shows that the carbon credit revenues result in a small increase in the rate of return of the project, based on the financial analysis assumptions at that time (2003/4).
29 March 2007	Renewable Energy Policy for Uganda issued, which states that CDM financing will be sought for renewable energy investments	ERM CVS has reviewed the policy. It demonstrates that renewable energy investments will be carried out subject to CDM financing and further demonstrates the serious need for CDM revenues for the proposed project
16 April 2007	Presentation to the Investment Committee of Blackstone Group, the main investor and owner of Sythe Global, the largest Joint Venture partner in BEL, that is providing 2/3 of the equity investment for the project	ERM CVS has reviewed an extract of the presentation, which sets out the economic attractiveness of the project as an investment including assessment of the Carbon Credit value as a key component. Blackstone committed approximately two thirds of the equity investment in the project and approval and commitment of funds by Blackstone was necessary before the project could go ahead.
21 May 2007	Investment memorandum submitted by Sithe Global to the investment committee of Blackstone Group	ERM CVS has reviewed an extract of the memo which includes a statement that the project qualifies for the generation of carbon credits, and describes the agreement to allocate 40% of the carbon revenues to the project sponsors
25 May 2007	Implementation Agreement signed between GoU and BEL	ERM CVS has reviewed an extract of the Implementation Agreement. Article 11 includes detailed agreement of the development of the project under the CDM including the feasibility of the emission reduction project, rights to credits, monitoring and reporting, the costs of developing the project as a CDM project, and the sharing of profits from the sale of credits
25 May 2007	Power Purchase Agreement signed between UETCL and BEL	ERM CVS has reviewed an extract of the PPA which states that the parties wish to generate marketable emission reduction credits
21 December 2007	**Project Starting date**. Full Notice to Proceed issued, bringing into full force the Construction Contract.	ERM CVS has reviewed the full Notice to proceed signed between BEL and Salini dated

Date	Milestone	Validation
	Actual commitment to start construction.	21 Dec 2007 (starting date of the project activity) [DR 121] and 'Construction, procurement and related services contract' between BEL and Salini dated May 2007 (contraction contract) [DR 120] that entered into force once the full notice to proceed was issued.
14 March 2008	Request for PDD preparation proposals	ERM CVS has reviewed the Proposal for development of a PDD for the project from Climate Focus [DR 12]
18 June 2008	Contract for PDD preparation signed with Climate Focus	ERM CVS has reviewed the Consulting Services Agreement signed by Climate Focus and BEL [DR 11]
11 – 15 August 2008	Fact finding mission for PDD preparation	ERM CVS has reviewed evidence that the consultants visited Uganda at this time [DR 77].
02 September 2008	PDD preparation plan presented	ERM CVS has reviewed the 'CDM Development: Bujagali Hydropower Project. Phase 1 Report' prepared by Climate Focus in 2008 [DR 10] which includes a detailed assessment of the eligibility of the project against the CDM requirements and the information that needs to be included in the PDD
14 November 2008	Request for validation proposals	ERM CVS has reviewed the requests for validation proposals from Climate Focus to three DOEs [DR 13]
27 February 2009	First draft of PDD presented to project sponsors	ERM CVS has reviewed a copy of email correspondence (subject: 'Draft PDD') showing completion of the draft PDD [DR 41];
28 May 2009	Further request for validation proposals	ERM CVS has reviewed the request for validation proposal sent to ERM CVS [DR 14]
06 July 2009	First indicative price offer received	ERM CVS has reviewed the covering letter for offer of validation services by one DOE [DR 17]
January 2010	Further request for validation proposals	ERM CVS received a request for validation proposals and a project information note was completed [DR 88]
04 May 2010	ERM CVS validation proposal	ERM CVS has reviewed the document [DR 89]
29 June 2010	ERM CVS validation contract signed	ERM CVS has reviewed the document [DR 90]
July 2010	Start validation	CDM website: PDD uploaded for GSP on 23 July 2010

Sufficient evidence has therefore been provided to demonstrate that real and continuing actions were taken to secure CDM status for the project activity. The project therefore complies with the requirements of the 'Guidelines on the demonstration and assessment of prior consideration of the CDM'.

Identification of alternatives:

In accordance with the methodology ACM0002, the baseline for a new grid-connected hydroelectric project activity is that electricity delivered to the grid by the proposed project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the *Tool to calculate the emission factor for an electricity system*.

The methodology does not require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario, however the PDD identifies several possible baseline scenarios. ERM CVS has validated that these include the Project Activity, but not implemented as a CDM project activity; and provision of an equivalent amount of annual electricity output by the grid to which the project is connected (represented by alternative 2, which is the continuation of the existing grid with the addition of decentralised medium and low speed diesel generators burning HFO with unit sizes of 10 MW to 50 MW net). Following the requirement of the applied methodology as well as in accordance with the guidance in paragraph 105 of the VVM, and paragraph 4 of the additionality tool, ERM CVS has not undertaken assessment of further baseline scenarios. ERM CVS has determined that the baseline scenario identified in the PDD (provision of an equivalent amount of annual electricity output by the grid to which the project is connected) is reasonable by validating the assumptions, calculations and rationales used in the determination of the combined margin emissions factor (see section 3.7). The selected baseline is also in compliance with the host country regulations and no national and/or sectoral policies and circumstances contradict the selected baseline scenario (ERM CVS has reviewed the Electricity Act (national legislation to regulate the generation, transmission, distribution, sale, export, import and distribution of electrical energy in Uganda) [DR 32], the Energy Policy for Uganda issued by the Ministry of Energy and Mineral Development [DR 33], and the Renewable Energy Policy for Uganda [DR 34]).
The PDD provides 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 – details of the grid are given, and have been cross checked against the monthly Power System Summaries provided by UETCL [DR 07].

Additionality determination:

Additionality of the proposed project is demonstrated by applying the 'Tool for the demonstration and assessment of additionality', version 5.2, in line with the applied methodology. Barrier analysis is used to determine that the proposed project activity faces barriers that:
(a) Prevent the implementation of this type of proposed project activity; and
(b) Do not prevent the implementation of at least one of the alternatives

Identify barriers that would prevent the implementation of the proposed CDM project activity:

The PDD identifies two types of barrier: barriers due to the financial position of the Government of Uganda, and investment barriers. ERM CVS has ensured that issues that have a clear direct impact on the financial returns of the project activity have not been included – please refer to section 7.38 of the validation protocol (Appendix B). ERM CVS has taken into account the 'Guidelines for objective demonstration and assessment of barriers' (EB 50 Annex 13) however it is noted that the project is located in a least developed country and therefore according to guideline 7 "*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*". ERM CVS has applied a two-step process to assessing the barrier analysis performed, as follows:

ERM CVS has determined whether the barriers are real by assessing the available evidence and undertaking interviews with relevant individuals (including government officials) to determine whether the barriers listed in the PDD exist. Using its sectoral knowledge ERM CVS has ensured that existence of barriers is substantiated by independent sources of data including relevant national legislation [DR 32, 33, 34], surveys of investment conditions in Uganda [DR 29, 37, 40, 45, 65, 68, 71] national statistics [DR 23] and international statistics [DR 23], as well as other documentation described below. The barriers prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives (alternative 2). ERM CVS has applied its local and sectoral expertise to conclude that the set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of the identified baseline scenario. ERM CVS has assessed each barrier listed in the PDD as follows:

Barrier due to the financial position of the Government of Uganda

Barrier	Validation
Electricity is purchased by UETCL. There is a risk that there may be shortfalls or delays in receiving payment for the electricity due to the financial position of UETCL as an entity owned by the GoU	The PPA [DR 117] confirms that all power is purchased by UETCL. UETCL is owned by the GoU and backed by a Guarantee Agreement under the 'Engineering, Procurement and Related Services Limited Notice to Proceed Agreement' between GOU, BEL and Salini [DR 100]. Therefore the financial position of the GoU (as validated below) can be expected to have an impact on the ability to meet payment obligations from UETCL to BEL.
UETCL has large shortfalls in revenue collection due to distribution losses, high unbilled energy (not metered and/or billed), and high unpaid bills	UETCL has experienced serious shortfalls in collecting revenue. In 2005 only 47% of revenues were collected and although this situation is expected to improve but likely to remain at 21% in 2012 [DR 21]
UETCL is paid for electricity in Ugandan Shillings by electricity consumers in Uganda, while UETCL will have to pay BEL in US Dollars. This creates an exchange rate risk for the GOU as the Ugandan Shilling fluctuates significantly against the US dollar	The payment arrangements are confirmed by review of the Economic and Financial Evaluation Study [DR 21] The Ugandan shilling has declined in value against the US dollar by approximately 50% since 2000 [DR 135, 136] Therefore the inherent exchange rate risk is taken on by GoU in relation to the implementation of the project, which could further undermine its financial position and increase the real and perceived risk of not meeting payment obligations for investors in the project. It may be noted that the Ugandan Government has limited reserves of US dollars and the availability of dollars is dependent on the balance of trade which is currently not favourable for the Ugandan Government. In January 2009 the Ugandan Central Bank held enough US dollars to cover only 5 months of foreign exchange reserves based imports [DR 23] and the annual payment to BEL represents 5% of these reserves. Therefore, CDM provides a buffer against exchange rate risk by generating a revenue stream for GoU in hard currency.
UETCL makes payments on a capacity basis, not per unit of electricity actually generated. Hence if the project generates less, UETCL faces losses which worsens their financial position and increases the risk of default	Electricity payments are made on a capacity basis, not per unit of electricity generated – this has been confirmed against the Economic and Financial Evaluation Study [DR 21] There is a large difference between the low hydrology and high hydrology scenarios [DR 21] meaning the GoU is taking on a large risk of under-generation
The risks assumed by GoU and the financial position of the GoU represent a credit risk to BEL	Based on the sales arrangements of the project [DR 21] BEL is dependent upon the ability of the GoU to meet its obligations under the PPA. The credit rating of the GoU is poor, with the country receiving a

Barrier	Validation
	B sovereign rating by Fitch [DR 22], a score of 21-31 between 2003 and 2009 (in a range of 1–100 with 100 being the best) from the Institutional Investors Country Credit Rating [DR 134] and a country risk rating score of 35.9 on a 1-100 scale from Euromoney [DR 137]

How CDM overcomes this barrier: ERM CVS can confirm based on document review and by applying its sectoral knowledge that the project faced serious and credible barriers in its implementation due to the financial position of the GoU and that the anticipated CER revenues contribute significantly in mitigating these barriers. Under the agreement signed between GOU and BEL [58], the GoU receives 60% of the CER income which is estimated at USD 10 – 17 million per year, depending on the amount of electricity generation and CER prices [DR 10]. This additional revenue will mitigate the risk of GoU not able to meet its payment obligations since the GoU gains a secure revenue stream in hard currency that is not subject to the revenue collection risks of UETCL [DR 50] and because proceeds of CER commercialisation are controlled by BEL, and can be used to offset unmet payments by GoU [DR 50]. Furthermore, the PPs have demonstrated that the size of the revenue stream from CERs is equivalent to the possible shortfall in electricity revenue collection by UETCL: should the revenue collection rate remain at the 2005 level of 47%, and if the targeted average consumer price of USD 0.17 per kWh is attained, then the GoU will face a yearly shortfall of USD 12 million in payments to BEL. The CER income could bridge this gap (exclusive of the cost of the transmission line) completely.

In addition, the carbon credit revenues were a key factor in the GoU's continued support of the project, as evidenced by the fact that the GoU undertook extensive negotiations with multiple revisions to the implementation agreement to secure CER revenues [DRs 50, 62-63, 64]. Furthermore, the PP has also demonstrated that the CER revenue is equivalent to the size of the payment risks that may result from the depreciation of the Ugandan Shilling, revenue collection risks and/or from low hydrology. ERM CVS has reviewed the comparisons presented in the PDD and can confirm that the calculations are correct. The 40% of carbon income received directly by BEL also mitigates exposure to the payment risk, as carbon buyers will make the CER purchase payments in hard currency. CDM revenues are not large enough to mitigate all these risks fully if they all occur simultaneously, however based on ERM CVS's financial and sectoral knowledge they are considered likely to be sufficient to mitigate the risks sufficiently to increase investor confidence in the project.

Investment barrier

Barrier	Validation
Uganda has a challenging investment climate, especially for large investments	Although Uganda has made great progress in opening up to foreign direct investment (FDI), the investment climate in Uganda still holds considerable risks for large scale investments due to a number of factors. The US department of State note that "*Strong economic growth, open markets, and abundant natural resources provide good opportunities for knowledgeable investors in Uganda, though significant challenges exist*" but go on to highlight "*weak infrastructure, largely uneducated workforce, political interference in the private sector and high levels of corruption*" as key risks. The challenging business climate for investors in Uganda is further confirmed by review of studies such as the World Bank's Investment Climate Assessment [DR 71], the UNCTAD Investment Policy review – Uganda [DR 65], the World Bank Doing Business report [DR 29], and the World Bank's report 'UGANDA - Moving Beyond Recovery: Investment & Behavior Change, For Growth' [DR 37], amongst other sources.
The power sector is especially challenging. Large investments in the power sector face additional risks and barriers due to lack of asset recovery (large plants cannot be recovered/moved), high capital costs and longer payback periods.	The majority of large investments in the country have been in the manufacturing, agro-business and telecoms sectors [DR 137], which present very different risk profiles to the power sector, and the power sector has seen a chronic lack of investment, for example only five percent of Ugandan's have access to grid electricity [DR 150] and daily power shortages have stunted overall economic growth of the entire country by an estimated one percent of gross domestic product [DR 140]. Most of the recent investment in generation sources has been in small diesel or HFO fired generators on short term PPAs [DR 44]. ERM CVS can confirm based on its sectoral and local knowledge and interviews with personnel from the Ministry of Energy and Mineral Development that these assets present a much lower risk profile to the proposed project as they are small, subject to short term PPAs with high tariffs, and can be physically moved to another site or another country. The proposed project has no such asset recovery ability and requires much larger up front capital investment costs and longer payback periods.
Power sector projects such as the proposed project are subject to significant counterparty risk (UETCL is owned by	The barrier is related to the financial position of the GoU discussed above and is further evidenced by the fact that the

Barrier	Validation
the GoU and there are considerable political risks associated with the GoU)	project required MIGA insurance cover to mitigate some of the counterparty risk. The Multilateral Investment Guarantee Agency (MIGA) of the World Bank Group is providing $115 million in guarantee coverage for the Bujagali hydropower project [DR 39, 48, 67]. The guarantee is insuring against the risk of breach of contract (i.e. default) by UETCL. The insurance is for up to 20 years [DR 39]. The fact that MIGA is providing insurance illustrates the fact that the financial position of the GoU was a real barrier to the project developer and investors in the project. Although the fact that insurance coverage was granted partially mitigates the risk of default and therefore partially mitigates the barrier, MIGA was only willing to provide coverage up to US $115 million, which is approximately one year of revenues from electricity sales. Therefore the guarantee only partially mitigates the risk to the project developer, and there remains a significant risk to the project developer that cannot be fully mitigated by insurance premiums.
The fact that there is a lack of similar investments in the host country further demonstrates the existence of the barrier	The barrier is further demonstrated by the general lack of private sector investments in the country and is evidenced by the fact that the project is the largest ever single private investment in Uganda [DR 138, 139] and in fact is larger than the total amount of Foreign Direct Investment (FDI) in the year 2004 by almost 400% [DR 137]. There are no similar projects in the host country: there are two existing large hydropower plants (Nalubaale (Owen Falls) (1954) and Kiira (Owen Falls Extension) (2000-2007)) however Nalubaale was developed more than 50 years ago before Uganda's independence and therefore cannot be compared to the current project, and Kiira was fully publicly financed by international grants and multi-lateral lender loans to the GOU [DR 140]. Please see the common practice analysis section below for further details.
The barriers have actually prevented the development of previous projects in similar circumstances	ERM CVS can confirm based on document review and sectoral knowledge that the barriers described in the PDD contributed to actually preventing the development of previous projects in similar circumstances. The failed development of the original Bujagali project in 2003 [DR 110, 125] illustrates the impact of the barriers faced by the project. According to the sources reviewed, the previous attempt to develop the project failed due to economic reasons connected with the delays faced by developing a project of this nature in a least developed country [DR 125]. The Bujagali Project's financing plan as originally proposed prior to 2003 envisioned an equity contribution of US$111.3 million from a private sponsor, the AES Corporation, as well as contributions from other financiers such as the AfDB (US$55 million) and export credit agencies (US$219.5 million) [DR 38]. The withdrawal of the equity financers meant the project development did not go ahead because other developers/financers were not available. This therefore illustrates the impact of the investment barrier – inability to secure financing. Furthermore, the Karuma project downstream of Bujagali on the Nile has been in the planning process for more than 10 years without the project getting off the ground. Karuma is a proposed hydropower plant with planned capacity between 200 and 650 MW. The project was being proposed by a Norwegian private company, Norpak Power Ltd, but this developer withdrew from the project in 2008, after which the GOU has failed to attract other private investors [DR 142] and although the Government has stated that the project will go ahead in the future, it has so far not started and it is considered unlikely that development will take place without private sector investment [DR 143]. The failure of the project is directly related to the investment barrier, linked to the investment climate in Uganda, and ERM CVS has confirmed this using independent third party sources [DR 143 and 148].

How CDM overcomes this barrier: Under the Implementation Agreement with the GOU, BEL will gain 40% of the CER revenues generated by the Project [DR 50]. Due to above-mentioned investment barriers, the CDM revenues were critical for the decision

of Sithe Global, the main shareholder in BEL and equity investor in the project, to invest in the project: from the evidence sources reviewed, ERM CVS can conclude that the project would not have received equity financing without the additional benefits from the CDM [DR 49, 57, 74, 75] and hence the loan financing would not have been granted (it was conditional upon the project receiving equity financing [DR 76]) and therefore the project would not have been built. Please see CL 13 and CL 33 for further details. In addition to the direct benefits, the CER revenues mitigate the counterparty risks related to the GoU (discussed above) and hence provide greater investor confidence in the project.

Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):

Based on ERM CVS's sectoral knowledge it is confirmed that the identified barriers would not prevent the identified baseline alternative, which is continuation of the current situation where electricity is provided by the grid, including addition of new generation sources, i.e. small diesel and HFO fired generators. These small generators have smaller up-front costs and the ability of asset recovery, hence are not subject to the investment risks or risks associated with the financial position of the GoU to nearly the same degree. This is substantiated by the fact that these small diesel and HFO generators exist in the grid and more have been added in recent years [DR 44].

ERM CVS can therefore conclude that the barrier analysis is credible, is based on reliable evidence, that the barriers are real and prevent the implementation of the proposed project whilst not preventing the alternative. Furthermore the CDM has a clear impact on alleviating the barriers.

Common practice analysis

A common practice analysis has been carried out in order to complement the barrier analysis presented in the PDD. The geographical scope of the analysis is limited to the host country. This is considered justified considering the regulatory regime and investment conditions vary significantly between different countries.

No projects comparable to the proposed CDM project activity exist in the Republic of Uganda. Comparable projects are defined as privately financed hydropower plants with a capacity of 200 MW or larger, developed after the reform of the Ugandan power sector. Even if smaller plants are included in the analysis, there are no other hydropower plants in the host country larger than the 10.5MW Mobuku III plant except the 180MW Nalubaale (Owen Falls) plant (1954) and the 200MW Kiira (Owen Falls Extension) plant (2000-2007) – all existing and potential hydro sites are listed in the renewable Energy Policy of Uganda document (2007) [DR 34] and can also be confirmed based on the official grid data provided by UETCL [DR 07]. Nalubaale was developed more than 50 years ago before Uganda's independence [DR 34] and therefore cannot be compared to the current project. Kiira was fully publicly financed by international grants and multi-lateral lender loans to the GOU [DR 140] and also predates the reform of the power sector in Uganda [DR 33] which resulted in splitting energy generation and distribution, allowing private sector developers and Independent Power Producers (IPPs) to develop projects, and changing the tariff structures and levels [DR 33]. Given these facts and considering that no private investment was involved in the Kiira project [DR 140], it is not considered comparable to the proposed CDM project activity. Therefore the project is not considered common practice and is therefore considered additional.

3.7. Calculation of GHG Emissions

The GHG emission reductions ($ER_{facility,\ y}$) achieved by the project activity are calculated in accordance with the methodology ACM0002 v12. ERy is equal to baseline emissions (BEy), minus project emissions (PEy) minus leakage emissions (Ly).

Baseline emissions

Baseline emissions (BE_y in tCO_2) are calculated as the quantity of electricity supplied by the project ($EG_{facility,y,}$ in MWh) multiplied by the baseline emissions factor of the grid ($EF_{grid,CM,y}$ in tCO_2/MWh). $EG_{facility,\ y}$ has been cross checked against the economic and financial evaluation study [DR 21] and is correct. ERM CVS have replicated the calculations using the same source data and the calculation procedures prescribed in the tool, and obtained the same results.

Grid emissions factor: The grid emission factor is determined *ex-ante* for the 7 year crediting period following the '*Tool to calculate the emission factor for an electricity system*', version 02, dated 16 October 2009. In accordance with the tool the weights of the operating margin and the build margin are 0.5:0.5.

The PDD was published for GSP on 23 July 2010, and the calculation of the grid emission factor in the GSP PDD included both grid power plants and off-grid power plants. This decision was revised and Option 1 (of Step 2 of the Tool) was selected so that only grid power plants were included in the calculation of the operating margin, which was calculated based on the latest data available from official sources [DR 07, 146 and 147] at the time of validation start. The most recent three years of data at the time of PDD submission (2007-2009) are used, with the hourly electricity production data presented in baseline calculation spreadsheet [DR 06], which was cross-checked with the monthly Power System Summaries provided by UETCL [DR 07]. The grid is the Uganda electricity network, defined by UETCL, and the description of the grid in the PDD was confirmed to be accurate through interviews conducted with the Ministry of Energy and Mineral Development, the Ugandan Rural Electrification Board and the Ugandan Electricity Transmission Company [IV 03, 04, 05 and 06] and through reviewing the data provided by the UETCL [DR 07]. Electricity trade between Kenya and Uganda is very limited (5 – 20 MW) and is therefore not accounted in the grid emission factor calculations in this PDD, as the amount is negligible [DR 07]. The PP has chosen not include off grid plants due to the difficulty of obtaining data. ERM CVS can confirm that this is conservative since the majority of off grid plants use diesel as fuel [DR 44].

Operating Margin (OM): Method (b) (Simple adjusted OM) is used. This is appropriate since low-cost/must run resources constitute more than 50% of total grid generation in the average of the five most recent years therefore the simple OM cannot be applied. The simple adjusted OM emission factor is calculated as the CO_2 emissions per unit net electricity generation (tCO_2/MWh) where the power plants/units are separated into low-cost/must run power sources (k) and other sources (m). The simple adjusted OM calculates the net electricity generation of each power unit and an emission factor for each power unit in accordance with the tool. The net quantity of electricity generated and delivered to the grid by each power unit and the CO_2 emission factor of each power unit are calculated in accordance with option A of the simple OM method. Data on fuel consumption and electricity generation of individual plants was available and Option A1 was used. ERM CVS has reviewed the data provided by UETCL and this is considered appropriate. Net calorific values and density of each fuel type were obtained from the power plants [DR 146 and 147], and IPCC 2006 default values [Doc 145] were used for the emission factor of each type of fossil fuel. The values used and the calculation of the simple OM is considered to be reasonable, and is in line with official data published by the UETCL [Doc 07].

The parameter λ_y is defined as follows:

λ_y (%) = (number of hours low-cost/must-run sources are on margin in year *y*) / 8760 hours per year

In accordance with the tool, λ_y is calculated as follows:

- Step i) Plotting a load duration curve. Chronological load data (in MW) for each hour of the year y was collected, and the load data was sorted from the highest to the lowest MW level. MW were plotted against 8760 hours in the year, in descending order.
- Step ii) Collecting power generation data from each power plant / unit. The total annual generation (in MWh) from low-cost/must-run power plants / units was calculated.
- Step iii) Filling the load duration curve. A horizontal line was plotted across the load duration curve such that the area under the curve (MW times hours) equals the total generation (in MWh) from low-cost/must-run power plants / units (i.e. $\Sigma_k EG_{k,y}$).
- Step iv) Determining the "Number of hours for which low-cost/must-run sources are on the margin in year *y*". First, the intersection of the horizontal line plotted in step (iii) and the load duration curve plotted in step (i) was located. The number of hours (out of the total of 8760 hours) to the right of the intersection is the number of hours for which low-cost/must-run sources are on the margin. λy (%) equals the number of hours low-cost/must-run sources are on margin in year y divided by 8760 hours per year.

The λ_y and the OM are correctly calculated.

Build Margin (BM): The build margin is determined ex-ante for the first crediting period following option 1 in the tool. The methodology requires that the sample group of power units *m* used to calculate the build margin consists of either (a) The set of five power units that have been built most recently, or (b) 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. The option that comprises the larger annual generation is chosen, which in this case is the five most recently built power plants (option a). The build margin emission factor is the generated-weighted average emission factor (tCO_2/MWh) of power units in sample group *m* during the most recent year y for which power generation data is available. The PP determined the BM emission factor by dividing the total emissions of the five power plants ($\sum FC_{i,m,y} * NCV_{i,j} * EF_{CO2,i,j}$) by the electricity generated by these power plants ($EG_{m,y}$). The DOE confirmed that this equates the BM emission factor calculated according to equation 13 in the tool, by determining the CO_2 emission factor of each power unit m ($EF_{EL,m,y}$) as per the guidance in Step 4 (a) of the tool for the simple OM, using options A1, as validated above, using for *y* the most recent historical year for which power generation data is available, and using for *m* the power units included in the build margin. The BM is determined correctly and ERM CVS has validated this against the data provided by UETCL.

Combined Margin (CM): The combined margin emissions factor is correctly calculated as $0.5 * EF_{grid,OM,y} + 0.5 * EF_{grid,BM,y}$.

Project emissions: In accordance with methodology ACM0002, there are no emissions from the project as it is a renewable energy (hydropower) project with a power density greater than $10W/M^2$. The Project does not include use of backup fossil fuel fired power capacity on the Project site. There are 2 emergency diesel generators on site, of 400 kVA and 1,500 kVA respectively, but these are not used for electricity supply to the grid and are only to maintain essential systems on site in the event that the project is not generating and the grid is not functioning. Due to the ability of power to be fed back to the Bujagali project from the upstream Owen falls hydropower facility, the diesel gensets will only be used when both facilities are shutdown and unable to generate station power. Based on the assumptions that the units are exercised every week for 30 minutes operating at 75% load and that every year a short term emergency occurs where both units operate at 75% load for 8 hours, the annual fuel consumption for the emergency diesel generators is estimated to be only 12,757 litres, generating approximately 48,450 kWh of electricity. The assumptions in this calculation are considered to be reasonable based on interviews on site, the technical design of the project, and ERM CVS's local and sectoral knowledge. This is far less than 1% of the total emission reductions of the project and thus is considered to be negligible, and furthermore this source is ignored for simplification in the methodology ACM0002.

Leakage: In accordance with methodology ACM0002, no leakage has to be considered for the proposed project activity.

Conclusion
As per the VVM paragraph 92, based on the information reviewed and calculations reproduced by the validation team, ERM CVS confirms the following:

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

Parameters determined ex-ante
The emissions factor of the electricity grid is determined ex-ante, and is described in detail above. The correct parameters are specified as per the methodology and the 'Tool to calculate the emissions factor of an electricity system', and in accordance with the data published by UETCL for the calculation of the emission factor of the grid [Doc 07]. Data units and descriptions for the parameters are appropriate, and the correct sources are referenced. The parameters set ex ante in the PDD have been validated in detail in the table below.

Conclusion:

The assumptions and data used to determine the emission reductions are listed in the PDD and all the sources have been checked and confirmed by ERM CVS, and the calculations can be replicated. ERM CVS can confirm, based on the information reviewed, that the sources used are correctly quoted and interpreted in the PDD, the calculations are complete, and that the numbers are reasonable and accurate, and that the methodology and tools have been correctly applied.

Parameter	Title in line with methodology?	Data unit correctly expressed?	Appropriate description?	Source clearly referenced (and appropriate)?	Correct value provided?	How has this value been verified?	Choice of data correctly justified?	Measurement methods correctly justified?
$EG_{m,y}$ $EG_{k,y}$	Title is in line with the Tool	Yes	Yes	Yes, the official data provided by UETCL	Yes	ERM CVS has checked the data provided by UETCL [DR 07]	Yes, official data is used	n/a
Plant name of the set of plants *m* representing the build margin.	Yes	n/a	Yes	Yes, the official data provided by UETCL	Yes	ERM CVS has checked the data provided by UETCL [DR 07]	Yes, official data is used	n/a
Energy companies representing the operating margin	Yes	n/a	Yes	Yes, the official data provided by UETCL	Yes	ERM CVS has checked the data provided by UETCL [DR 07]	Yes, official data is used	n/a
$FC_{i,m,y}$	The title in the PDD was updated to $FC_{i,m,y}$ which is in line with the tool	The data unit was correctly expressed in *litres/kWh*	The description provided in the updated PDD is correct	The source of data was corrected to reflect raw data supplied by UETCL	The values for the amount fossil fuel consumed for each thermal power plant per month were provided in the EF calculation worksheet in Annex 3 Baseline calculations spreadsheet. The raw data was provided by UETCL [DR#102,103,104,108]	ERM CVS viewed a letter of certification from UETCL authenticating the raw data provided was correct [DR#102,103,104,108]	The choice of data was justified correctly, as being available from UETCL	The description of the measurement method is in accordance with the Tool
$NCV_{i,y}$	Title is in line with the Tool	The data unit is correctly expressed as GJ/litre	The description provided is in accordance with the Tool	Local data used for HFO and diesel: official document from Aggreko [DR 147] and Jacobsen power plant [DR147], both certified by UETCL.	The PDD was updated to reflect '*the data from Aggreko Uganda Power Plant and Jacobsen Uganda Power Plant'* certified as correct by UETCL . The values are consistent with the references [DR146 -147].	ERM CVS has confirmed the values against the sources.	Yes	n/a
$EF_{CO2,i,m,y}$	Yes, the title is in line with the tool	The data unit is correctly expressed as tCO_2/GJ	Yes, the description is in line with the tool	Local values not available so IPCC defaults at lower limit of the	The PDD was updated to reflect '*the lower limit of the uncertainty at a 95% confidence interval as*	ERM CVS has confirmed against Chapter 1 of Vol.2 (Energy) of the 2006	Yes	n/a

Parameter	Title in line with methodology?	Data unit correctly expressed?	Appropriate description?	Source clearly referenced (and appropriate)?	Correct value provided?	How has this value been verified?	Choice of data correctly justified?	Measurement methods correctly justified?
				uncertainty at a 95% confidence interval as provided in [DR 145]	*provided in Table 2.2 of Volume 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories'*. The values are consistent with the references. [DR 145]	IPCC Guidelines		
$EF_{grid,BM,y}$	Yes	Yes, tCO_2/ MWh	Yes, in line with tool	Data from UETCL, which is official and appropriate	Yes	ERM CVS has checked the official data provided by UETCL [DR 07]	Yes	n/a
$EF_{grid,OM-adj,y}$	Yes	Yes, tCO_2/ MWh	Yes, in line with tool	Data from UETCL, which is official and appropriate	Yes	ERM CVS has checked the official data provided by UETCL [DR 07]	Yes	n/a
$EF_{grid,CM,y}$	Yes	Yes, tCO_2/ MWh	Yes, in line with tool	Data from UETCL, which is official and appropriate	Yes	ERM CVS has checked the official data provided by UETCL [DR 07]	Yes	n/a
EF_{Res}	Yes	Yes	Yes, in line with methodology	Default value provided by methodology	Yes	Methodology has been cross checked	Yes	n/a
CAP_{BL}	Yes	Yes	Yes, in line with methodology	For new projects: zero. Defined by methodology.	Yes	ERM CVS confirmed the project is a new project on site and by review of the economic & financial evaluation study [DR 21]	Yes	n/a
A_{BL}	Yes	Yes	Yes, in line with methodology	For new projects: zero. Defined by methodology.	Yes	ERM CVS confirmed the project is a new project on site and by review of the economic & financial evaluation study [DR 21]	Yes	n/a

3.8. Environmental and Sustainable Development Impacts

A Social and Environmental Impact Assessment (SEA) has been performed according to host country regulations. The SEA was conducted by R.J. Burnside International Limited in September 2006 [DR 05], and was prepared by an international group of environmental and social experts and monitored by experts from the participating International Finance Institutions including the World Bank and EIB [DR 144] and the document has been reviewed by ERM CVS. The SEA was designed to ensure that the proposed facility is designed and developed to maximise its benefits while minimising potentially negative social and environmental effects and describes in detail the environmental, social and other regulatory requirements placed upon the project during construction and operation. Following review of the SEA, the GoU and project lenders approved the Project in April 2007 [DR 35, 100]. Moreover, the SEA process was monitored by an NGO, InterAid Africa, and was based on extensive consultations with local community members, national stakeholders and NGOs pursuant to a rights-based approach [DR 05, 144].

The EIA assessed the impact of the project on Resettlement and Land Compensation, Effects on Land, Effects on Hydrology, Effects on Water and Aquatic Life, Air Quality and Greenhouse Gas impacts, Noise, Access Roads and Traffic, Environmental Protection Areas, Tourism, White Water Rafting and Aesthetics, Effects on Cultural Property, Community Health, Safety and Security, Dam Safety, Labour and Working Conditions, Associated Facilities, Other Construction Related Issues, Other Operations Related Issues, and cumulative impacts. These are summarised in the PDD and the SEA and associated documents are available online. Impacts that are identified are subject to mitigation measures, and these are accurately described in the final PDD.

The letter of approval by the DNA of Uganda confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party [DR 122].

3.9. Consultation with Local Stakeholders

Since early 2006, the PPs have implemented a comprehensive "Public Consultation and Disclosure Program" (PCDP) consisting of numerous public meetings and discussions with a wide range of stakeholders such as: Local communities (including government officials and local residents); Government agencies; Non-government organizations (environmental and other interest groups); Businesses (including tourist-related interests in the area); and Cultural groups (the Kingdoms of Buganda and Busoga). The consultation actions undertaken for each of these identified stakeholder groups are correctly described in the PDD and ERM CVS has reviewed the documents including the:

- Public Disclosure and Consultation Report compiled by BEL (provides an overview of the Public Disclosure and Consultations that were conducted) [DR 26]
- Bujagali Hydropower Project Public Consultation and Disclosure Plan, prepared by BEL [DR 27]
- Bujagali Hydro Power Project Public Consultation Report for September 2008, prepared by BEL [DR 28]

ERM CVS can confirm that all relevant local stakeholders were included and that the comments are accurately summarised in the PDD. Due account of stakeholder comments has been taken throughout the project development process as demonstrated by the documents listed above and the ongoing consultation activities that were evident to the validation team during the site visit. The stakeholder consultation process is therefore considered adequate. Further information on how this was validated is contained in section 12 of the validation protocol.

3.10. Additional Findings

None.

4. Conclusion and Validation Opinion

Project Title	Bujagali Hydropower Project
Basis of validation	ERM CVS based its validation work on: • CDM approved monitoring methodology ACM0002 v12 • Project Design Document version 01 dated 16 July 2010 uploaded for GSP and the revised PDD version 2.0 dated 06 October 2011 • CDM Validation and Verification Manual (version 1.2) • ERM CVS's internal CDM validation methodologies and protocols • CDM decisions and guidance issued by the CDM Executive Board • UNFCCC criteria for the Clean Development Mechanism • Host Country criteria for the Clean Development Mechanism
Responsibilities of ERM CVS	ERM CVS is responsible to provide a thorough independent third party assessment of the proposed CDM project activity to ensure that the proposed CDM project activity meets all the identified and applicable criteria for registration of projects under the CDM.
Responsibilities of Project Participants	Bujagali Energy Limited and the Government of Uganda, Ministry of Energy and Mineral Development are responsible for preparing the PDD, supporting documentation and providing all necessary evidences to support the information included in the PDD.
Activities performed	ERM CVS conducted its activities in accordance with the CDM Validation and Verification Manual, version 1.2. The validation consisted of a review of project documentation, a site visit, interviews with relevant personnel, cross checking and ascertaining information through other reliable sources and on its sectoral, regional and local expertise and resolution of CLs and CARs pertaining to the project activity.
ERM CVS Conclusion	ERM Certification and Verification Services has performed the validation of the Bujagali Hydropower Project against the criteria for the Clean Development Mechanism as set out by the Conference of the Parties and the UNFCCC CDM Executive Board, and host country criteria. The validation employed standard auditing techniques, and a validation protocol checklist was used to carry out the validation. The project is a hydroelectric project in Uganda. The Annex 1 Party for the project activity is The Netherlands. The Party fulfils the criteria for participation in the CDM, and has issued a letter of approval for the project and authorised the project participants. The LoA of the host Party, Uganda, confirms the contribution of the project towards sustainable development. The validation has provided sufficient evidence to demonstrate that the project activity is not the baseline scenario, and that emission reductions would be additional to what would have taken place in the absence of the CDM project activity. The project meets the applicability criteria and correctly applies the approved methodology ACM0002 v12 and is therefore expected to result in real, measurable and long term reductions in greenhouse gas emissions. The monitoring plan provides for the collection and archiving of data sufficient to ensure that emission reductions can be verified. Nothing came to our attention to suggest that the project, if implemented as described, would not result in emission reductions of 858,173 tCO_2e per year on average over the first crediting period. It is the opinion of ERM CVS that the Bujagali Hydropower Project as described in the PDD version 2.0 of 06 October 2011 meets all stated criteria of the CDM, correctly applies the methodology ACM0002 v12 and is expected to result in real, measurable and long term emission reductions, and the DNA of the host Party has confirmed that the project assists in meeting sustainable development criteria. ERM CVS therefore requests registration of the project activity.
Signed on behalf of ERM CVS	
Name:	Melanie Eddis
Date:	06 October 2011

Appendix A: DOCUMENTS & INTERVIEWEES

DOCUMENT LIST

Reference	Date	Document Title
1	16 July 2010 06 October 2011	PDD version 1.0 submitted for GSP PDD version 2.0, submitted for registration
2	December 2008	Project layout diagrams prepared by R.J. Burnside International Limited
3	26 February 2007	Power Planning Associates (2007) Bujagali II Economic and Financial Evaluation Study - Annexes
4	16 November 2007	Bujagali Energy Limited: Community Development Action Plan (CDAP) for the Bujagali Hydropower Project
5	December 2006	Bujagali Hydropower Project Social and Environmental Assessment Main Report, Prepared by R.J. Burnside International Limited
6	July 2010 27 July 2011	Grid emissions factor and emission reduction calculation spreadsheet (9_Baseline_calculations_-ver_3.9.xls) Annex 3 - Baseline calculations -ver 4.4 27July11.xls
7	2003-2008 2007-2008	Monthly Summary reports of the Ugandan Electricity Grid prepared by UETCL for the period 2003-2008 Monthly Power System Summary reports for the Ugandan Electricity Grid prepared by UETCL for the period 2007-2008
8	2005-2007 17 June 2011	Load Duration Curves for the Ugandan electricity grid for the years 2005, 2006 and 2007 Load Duration Curves for the Ugandan electricity grid for the years 2007, 2008 and 2009 (included in Annex 3 of the PDD)
9	March-November 2008	UMEME Load Shedding public announcements placed in The New Vision for March, May, July, October and November 2008
10	02 September 2008	CDM Development Bujagali Hydropower Project Phase 1 report prepared by Climate Focus
11	18 June 2008	Consulting Services Agreement between Bujagali Energy Limited and Climate Focus BV first signed by Climate Focus on 18 June 2008 and by BEL on 08 July 2008
12	14 March 2008	Proposal for development of a PDD submitted by Climate Focus to BEL
13	14 November 2008	Request for Proposal for the CDM validation of the Bujagali Hydropower Project, submitted to DNV
14	28 May 2009	Request for Proposal for the CDM validation of the Bujagali Hydropower Project, submitted to ERM-CVS
15	14 November 2008	Request for Proposal for the CDM validation of the Bujagali Hydropower Project, submitted to SGS
16	14 November 2008	Request for Proposal for the CDM validation of the Bujagali Hydropower Project, submitted to TUV-SUD
17	06 July 2009	Offer for Validation services for the Bujagali Hydropower Project by TUV-SUD
18	September 2002	CERUPT 2001 Certified Emission Reduction Units Procurement Tender: Bujagali Hydroelectric Project Uganda: Baseline Report and Project Proposal; submitted by AES Corporation
19	March 2001	Bujagali Project Environmental Impact Assessment, Executive Summary. Prepared by ESG International, Inc and WS Atkins for AES Nile Power
20	March 2001	Bujagali Project Hydropower facility Resettlement and Community Development Action Plan Prepared by ESG International, Inc and WS Atkins for AES Nile Power
21	26 February 2007	Power Planning Associates (2007) Bujagali II Economic and Financial Evaluation Study – Main report
22	30 July 2010	Fitch Ratings: Complete Sovereign Rating History (illustrating the sovereign credit rating of the GoU) http://www.fitchratings.com/web_content/ratings/sovereign_ratings_history.xls
23	January 2009	The Bank of Uganda Economic and Financial Indicators, Month of January 2009. Available at http://www.bou.or.ug/bouwebsite/opencms/bou/publications_research/mnth_econfin_indicators.html
24	March 2005	GoU Ministry of Energy & Mineral Development: Survey Report on Existing Standby Generation Capacity
25	December 2006	Bujagali Hydropower Project Social and Environmental Assessment Main Report, Prepared by R.J. Burnside International Limited: section concerning health and safety training
26	March 2009	Public Disclosure and Consultation Report compiled by BEL (provides an overview of

Reference	Date	Document Title
		the Public Disclosure and Consultations that were conducted)
27	16 November 2007	Bujagali Hydropower Project Public Consultation and Disclosure Plan, prepared by BEL
28	September 2008	Bujagali Hydro Power Project Public Consultation Report for September 2008, prepared by BEL
29	2009	World Bank 'Doing Business 2010' Report: Uganda
30	March 2005	The East African Power Master Plan Study - Final Phase II Report. Published by the East African Community. Available: http://www.eac.int/energy/index.php?option=com_content&view=article&id=112&Itemid=84
31	16 January 2004	GoU: Request for Proposals / Prospectus In relation to the development of the Bujagali Hydroelectric project
32	1 November 1999	GOU: The Electricity Act (national legislation to regulate the generation, transmission, distribution, sale, export, import and distribution of electrical energy in Uganda)
33	September 2002	GOU Ministry of Energy and Mineral Development:: The Energy Policy for Uganda
34	29 March 2007	GOU: The Renewable Energy Policy for Uganda
35	April 2007	Uganda National Environment Management Authority (NEMA): Report of the Presiding officer on the public hearing for the proposed Bujagali Hydropower Project
36	undated	Uganda DNA CDM Sustainable Development Criteria Template, completed by BEL for the Bujagali Hydropower Project
37	October 2007	World Bank Poverty Reduction and Economic Management Unit. 'UGANDA - Moving Beyond Recovery: Investment & Behavior Change, For Growth' COUNTRY ECONOMIC MEMORANDUM VOLUME II: OVERVIEW. Available: http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&theSitePK=523679&entityID=000020439_20071204102731&searchMenuPK=64187283&theSitePK=523679
38	29 August 2008	World Bank Inspection Panel: Investigation Report - Uganda: Private Power Generation (Bujagali) Project. Available: http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000350881_20090918111642
39	Accessed 27 August 2010	Multilateral Investment Guarantee Agency (MIGA): Information page concerning the Bujagali Hydropower Project. http://www.miga.org/projects/index_sv.cfm?pid=723
40	Accessed 18 August 2010	2010 Index of Economic Freedom, published by the Wall Street Journal & the Heritage Foundation. www.heritage.org/Index/Country/Uganda
41	27 February 2009	Copy of email correspondence (subject: 'Draft PDD') showing completion of the draft PDD
42	2006	Brochure of the Aga Khan Fund for Economic Development (AKFED)
43	2007	Brochure of the Aga Khan Development Network (AKDN)
44	June 2006 – September 2008	'DFD Data Analysis for Large Scale Commercial and Industrial Enterprises' spreadsheet listing off-grid plants that are beneficiaries of the fuel subsidy scheme in Uganda. data for June 2006 to September 2008
45	May 2006	ENABLE Project (Supported by the European Commission): Energy Sector Policy Overview Paper – Uganda. Available: http://www.enable.nu/publication/Energy_Policy_Overview_Uganda.pdf
46	Undated. Received 02 September 2010	Letter from AKFED to ERM CVS outlining the nature, activities and financial standing of AKFED, with an extract from the commercial registry in Switzerland (dated 17 December 1984) where AKFED is registered
47	Undated	Briefing Paper on AKFED and it's activities
48	April 02 2007	The World Bank: Project Appraisal Document for the Bujagali Hydropower Project (appraisal of the project for an international development association partial risk guarantee, a $115m guarantee from the Multilateral Investment Guarantee Agency (MIGA), and IFC loans totalling $130m). Available: http://web.worldbank.org/external/projects/main?menuPK=51447259&pagePK=51351007&piPK=64675967&theSitePK=40941&menuPK=64187510&searchMenuPK=51351213&theSitePK=40941&entityID=000020953_20070411110509&searchMenuPK=51351213&theSitePK=40941
49	22 March 2005	AKFED: Final Notification To Submit A Bid for Bujagali Hydroelectric Power Project
50	06 December 2007	Extract of the Amended and restated Implementation Agreement for the Bujagali Hydropower project, signed between GoU and BEL
51	06 December 2007	Extract of the Amended and Restated Power Purchase Agreement signed between UETCL and BEL
52	14 December 2007	Common Terms Agreement in relation to the Financing of the Bujagali Hydroelectric Power project signed between BEL and the multilateral lending institutions – Societe de promotion et de participation pour la cooperation economique (Proparco); Deutsche Investitions- und Entwicklungsgesellschaft; KfW; Nederlandse Financierings-

Reference	Date	Document Title
		Maatschappij voor Ontwikkelingslanden n.v (FMO); Standard Chartered Bank; Absa Bank; European Investment Bank; African Development Bank; International Finance Corporation (WBG); Agence Francaise de Developpement.
53	Undated. Accessed 18 August 2010	Investing in Uganda's Energy Sector, a paper by the Uganda Investment Authority. Available: http://www.ugandainvest.com/energy.pdf
54	23 May 2006	IPS Kenya: Annual Report and Financial Statements 2005 (audited by Pricewaterhouse Coopers)
55	20 June 2007	IPS Kenya: Annual Report and Financial Statements 2006 (audited by Pricewaterhouse Coopers)
56	01 March 1963 and 11 April 1967	IPS Kenya Certificate of Incorporation and Change of Name
57	1 July 2005	IPS Kenya: Certified True Extract signed by the company secretary from the Minutes of the Board of Directors meeting held at the Relais D'Aumale Hotel, Paris on Friday 1st July 2005. (Includes consideration of the revenue stream from the sale of carbon credits once the project is registered under the CDM and an understanding that reliance on such revenue streams would play a key role in Sithe Global's preparedness to invest in the project.
58	20 June 2007	IPS Kenya: Certified True Extract signed by the company secretary from the Minutes of the Board of Directors meeting held in the Company's Boardroom on Wednesday 20th June 2007. (where it was agreed to share revenues from the sale of carbon credits between the GoU (60%) and BEL (40%) and where BEL undertook to carry out the CDM process steps. it was also stated that the project revenue stream from carbon credits would be included as a high probability scenario in the project's financial model and that Sithe Global was relying on these revenue streams in order to gain internal approval to make the investment).
59	Undated	IPS Kenya: List of Shareholders (Internal Document)
60	03 September 2010	IPS Kenya: Signed statement from the Company Secretary detailing the share holders of IPS Kenya
61	September 2010	IPS Kenya: Organisational Chart (internal document)
62	13 December 2005	Signature page of the Implementation Agreement signed between BEL and GoU
63	13 December 2005	Extract from the Implementation Agreement signed between BEL and GoU (
64	25 May 2007	Extract from the Amended and restated Implementation Agreement signed between BEL and GoU (includes the stated objective of the parties to obtain marketable GHG emission reduction units through the CDM and a detailed plan for the development of the CDM aspects of the Project).
65	2000	United Nations Conference on Trade And Development (UNCTAD) - Investment Policy Review: Uganda. Available: http://www.unctad.org/en/docs/iteiipmisc17_en.pdf
66	Undated	IPS Kenya: Statement of comprehensive income for the year ended 31 December 2009 (showing financial results for 2007, 2008 and 2009)
67	13 December 2005	Letter from World Power Holdings Luxembourg (an associate company of Sithe Global) and IPS Kenya confirming that the project developer will seek MIGA risk insurance coverage for the investment in the proposed project
68	February 2009	US Department of State - 2009 Investment Climate Statement – Uganda. Available: www.state.gov/e/eeb/rls/othr/ics/2009/117174.htm
69	13 December 2005	Title page of the Power Purchase Agreement signed between UETCL and BEL
70	13 December 2005	Signature pages of the Power Purchase Agreement signed between UETCL and BEL
71	August 2004	World Bank – Competing in the global economy: an investment climate assessment for Uganda. Available: http://www-wds.worldbank.org/servlet/main?menuPK=64187510&pagePK=64193027&piPK=64187937&theSitePK=523679&entityID=000090341_20051005161553
72	20 August 2005	Extract of Draft Power Purchase Agreement between UETCL and BEL (not signed version) (Includes a resolution to develop the project as a carbon credit project and proposals to share the revenues derived thereof)
73	25 May 2007	Extract of the Amended and restated Power Purchase Agreement signed between BEL and GoU (states that the parties wish to generate marketable emission reduction credits)
74	21 May 2007	Extract of an investment memorandum submitted by Sithe Global to the investment committee of Blackstone Group which includes a statement that the project qualifies for the generation of carbon credits, and describing the agreement to allocate 40% of the carbon revenues to the project sponsors.
75	16 April 2007	Extract of the Presentation to the Investment Committee of Blackstone Group, the main investor in Sythe Global, the largest Joint Venture partner in BEL, which sets out the economic attractiveness of the project as an investment including assessment of the Carbon Credit value.
76	17 August 2007	Resolution of the directors of World Power Holdings, an associate company of Sithe Global, concerning the Bujagali Hydropower Project. (States the intention to borrow funds from the various lenders to the project and noting that the common terms

Reference	Date	Document Title
		agreement with the lenders includes a condition precedent requiring the Board Approval of World Power Holdings (i.e. the equity financer of the Project) as a condition to the disbursement of loans)
77	7 August 2008	Travel Confirmation for Adriaan Korthius from Amsterdam to Entebbe, Uganda. Monty's Travel Service, Haarlem.
78	EB 25	EB25 Annex 15 (Version 3) PDD Template
79	EB 41	EB41 Annex 12 - Guideline for Completing the Project Design Document (CDM-PDD) and the Proposed New Baseline and Monitoring Methodologies (CDM-NM) (Version 07)
80		ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"
81	EB 55	EB55 Annex 1 – Clean Development Mechanism Validation and Verification Manual (Version 01.2)
82	EB 39	EB39 Annex 10 – Methodology Tool "Tool for the demonstration and assessment of additionality" (Version 05.2)
83	EB 49	EB49 Annex 22 Guidelines on the Demonstration and Assessment of Prior Consideration of CDM (Version 03)
84	EB 50	EB50 Annex 14 – Methodology Tool (version 02) "Tool to calculate the emission factor for an electricity system"
85	EB 50	EB50 Annex 13 – Guideline for Objective Demonstration and Assessment of Barriers (version 01)
86	2010	Republic of Uganda: National development Plan 2010-2014. Available: http://www.finance.go.ug/docs/NDP_April_2010-Prot.pdf
87		CDM-Glos-05 – Glossary of CDM terms (Version 05)
88	February 2010	Project Information Sheet providing information needed for ERM CVS validation proposal completed by Climate Focus, following request for proposal in January 2010
89	04 May 2010	ERM CVS Validation proposal
90	June 2010	ERM CVS Validation Contract:
91	Accessed 14 September 2010	UN-OHRLLS: List of Least Developed Countries. Available: www.unohrlls.org/en/ldc/related/62/?print=1
92	Accessed 05 October 2010	Bujagali Project Website – information on Bujagali Energy Limited. http://www.bujagali-energy.com/bujagali_aboutUs1.htm
93	Accessed 05 October 2010	AKFED Website: Information Page concerning IPS. http://www.akdn.org/akfed_ips.asp
94	19 November 2003	International Finance Corporation (IFC) press release 'Kenya - IFC Helps IPS (Kenya) Expand'. Available: http://www.ifc.org/ifcext/pressroom/ifcpressroom.nsf/PressRelease?openform&E1A6682111C3575E85256DE30076C425
95	Accessed 05 October 2010	Industrial Promotion Services: Wikipedia Entry. Available: http://en.wikipedia.org/wiki/Industrial_Promotion_Services
96	Accessed 04 October 2010	www.xe.com Currency Conversion Service
97	Accessed 05 October 2010	Aga Khan Development network (AKDN) website – about us. http://www.akdn.org/about.asp
98	Accessed 05 October 2010	Sithe Global Website – About Us. www.sitheglobal.com/about.cfm
99	29 August 2001	Development Credit Agreement (Fourth Power Project) between THE REPUBLIC OF UGANDA and INTERNATIONAL DEVELOPMENT ASSOCIATION, relating to the financing of the Kiira (Owen Falls extension) project
100	24 April 2007	Extract of the 'Engineering, Procurement and Related Services Limited Notice to Proceed Agreement' between GOU, BEL and Salini.
101	25 November 2010	Annex_3_-_Baseline_calculations_-ver_4.0_25Nov10_BH(1).xls
102	Undated	2007_data(1).xls – hourly electricity generation data per power unit from UETCL (included in Annex 3 of the PDD [DR 6]
103	Undated	2008_data(1).xls hourly electricity generation data per power unit from UETCL (included in Annex 3 of the PDD [DR 6]
104	Undated	2009_data(1).xls hourly electricity generation data per power unit from UETCL (included in Annex 3 of the PDD [DR 6]
105	13 November 2009	Annex_6-1_Schedule_(timeline)[1].doc
106	February 2008	Annex_6-2_Meter_brochure_PowerLogic_ION_7550_Brochure_022008[1].pdf
107	24 February 2009	Annex_6-3_Metering_diagram_AS-D-SW-LY-0206-1[1].pdf
108	8 November 2010	Certification_Letter[1].pdf
109		EIB_Loan_extract[2].pdf
110	Accessed 11/01/2011	Bujagali Hydro-Power Dam, Jinja, Uganda. Article by Power technology. Available: http://www.power-technology.com/projects/bujagali/
111	Accessed 11/01/2011	Scandinavians pull out of Uganda's Bujagali project. Article by Afrol News. Available: http://www.afrol.com/articles/12892

Reference	Date	Document Title
112	10 February 2010	Uganda to finance 500MW Karuma hydropower dam. Article by Industrial fuel and power. Available: http://www.ifandp.com/article/002066.html
113	09 February 2010	Government Fails To Attract Investors For Karuma Hydropower Plant. Article by All Business. Available: http://www.allbusiness.com/company-activities-management/company-strategy/14031329-1.html
114	21 December 2010	Karuma hydro power project raises capacity. Article by Trade Mark Southern Africa. Available: http://www.trademarksa.org/node/2982
115	December 2005	Annex C to the Power Purchase Agreement, showing details of quality control and quality assurance of the measuring systems.
116	2010	Exhibit 5 of the Operation and Management agreement between BEL and Operacion Y Mantenimiento Energy S.A.
117	13 Dec 2005	Extract of the PPA between BEL and UETCL, showing that electricity is purchased in US $
118	21 Dec 2007	Loan agreements signed between BEL and the project lenders (AFD, Absa, Standard Chartered, FMO, Proparco, IFC, DEG, EIB and AfDB
119	04 April 2005	'Evaluation of Proposals in relation to the development of the Bujagali Hydroelectric Project' issued by GoU
120	May 2007	Extract of the 'Engineering, procurement and related services contract' between BEL and Salini dated May 2007 (EPC contract) and extract of 'Construction, procurement and related services contract' between BEL and Salini dated May 2007 (contraction contract)
121	21 Dec 2007	Full Notice to proceed signed between BEL and Salini
122	First version: 12 January 2010 Final version: 22 June 2011	Letter of Approval (LoA) issued by the Ministry of Water and The Environment, acting as the DNA of Uganda
123	20 April 2005	Letter from Paul Mubiru, permanent secretary, Ministry of Energy and Mineral Development, to Mr Lutaf Kassam, Group Managing Director, IPS (Kenya) Ltd confirming that GoU selected the consortium led by IPS
124	23 February 2005	'Request for proposals/prospectus (first revision) in relation to the development of the Bujagali Hydroelectric Project' issued by GoU
125	13 August 2003	'Power Giant AES Withdraws From Uganda Dam Project' article by Environment News Service. Available: http://www.ens-newswire.com/ens/aug2003/2003-08-13-02.html
126	04 March 2011	Agence Francaise de Developpement: letter confirming non-diversion of ODA
127	25 February 2011	African Development Bank Group: letter confirming non-diversion of ODA
128	07 March 2011	European Investment Bank: letter confirming non-diversion of ODA
129	21 April 2011	Multilateral Investment Guarantee Agency (MIGA): letter confirming non-diversion of ODA
130	28 February 2011	Proparco [Societe de promotion et de participation pour la cooperation economique] (Group Agence Francaise de developpement): letter confirming non-diversion of ODA
131	13 April 2011	The World Bank: letter confirming non-diversion of ODA
132	02 March 2011	Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden n.v (FMO): letter confirming non-diversion of ODA
133	28 February 2011	Bundesministerium fur wirtschaftliche Zusammenarbeit and Entwicklung (The German Federal Ministry of Economic Cooperation and Development (BMZ)): letter confirming non-diversion of ODA
134	Accessed 20 June 2011	Business Environment Snapshot for Uganda – Highlights. The World Bank Group. http://rru.worldbank.org/BESnapshots/Uganda/default.aspx
135	Accessed 20 June 2011	Tables of historical exchange rates to the USD http://en.wikipedia.org/wiki/Tables_of_historical_exchange_rates_to_the_USD
136	Accessed 20 June 2011	CIA World Factbook: historical exchange rate between Ugandan Shilling and US Dollar https://www.cia.gov/library/publications/the-world-factbook/fields/2076.html
137	January 2007	Snapshot Africa: benchmarking FDI Competitiveness in Sub-Saharan African Countries. MIGA. http://www.fdi.net/documents/WorldBank/databases/snapshot_africa/
138	01 October 2009	Article from This is Africa news service (01 Oct 2009) indicating that 'The 250 megawatt Bujagali dam is the largest private investment project ever in East Africa'. Available: http://thisisafricaonline.com/news/fullstory.php/aid/104/?current_page=2
139	21 August 2007	Article from the World Bank 'Uganda's President, the Aga Khan, Cut Ribbon on Bujagali Dam Project' (21 Aug 2007) indicating that 'Bujagali is the largest single private sector investment in East Africa, the biggest independent power project in sub-Saharan Africa'
140	Accessed June 2011	MIGA description of investment in the power sector: http://www.miga.org/sectors/index_sv.cfm?stid=1534&sectid=22&pv=s
141	29 August 2001	Development Credit Agreement covering the Kiira expansion project signed between GOU and the International Development Association
142	10 February 2010	Industrial Fuels and Power: 'Uganda to finance 500MW Karuma hydropower dam'. http://www.ifandp.com/article/002066.html

Reference	Date	Document Title
143	09 February 2010	All Business: 'Government fails to attract investors for Karuma Hydropower Plant' http://www.allbusiness.com/company-activities-management/company-strategy/14031329-1.html
144	02 July 2007	European Investment Bank (EIB) Information page on the Bujagalai Hydroelectric Project. http://www.eib.org/projects/news/bujagali-hydroelectric-project-uganda.htm?lang=-en
145	2006	2006 IPCC Guidelines for National Greenhouse Gas Inventories. Volume 2 – Energy. TABLE 2.2 DEFAULT EMISSION FACTORS FOR STATIONARY COMBUSTION IN THE ENERGY INDUSTRIES.
146	03 December 2010	Jacobsen Uganda Power Plant Co.Ltd. Data for the Grid Emission Factor (GEF).
147	21 April 2011	AGGREKO Diesel Fuel specifications – data for the grid emission factor (GEF)
148	09 February 2010	Business Monitor International: Government Fails To Attract Investors For Karuma Hydropower Plant
149	April 2003	Joint Implementation Quarterly, Vol 9, No. 1. 'Cerupt First Round Concluded' Available: http://cdm.unfccc.int/UserManagement/FileStorage/EY74PL6Z5OKDJ192I3Q0NCW8RAHXVM
150	27 September 2007	MicroCapital Story: Ugandan Government Initiative to Subsidize Solar Power Equipment by 45% to be Implemented by Rural Microfinance Institutions (MFIs) Available; http://microcapitalmonitor.com/cblog/index.php?/archives/1171-MICROCPAPITAL-STORY-Ugandan-Government-Initiative-to-Subsidize-Solar-Power-Equipment-by-45%25-to-be-Implemented-by-Rural-Microfinance-Institutions-MFIs.html
151	February 2008	Schneider Electric: PowerLogic® ION7550/ION7650 power meter Brochure
152	22 August 2011	LoA issued by the Ministry of Infrastructure and the Environment of the Netherlands

List of Interviewees

Interview Number	Date	Name	Position	Subject Discussed
1	24Aug2010	David Bizimana	InterAid: Project Manager	Stakeholder engagement, Project Affected People, Resettlement programmes
2	24Aug2010	Kikomeko Allen	InterAid: Field Officer (Environmentalist)	Stakeholder engagement, Project Affected People, Resettlement programmes
3	24Aug2010	Fred Kanagambe-Kaliisa	Ministry of Energy and Mineral Development: Permanent Secretary & Chairman of the Rural Electrification Board	Policy direction to ERA. GoU subsidises electricity price, state funding, global guarantees payment obligation to generators. Generation, Transmission and Distribution agencies. Rural electrification Agency and the Ugandan national grid. Additionality, project funding, impacts of FOREX fluctuations, hydrological impacts on electricity generation. Hydro (30 yrs and investment costs up front) vs. Thermal (3 yrs and continuous investment costs i.e. in fuel). Bujagali displaces huge cost of Thermal. National Master Plan for Renewable Energy, Investment Plan (draft) to be published in about Oct2010. Rural Electrification Programme. Barriers – investment climate, power projects in Uganda, high CAPEX +$800M, long recovery period 12-15 yrs, infrastructure requirements. Other potential CDM hydro projects in Uganda.
4	24Aug2010	James Baanabe Isingoma	Ministry of Energy and Mineral Development: Ag. Comm. Energy Resources Department	As above
5	24Aug2010	Eriasi Kiyemba	Ugandan Electricity Transmission Company Ltd: Managing Director/CEO	UETCL's financial obligations to generators (i.e. power purchase obligations), FOREX fluctuations, PPA. East Africa power grid (interconnections between Uganda, Kenya, Tanzania, Rwanda and Burundi), and work plan to connect with

				SADC, Sudan and Ethiopia. Independent Power Producers (>100kVA). Ex Post calculations. UETCL and Rate Payers carry the risks.
6	24Aug2010	James M Omara-Ogwang	Electricity Regulatory Authority: Assistant Manager – Compliance	Independent Regulator sets power price. Cross check with Ugandan Regulatory Authority (URA) – taxes/ subsidizes generator larger than 100kVA. Generators <100kVA not included in data, but responsible for most pollution (1996 survey indicated off-grid independent captive generators had the same capacity as the national grid itself).
7	24Aug2010	Peter Kityo	Electricity Regulatory Authority: Environmental Officer	As above.
8	24Aug2010	Paul Isabirye	Designated National Authority: Secretary (Ministry of Water and Environment, Department of Meteorology/Climate Change Unit: Assistant Commissioner-Meteorology)	Uganda DNA Sustainable Development criteria, Climate Change Unit serves as CDM Secretariat. CDM approval process, current status of the Letter of Approval, local stakeholder consultation.
9	24Aug2010	Lawrence Aribu	Designated National Authority (Ministry of Water and Environment, Department of Meteorology/Climate Change Unit: Senior Programme Officer.	As above.
10	24-26 Aug2010	Adriaan Korthuis	Climate Focus: Director	PDD Development
11	24-27 Aug2010	Adnan Khalid	Industrial Promotion Services (Kenya) Ltd. Group Environmental Coordinator / Officer	Project investor
12	24-27 Aug2010	Glenn Gaydar	BEL: Project Director	Technical implementation and financials of project activity
13	24-27 Aug2010	Emmy Beraho	BEL: Safety and Environmental Manager	Environmental Impacts
14	24-27 Aug2010	Zachariah Lebeya	BEL:	
15	25Aug2010	Marco Faggiani	Salini: Project Manager	Project construction and scheduling.
16	25Aug2010	Giusette Gulisano	Salini: HSE Manager	Project construction and scheduling.
17	25Aug2010	Fatima Diat	Salini: HSE Manager	Project construction and scheduling.
18	26Aug2010	Dr Gerald Musoke Swula	National Environmental Management Authority	Deputy Executive Director
19	26Aug2010	Fred Onyai	National Environmental Management Authority	Internal M&E Specialist
20	27Aug2010	John Othieno	UETCL	Principle Environmental Officer
21	27 Aug 2010	Jason Oliver	Sithe Global: Senior Vice President, Development Project Manager: Bujagali	CDM consideration, investment decision, barriers
22	27 Aug 2010	Simon Hodson	AKFED: Project Manager	CDM consideration, investment decision, barriers

Appendix B: CDM Validation Protocol Checklist

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
1.	**PDD Format**				
1.1	Is the PDD prepared in accordance with the latest template and guidance by the CDM EB? http://cdm.unfccc.int/Reference/PDDs_FORMS/PDDs/index.html	DR#1, 78	Yes, the PDD is prepared using the **PROJECT DESIGN DOCUMENT FORM (CDM PDD) Version 03** template for large scale projects.	Ok	OK
1.2	Does the language make sense and is it clear?	DR#1	Yes, the English used in the PDD is of good quality.	Ok	OK
2.	**Project Title**	PDD A.1			
2.1	Does the used project title clearly enable identification of the unique CDM activity?	DR#1, 78	Yes, the project title clearly identifies the project as the "**Bujagali Hydropower Project**". The project title enables the unique identification of the project activity, which is located at Bujagali falls, and is distinct from the 2 existing hydroelectric projects upstream (Naalubale (Owen Falls) and Kiira (Owen Falls Extension).	Ok	OK
2.2	Is the version number and the date given? Is this consistent with the project's timeline?	DR#1, 03, 21, 78	Yes, PDD Version 1.0 dated 16 July 2010 was submitted for validation, and uploaded for the global stakeholder process. Financial close was reached in mid 2007, and the project is under construction and will take between 44-47 months to complete. This schedule has been confirmed against the Economic and Financial Evaluation Study. The power plant is expected to be operational in Q1 2011. A proposed schedule/project timeline for the project design/construction/and implementation was not viewed during the site visit, therefore **CL 4** was raised.	**CL4**	OK
3.	**Project Description**	PDD A.2			
3.1	Does the PDD contain a clear description of the project activity, with regard to its nature and technical implementation? Does Section A2 include: a. A brief summary of the technology employed, b. A brief summary of the sources and gases included in the project boundary c. The PP's opinion regarding the contribution of the project to sustainable development	DR#1, 2-3, 6-9, 19-20, 21, 78 SV DR# 03, 21, 38 IV#10,11, 3-7, 12-17	The PDD contains a clear description of the project activity, and the nature and technical implementation of the project activity (including the connection to the national grid), however the following was found: a) The project scenario includes a summary of the scope of activity/measures being implemented, but the PDD does not describe clearly the scenario existing prior to the start of the project activity implementation i.e. the composition of the electricity system (including off-grid generation) is not included. Furthermore, an explanation of how the load	CL 1	OK

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			factor was derived is not given in the PDD. Please refer to **CL 1**. b) The PDD states that the project activity will reduce emissions of greenhouse gases, but reference is not made to the emission sources and gases described in Section B.3 – refer to **CL 1**. c) The project participants' view on the project activity's contribution to sustainable development is included in the PDD. The information has been confirmed against the economic and financial evaluation study and the World Bank Inspection Panel: Investigation Report.		
3.2	Does the description deliver a transparent overview of the project activities and cover all relevant elements?	DR#1, 2-3, 6-9, 19-20, 21, 78 SV IV#10,11, 3-7, 12-17	The description gives a transparent overview, and covers the relevant elements, except for the baseline scenario – refer to **CL 1**.	CL 1	OK
3.3	Has a physical site inspection been undertaken to confirm that the description in the PDD reflects the proposed CDM project activity?	DR#1, 2-3, 6-9, 19-20, 21, 78 SV IV#10,11, 3-7, 12-17	A physical site inspection was conducted on 24 – 27 August 2010, and the description in the PDD reflects the proposed CDM project. The project is currently under construction, with the dam and power house being mostly complete, however turbines and ancillary equipment were not yet installed at, the time of the site visit. The observations on site were consistent with the project implementation timescale as envisaged in the PDD.	OK	OK
3.4	Does section A.2 also indicate the baseline situation, and the historical situation at the facility, if this is different to the baseline? If the proposed CDM activity involves the alteration of an existing installation or process, does the description clearly state the differences to the pre-project situation?	DR#1, 2-3, 6-9, 19-20, 21, 78 SV IV#10,11, 3-7, 12-17	This is a new run-of river hydropower facility, and the PDD contains a brief description of how the project activity will change the historical situation of the river. The baseline situation in Uganda regarding electricity generation is mentioned very briefly, but the composition of grid electricity (provided in Table 7 in the PDD) is not included in Section A2, Section B4 or Annex 3 in the PDD, and no information of the off-grid electricity generation is provided – refer to **CAR 07, 08, 11 and CL 1**.	CAR 07, 08, 11 CL 1	OK
3.5	Is all information provided in the project description consistent with information provided in later sections of the PDD?	DR#1, 2-3, 6-9, 19-20, 21, 78 SV IV#10,11, 3-7, 12-17	The information is consistent throughout the PDD, however, the grid emission calculations include off-grid electricity generated by small diesel generators, detailed information on which is not included in the PDD or Annex 3 – refer to **CL 1**.	CL 1	OK
4.	**Technical Description**	**PDD A.4**			
	Location of Project	PDD A.4.1			

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4.1	Does the information provided on the location of the project activity allow for a clear identification of the site(s)? How was the site location confirmed? (e.g. site visit, planning documents)	DR#1, 2-3 SV IV#10,11,8-9, 12	The location of the project activity on the Victoria Nile River is described clearly in the PDD, and location maps and GPS co-ordinates are also provided. The location was confirmed by the DOE during the site visit.	OK	OK
	Category/ Sectoral Scope	PDD A.4.2			
4.2	Is the category (sectoral scope) of the project activity indicated and correct?	DR#1, 78-79 IV#10	The sectoral category is given correctly in the PDD: Sectoral scope 1: Energy industries (renewable / non-renewable sources) in line with the methodology.	OK	OK
	Technology to be Employed by the Project Activity	PDD A.4.3			
4.3	Is there a clear description of the baseline scenario, as identified in section B.4? This should include: a. An indicative list of the equipment(s) and systems that would have been in place in the absence of the project activity (if any) b. Information about the age and average lifetime of the baseline facility based on manufacturer's specifications and industry standards (if applicable) c. Installed capacities, load factors and efficiencies of the baseline facility (if applicable) d. An explanation of how the same types and levels of services provided by the project activity would have been provided in the baseline scenario.	DR#1, 2, 3, 5-9, 18-21, 31, 33, 44 SV IV#10, 11, 3-7, 12-17	The technology to be employed by the project activity is described in Section A.4.3, but the description of the baseline scenario was not sufficient in Section A.4.3. a. An indicative list of the equipment(s) and systems that would have been in place in the absence of the project activity (i.e. complete details of the grid and off grid plants) should be provided in the PDD b. Information about the age and average lifetime of the baseline facilities based on manufacturer's specifications and industry standards is not applicable since there is no baseline facility – the project is a new project at a site where no power was previously generated. c. Installed capacities, load factors and efficiencies of the baseline facilities are also therefore not applicable. d. An explanation of how the same types and levels of services provided by the project activity would have been provided in the baseline scenario is not stated explicitly in the PDD. Please refer to **CL 1**	CL 1	OK
4.4	If the scenario existing prior to the start of the implementation of the project activity is different from the selected baseline scenario, is there a clear description of the pre-existing scenario, with a list of the equipment(s) and systems in operation at that time?	DR#1, 2, 3, 5-9, 18-21, 31, 33, 44 SV IV#10, 11, 3-7, 12-17	The scenario existing prior to the implementation of the project is the same as the baseline scenario described in the PDD i.e. that "Electricity delivered to the grid by the Project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources" as reflected in the combined margin ("CM") calculations according to the "Tool to calculate the emission factor for an electricity system". However the PDD does not adequately describe in section B.4 that off-grid power generation sources are also included in the combined margin calculations. Please refer to **CAR 6**	CAR 6	OK
4.5	Is the technology to be employed by the project activity clearly described and is it consistent with information provided	DR#1, 2, 3, 5-9, 18-21,	The technology to be employed by the project activity is described clearly and the information is consistent throughout	CL 1, 2	OK

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	elsewhere in the PDD? a. List of main technologies involved b. List of main equipment and installations c. The lifetime of the project equipment d. Monitoring equipment and its location e. Capacities, load factors and efficiencies f. The emissions sources and the greenhouse gases involved in the project activity g. Existing and forecast energy and mass flows and balances h. Interaction with processes/equipment outside the project boundary, if any, is stated.	31, 33, 44 SV IV#10, 11, 3-7, 12-17	the PDD. The description included: a. A list of technical details for the hydropower project b. The turbine generator units to be installed and grid connected transmission line; c. the lifetime of the project equipment was not discussed – refer to **CL 2** d. the installed capacity was included, however explanation of how the load factor was derived was not provided in the PDD. Please refer to CL 1 e. the emission sources and greenhouse gasses involved in the project activity (e.g. diesel generators etc) were not discussed in Section A.4.3 – refer to **CL 1** f. the forecast energy and mass flows and balances were included The interaction with the Bujagali Interconnection Project (the construction of the transmission line to connect the project activity to the national grid was discussed.		
4.6	Does the description of the technology to be applied provide sufficient and transparent input/ information to evaluate its impact on the greenhouse gas balance?	DR#1, 2, 3, 5-9, 18-21, 31, 33, 44, 99 SV IV#10, 11, 3-7, 12-17	Although the impact on the greenhouse gas balance is not discussed in Section A.4.3, the description of the technology to be applied (i.e. hydropower replacing fossil fuel electricity generation) is transparent and allows the impact on the green house gas balance to be evaluated, i.e. that the project is likely to result in reductions of greenhouse gas emissions.	OK	OK
4.7	Does the implementation of the project activity require any technology transfer from Annex-1-countries to the host country(ies)?	DR#1, 2, 3, 5-9, 18-21, 31, 33, 44, 99 SV IV#10, 11, 3-7, 12-17	Technology transfer from annex-1 countries is not discussed in the PDD – refer to **CL 3**	CL 3	OK
4.8	Does the project use state of the art technology and / or does the technology result in a significantly better performance than any commonly used technologies in the host country? Is the technology implemented by the project activity environmentally safe?	DR#1, 2, 3, 5-9, 18-21, 31, 33, 44, 79 SV IV#10, 11, 3-7, 12-17	Hydropower electricity generation is more efficient, sustainable and environmentally safe than fossil fuel electricity generation, which is commonly used in the host country especially in recent years with the addition of small scale oil-fired generation units.	OK	OK
4.9	Is the project technology likely to be substituted by other or more efficient technologies within the project period?	DR#1, SV IV#10, 11, 3-7, 12-17	Based on ERM CVS's local and sectoral knowledge it is considered unlikely that the technology will be replaced by other more efficient technologies.	OK	OK

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4.10	Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period? Is information available on the demand and requirements for training and maintenance?	DR#1, 25 SV IV#10, 12	The hydropower plant is under construction, and initial training will be required to ensure proper operation and maintenance throughout the project period. The Environmental Impact Assessment states that "Personnel should be trained in environmental, health and safety matters including accident prevention, safe lifting practices, the use of MSDSs, safe chemical handling practices, and proper control and maintenance of equipment and facilities and in emergency response" and according to the PDD "qualified and trained staff will be dedicated to carry out the monitoring process including data recording, reporting, archiving and management". Based on site observations and interviews, the project participants have sufficient capacity to carry out the monitoring plan and to carry out necessary training of staff .	OK	OK
4.11	Is a schedule available for the implementation of the project and are there any risks for delays?	DR#1, 21, 64, 66-72 SV IV#10, 3-7, 12, 15	A proposed schedule/project timeline for the project design/construction/and implementation was not viewed during the site visit, therefore **CL 4** was raised. The construction of the Bujagali hydropower plant and the Bujagali Interconnection Project (i.e. the transmission line connecting the project to the national grid) are both being co-ordinated by BEL and are due to be completed during Q1 of 2011.	CL 4	OK
	Public Funding	PDD A.4.5			
4.12	Is the information provided on public funding provided in compliance with the actual situation or planning as available by the project participants?	DR# 52	The Bujagali Hydropower Project is funded by equity from the project developers and debt from various lenders. USD 681.8 million of debt has been loaned to the projects, provided by the following lenders: Societe de promotion et de participation pour la cooperation economique (Proparco); Deutsche Investitions- und Entwicklungsgesellschaft (part of the German Federal Ministry of Economic Cooperation and Development); KfW; Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden n.v (FMO); Standard Chartered Bank; Absa Bank; European Investment Bank; African Development Bank; International Finance Corporation (WBG); Agence Francaise de Developpement; Fortis Bank; and Nedbank. This information has been cross checked against a Common Terms Agreement signed between BEL and all the lenders except Fortis and Nedbank, both of which are commercial lenders and therefore do not constitute public funding. However evidence has not been provided to prove the final debt funding structure of the project, including all public and non-public debt funding. **CL 5**: Evidence to prove the final debt funding structure of the	CL 5, 6	OK

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			project, including all public and non-public debt funding should be provided.		
4.13	If the project involves public funding from an Annex 1 country, have the annex 1 parties involved provided an affirmation that such funding does not result in a diversion of official development assistance?		Statements from each of the public funders based in annex 1 countries have not been provided to demonstrate that such funding does not result in a diversion of official development assistance. **See CL 6**	CL 6	OK
5.	**Approval and Participation**	PDD A.3			
5.1	Are project participants listed in tabular form in section A.3 of the PDD? Is this information consistent with the contact details provided in Annex 1 of the PDD and other project documentation (Letters of Approval and Modalities of Communication)?	DR#1 SV IV#10, 3-7, 11-12	Section A.3 only lists Bujagali Energy Limited (BEL) as a Project Participant, whereas the Government of Uganda, Ministry of Energy and Mineral Development is also listed as a Project Participant in Annex 1 – refer to **CAR 1**. The consistency of the information in the Letters of Approval and Modalities of Communication will be assessed once available – refer to **CAR 2**.	CAR 1, 2	OK
5.2	Has the Host Party provided a Letter of Approval (LoA) with clear referencing and supporting documentation? Does the LoA confirm: ○ Ratification of the Kyoto Protocol ○ Voluntary Participation ○ Contribution to Sustainable Development ○ Reference to the precise project title in the PDD	DR#1 SV IV#10, 8-9	a. A Letter of Approval from the DNA for Uganda has not yet been provided (**CAR 2**).	CAR 2	OK
5.3	Was the LoA received directly from the DNA or from the project participants? Has the Host Party LoA been issued by the respective DNA? How has this been confirmed?	DR#1 SV IV#10, 8-9	The DOE met with and conducted interviews with the Ugandan DNA during the site visit. The DNA requires the Draft Validation Report and updated PDD to finalise the issuance of the LoA. Please refer to **CAR 2**.	CAR 2	OK
5.4	Has the Annex I Party provided a Letter of Approval (LoA) with clear referencing and supporting documentation? Does the LoA confirm: ○ Ratification of the Kyoto Protocol ○ Voluntary Participation ○ Contribution to Sustainable Development ○ Reference to the precise project title in the PDD	DR#1 SV IV#10, 8-9	No Annex 1 Party has been identified by the Project Participant yet.	n/a	n/a
5.5	Was the LoA received directly from the DNA or from the project participants? Has the Annex I Party LoA been issued by the respective DNA? How has this been confirmed?		n/a	n/a	n/a
5.6	If either LoA contains additional specification or conditions of the project activity, then has the request for registration been based on the documents specified in the LoA?		TBC	TBC	OK
5.7	If either LoA references a specific version of the Validation Report and this version cannot be submitted, then has either of		TBC	TBC	OK

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	the following been submitted? a) a statement indicating final LoA has not been received or b) an updated Validation Report				
6.	**Baseline and Monitoring Methodology**	PDD B			
	Title and reference of the approved baseline and monitoring methodology?	PDD B.1			
6.1	Are the number, version and reference of the methodology clearly and correctly stated? Has the methodology been previously approved by the CDM Executive Board? http://cdm.unfccc.int/Reference/Procedures/Meth_proc02_v13.pdf	DR# 1, 80	Yes. The project applies the approved consolidated baseline and monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 11. This is clearly stated in the PDD. This is the applicable current version of the methodology valid at the time of validation.	OK	OK
6.2	Are the Tools applicable to the methodology correctly referenced, including the correct version number(s) valid at the time of registration submission?	DR# 1, 82, 84	Yes, the PDD correctly references the Methodological Tool "Tool for the demonstration and assessment of additionality" (Version 05.2) and the Methodological Tool "Tool to calculate the emission factor for an electricity system" (Version 02). These are the correct version numbers valid at the time of registration submission.	OK	OK
	Justification for the choice of methodology and why it is applicable	PDD B.2			
6.3	Have any sources of greenhouse gas emissions been identified by the DOE, within the project boundary following project implementation, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, and which are not addressed by the applied methodology?	DR# 1, 80 SV	No sources of GHGs have been identified within the project boundary following project implementation which are expected to contribute more than 1% of the overall expected average annual emission reductions, and which are not already addressed by the methodology. For hydro power plants, the only source of project emissions included in the methodology is emissions of CH_4 from the reservoir. These are considered in the PDD as the calculation of the power density is presented. Emissions from fossil Fuel Combustion are only included in the methodology for geothermal and solar thermal projects which also use fossil fuels for electricity generation. The proposed project activity is a hydro project, and does not use fossil fuels for its electricity generation. This was confirmed based on the third party feasibility report. The PDD includes, in section B.7.1, monitoring of 'Quantity of the diesel fuel used in the Project to back up any electric generator in year y', however this parameter is not required to be monitored for hydro electric projects under the methodology. Furthermore, ERM CVS has confirmed based on the site visit and review of the detailed technical design of the project as contained in the third party feasibility report that diesel	CL 7	OK

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			generators will not be used for supply of electricity to the grid, and will only be used for emergency back up power on site in the event of grid failure, to maintain essential systems. However, it has not yet been determined that this source will represent less than 1% of emission reductions. Further evidence of fuel consumption and emissions is required. **See CL 7**		
6.4	Is the methodology fully applicable to the proposed project? For each of the applicability criteria: a. Is the criterion discussed in the PDD? b. Is compliance provable? c. Is evidence provided in the PDD to prove applicability? d. Has compliance with the criterion been verified (by checking evidence provided, sector/ local knowledge etc)?	DR# 1, 2, 3, 5, 7, 21, 80, SV	The applicability of the project to the methodology is discussed in the PDD. ERM CVS has validated the applicability of the project against the applicability conditions set out in the methodology, as follows: *(1) This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).* **a.** Yes. **b.** Yes. **c.** This applicability criteria was able to be validated on site. ERM CVS has confirmed by visual inspection that the project is a newly built grid connected hydropower plant. This was confirmed against the Economic and Financial Evaluation Study. **d.** The project is a new hydropower plant connected to the electricity grid. This was confirmed based on the third party Economic and Financial Evaluation Study and by on-site inspection. No renewable power plant was operated at the site prior to the implementation of the project activity. This was confirmed by review of a list of all existing power plants in the country provided by the Electricity Transmission Company UETCL (Uganda Electricity Transmission Company Ltd), by the third party Economic and Financial Evaluation Study, and by on-site inspection. *(2) The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-*	CL 8	OK

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			river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit **a.** Yes **b.** Yes **c.** This applicability criteria was able to be validated on site. ERM CVS has confirmed by visual inspection that the project is a newly built grid connected hydropower plant. **d.** The project activity is the installation of a hydro power plant with a run-of-river reservoir. This was confirmed by review of the third party Economic and Financial Evaluation Study and on-site inspection, as well as review of a site plan diagram showing the layout of the plant and run-of-river reservoir. *(3) In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter EGPJ,y): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity* **a.** The PDD states clearly that the project is a new hydropower plant, therefore making it evident that this condition is not relevant. **b.** Not applicable **c.** Not applicable **d.** ERM CVS has confirmed that the project is a new hydro power plant, i.e. is not a capacity addition, retrofit or replacement. See criterion (1) above. *(4) In case of hydro power plants, one of the following conditions must apply:* *o The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or* *o The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m2; or* *o The project activity results in new reservoirs and the power*		

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			density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m2. **a.** Yes. The PDD states that the project activity results in a new reservoir and states the power density of the project, which is greater than 4W/m^2. **b.** Yes **c.** ERM CVS has confirmed by visual inspection that the project is a newly built grid connected hydropower plant that will result in a reservoir. The PDD provides a calculation of the power density of the project however no reference is cited for the reservoir area (stated as 388ha in the PDD) **d.** ERM CVS has confirmed that the power plant is a new hydro power plant – see criterion (1) above. ERM CVS has confirmed that the flooded area of the project will be 388 hectares by cross checking the Social and Environmental Assessment Report which states that the reservoir will have a surface area of approximately 388 ha at Full Supply Level *(5) The methodology is not applicable to the following:* *• Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;* *• Biomass fired power plants;* *• Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m2.* **a.** Yes **b.** Yes **c.** The PDD does not cite specific evidence that the project does not involve switching from fossil fuels to renewable energy sources at the site of the project activity, however this information was able to be validated on site. The PDD provides a calculation of the power density of the project however no reference is cited for the reservoir area (stated as 388ha) in the PDD **d.** ERM CVS has confirmed that the project does not involve switching from fossil fuels by means on the on-site inspection and review of the third party Economic and Financial Evaluation Study. There was no power plant at the site of the project activity prior to the development of the proposed CDM project and this was further confirmed by review of a list of all		

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			existing power plants in the country provided by the Electricity Transmission Company UETCL. ERM CVS has confirmed that the flooded area of the project will be 388 hectares by cross checking the Social and Environmental Assessment Report. *(6) In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance"* **a.** This criterion is not relevant for the project **b.** Not applicable **c.** Not applicable **d.** Not applicable. ERM CVS has confirmed it is a new project – see above. **See CL 8**		
6.5	Was there a request for clarification, revision or deviation made for the adopted methodology in relation to the proposed project activity? If so, were the correct procedures provided by the CDM EB followed?		No such request was made.	n/a	n/a
	Description of sources and gases included in the project boundary	PDD B.3			
6.6	Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity, in compliance with the requirements of the selected baseline methodology, and is this consistent with site observations and other documentation provided?	DR# 1, 7, 44, 80, 84	The PDD correctly describes the project boundary in accordance with the methodology, as: the Bujagali Project site; all grid-connected power plants; and all off-grid power plants installed as backup that are used during planned load shedding. The inclusion of off-grid power plants is in accordance with the provisions in the "Tool to calculate the emission factor for an electricity system". The description of the project boundary in the PDD is consistent with site observations and with the information provided by UETCL on the make-up of the electricity grid, and information provided by the Ugandan Revenue Authority URA on off-grid power plants.	OK	OK
6.7	**Baseline emissions:** Have all sources and GHGs required by the methodology been included within the project boundary? For each potential source:	DR# 1, 80	Yes. In accordance with the methodology, only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity are included.	OK	OK

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	○ Are source(s) and gases discussed by the PDD? ○ Is inclusion / exclusion justified? ○ Is explanation/ justification sufficient? ○ Is the inclusion/ exclusion consistent with the monitoring plan?		• Sources and gases are discussed in the PDD • Inclusion is justified and it is in line with the methodology • No further explanation is required • Inclusion is consistent with the provisions of the monitoring plan		
6.8	**Project emissions:** Have all sources and GHGs required by the methodology been included within the project boundary? For each potential source: ○ Are source(s) and gases discussed by the PDD? ○ Is inclusion / exclusion justified? ○ Is explanation/ justification sufficient? ○ Is the inclusion/ exclusion consistent with the monitoring plan?	DR# 1, 80	In accordance with the methodology, the only source of project emissions that is relevant for hydro projects is CH_4 emissions from the reservoir. However, this is not appropriately notated in table 3 of the PDD, and CH_4 emissions are incorrectly marked as 'excluded'. Given that the power density of the project is required to be monitored under the methodology, this source should not be excluded. • Sources and gases are not correctly discussed in the PDD • Exclusion of this source is not justified • Explanation is not sufficient • Exclusion is not consistent with provisions of the monitoring plan **See CAR 3**	CAR 3	OK
6.9	For large scale projects, is a diagram given to illustrate the project boundary, including all the key equipment, systems and flows of mass and energy, as well as the emissions sources and gases included in the project boundary?	DR# 1	No diagram of the project boundary is provided. **See CL 9**	CL 9	OK
	Description of how the baseline scenario is identified and description of the identified baseline scenario	PDD B.4			
6.10	Does the PDD identify the baseline, a scenario that represents the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed CDM project activity?	DR# 1, 80	Yes, the PDD correctly identifies the baseline, in accordance with the methodology, as "Electricity delivered to the grid by the Project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources".	OK	OK
6.11	a. Have the procedures/ steps to identify the most reasonable baseline scenario, as required by the methodology and applicable tools, been documented clearly in the PDD? Are all feasible and credible alternatives identified including but not limited to all the potential scenarios listed in the methodology? b. Are all considered alternatives assessed for consistency with (enforced) mandatory laws and regulations? c. Does the list of alternatives include the project activity undertaken without being registered as a CDM project? d. If alternatives are excluded:	DR# 80	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	n/a	n/a

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	▪ Is sufficient evidence/ justification provided to support every exclusion of alternatives? Is it reasonable? ▪ Is it shown that at least one credible and feasible alternative does not face a barrier? Is this reasonable? ▪ If the remaining alternatives include the project undertaken without CDM, is sufficient justification provided to demonstrate the validity of the barrier? Is sufficient justification provided to demonstrate that the CDM alleviates the identified barriers that prevent the project? How has this been verified? e. If Investment Analysis is used to exclude baseline alternatives, has it been correctly applied? Are assumptions and input values reasonable and sufficiently justified?				
6.12	Have all relevant national and/or sectoral policies and circumstances been taken into account? Are they listed in the PDD?	DR# 1, 32, 33, 34, 80	The selected baseline scenario is in accordance with relevant national and/or sectoral policies and circumstances. ERM CVS has reviewed the relevant policies and regulations pertinent to the electricity sector in Uganda, namely the Electricity Act (1999), The Government of Uganda Energy Policy (2002), and the Government of Uganda Renewable Energy Policy (2007). The policies and regulations do not contradict or undermine the selected baseline scenario. These policies are not listed in the PDD, however they are publicly available and ERM CVS has reviewed the documents. They do not give economic comparative advantages to large scale hydro electric projects. No specific incentives are provided, and electricity tariffs will be decided on a project-by-project basis. Given that they do not contradict the selected baseline scenario, and given that the baseline scenario is defined in the methodology, further discussion of these policies and regulations is not needed in the PDD.	OK	n/a
6.13	Does the PDD provide a verifiable description of the baseline scenario, including a description of the technology/ activities that would have been employed in the absence of the CDM project?	DR# 1, 7, 44	Yes, the PDD describes the baseline scenario and includes information on electricity grid connected and off-grid plants. This information has been cross checked against the information provided by UETCL on the make up of the electricity grid, and information provided by the Ugandan Revenue Authority URA on off-grid power plants.	OK	n/a
6.14	Does the identified baseline scenario reasonably represent what would occur in the absence of the proposed project activity?	DR# 1, 80	Yes, the identified baseline is considered realistic and is in line with the applied methodology.	OK	OK
7.	**Additionality**	PDD B.6			
	a) Prior consideration of the CDM	*PDD C.1.1*			

<table>
<tr><th></th><th>Checklist Question</th><th>Reference</th><th>Comment</th><th>Draft Conclusion OK/CAR/CL</th><th>Final Conclusion OK/ NOT OK</th></tr>
<tr><td>7.1</td><td>Is the start date defined in accordance with the “Glossary of CDM terms”? What evidence is provided to verify that this was the official start date? Is this considered reliable and reasonable?</td><td>DR# 1, 5, 18, 19, 20, 31, 48, 49, 50, 51, 52, 62, 63, 64, 87
SV
IV 3-7, 11-14</td><td>A project development time line is provided in table 4 of the PDD including key dates in the history of the development of the project. The start date is also stated in table 4 of the GSP PDD to be 24th December 2007, the date of full notice to proceed and construction contract with Salini, the equipment procurement and construction contractor. However the start date is also stated to be 21 December 2007 in the text of the PDD. Please refer to CL 10.
The ‘Glossary of CDM Terms’ defines the start date of the project activity as “the earliest date at which either the implementation or construction or real action of a project activity begins”, and “In light of the above definition, the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project”.
The proposed project has been planned and in the development process for a long time. In order to confirm whether the start date was correctly determined ERM CVS has validated the various steps taken in the development of the project, as described in table 4 of the PDD:
<table>
<tr><th>Date</th><th>Milestone</th><th>Validation</th></tr>
<tr><td>1994</td><td>The GOU and AES Nile Power Ltd (AESNP) first discuss the development of hydropower in Uganda</td><td>No reference has been provided</td></tr>
<tr><td>1997 – 2002</td><td>AESNP carries out numerous studies and preparatory activities to develop the project</td><td>ERM CVS has reviewed the AES EIA prepared by WS Atkins (March 2001), and the Resettlement and Community</td></tr>
</table></td><td>CAR 4 CL 10</td><td>OK</td></tr>
</table>

	Checklist Question	Reference	Comment			Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
					development action plan (March 2001)		
			September 2002	AESNP participates in the CDM procurement programme of the Dutch government to sell CERs from its project	ERM CVS has reviewed the Baseline report submitted to the CERUPT programme (Certified Emission Reduction Units Procurement Tender) in September 2002		
			2003	Withdrawal of AESNP from the project and GOU terminates the development of the project by AESNP	ERM CVS has reviewed the Social and Environmental Assessment Report prepared by R.J. Burnside International Ltd which confirms that AESNP withdrew from the project in 2003; and the Project Appraisal Document from the World Bank which confirms that AESNP withdrew from the project which led to a termination of the agreements by the GOU in September 2003		
			16 January 2004	GOU launches a Request for Proposals / Prospectus	ERM CVS has reviewed the request for proposals / prospectus issued by the GOU on 16 January 2004		
			23 February 2005	GOU issues a revised version of the Request for Proposals / Prospectus, the Proposal Evaluation	No reference has been provided		

	Checklist Question	Reference	Comment			Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
				Criteria, the draft Implementation Agreement and the draft Power Purchase Agreement			
			23 March 2005	GOU receives three proposals for the development of the Project	ERM CVS have reviewed a Memorandum from the Aga Khan Fund for Economic development (AKFED) formally giving final notification to submit a bid for the project, dated 22 March 2005. However evidence of the other two proposals has not been provided.		
			April 2005	GOU selects the consortium led by IPS(Kenya) (which included a commitment from Sithe Global) to start negotiations on development of the Project	ERM CVS has reviewed an extract of the Implementation Agreement between GOU and BEL dated December 13 2005. However evidence for the stated date of April 2005 has not yet been provided.		
			January 2006 – February 2007	Power Planning Associates carries out the Economic and Financial Evaluation Study by order of the International Finance Corporation	ERM CVS has reviewed the Economic and Financial Evaluation Study by Power Planning Associates (February 2007)		
			January 2006 – December 2006	R.J. Burnside International Limited carries out the Social and	ERM CVS has reviewed the Social and Environmental Assessment Report by		

	Checklist Question	Reference	Comment			Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
				Environmental Assessment	R.J. Burnside (December 2006)		
			April 2007 – December 2007	Project lenders and guarantors approve the financing package of the Project. Lenders and/or guarantors include the World Bank Group (IFC & MIGA), European Investment Bank, African Development Bank, Proparco, AFD, DEG, KfW and commercial banks	ERM CVS has reviewed an extract of the common terms agreement in relation to the financing of the project signed between BEL and the lenders dated 14 December 2007		
			25 May 2007	Implementation Agreement and Power Purchase Agreement signed between Bujagali Energy Limited and the GOU	ERM CVS has reviewed an extract of the Amended and restated implementation agreement signed between GOU and BEL dated 25 May 2007.		
			25 May 2007	Construction contract with Salini Hydro Ltd. Signed, and Initial ground activities began after a bridge loan issued from the GOU	No reference has been provided		
			21 December 2007	Amended and Restated Implementation Agreement and Power Purchase Agreement signed between Bujagali Energy Limited and Uganda Electricity Transmission	ERM CVS has reviewed an extract of the Amended and Restated Implementation Agreement signed between BEL and GOU dated 6 December 2007, and an extract of the		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK

	Company Limited, and financial closure achieved.	Amended and Restated PPA signed between BEL and GOU dated 6 December 2007. The date indicated in the PDD is not correct. Evidence of financial closure is not provided.
24 December 2007	Project Starting date. Full Notice to Proceed issued, and construction contract with Salini Hydro Ltd. and Salini Costruttori S.p.a. entering into force	Reference has not been provided

See CL 10
See CAR 4
By interviews with representatives of the project developer, construction company, and Government of Uganda, and by review of the request for proposals / prospectus issued by the GOU on 16 January 2004, which provides a comprehensive explanation of the development history of the project, ERM CVS determined that no project construction work was carried out by AESNP (who were involved in planning the project prior to 2003). Activities that AES did complete were pre-project planning and feasibility assessment, Environmental Impact Assessment, tendering and permitting with the Government of Uganda, and starting the development of the CDM aspects of the project. On-site activities were limited to acquisition of land and resettlement activities (the land subsequently passed to the ownership of the Government when AES withdrew), laying of temporary access roads or tracks to facilitate hydrological and geotechnical assessments, and putting up perimeter fences. Although the acquisition of the land by AES could potentially be considered as 'expenditures related to the implementation of the project activity', AES withdrew from the project in 2003 and the project ceased, and no further activity was undertaken on project implementation until 2007. This was further cross checked against the Social and Environmental

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			Assessment Report prepared by R.J. Burnside International Ltd and the Project Appraisal Document from the World Bank which both confirm the development history of the project. In the PDD, the start date is determined to be 24 December 2007. ERM CVS has validated that this date is correct and that the start date should not be earlier as follows: Bujagali Energy Limited (BEL) was formed in 2005 and the first implementation Agreement between BEL and the Government of Uganda (GoU) was signed in December 2005. This agreement did not commit BEL to build the project but confirmed the company as the preferred developer and agreed a series of contractual terms regarding the project between GoU and BEL. The first draft of the Power Purchase Agreement (PPA) was also signed in December 2005 between BEL and UETCL, but this also did not commit BEL to construct the project, since the project would require financing approval before going ahead. ERM CVS has reviewed extracts of the documents above and a Common terms Agreement with lenders which substantiates that the project could not gain financing until and unless equity funds were committed by the project developer. The signature of these agreements enabled BEL to seek investors for the project, but BEL was not committed (and indeed could not develop the project) until investors committed sufficient funds to build the project (financial closure). Construction contract: the project participants have stated that construction contract was signed between BEL and Salini Costruttori SpA ('Salini') on 25 May 2007 agreeing the terms and conditions under which Salini would construct the project. However the document has not yet been provided to ERM CVS – see CL 10 above. However, this did not commit BEL to go ahead with project construction until a formal notice to proceed was issued (in December 2007). This document has also not yet been provided to ERM CVS – see CL 10 above. The Government of Uganda decided in May 2007 to provide a bridging loan of approximately $75 million to finance initial construction work by Salini Costruttori SpA on site, which included mobilisation of equipment and materials, fencing, road construction, and ordering of temporary buildings to house site offices and housing. ERM CVS has confirmed the bridging loan by review of the Amedned and restated Implamentation Agreement signed between BEL and GOU on 6 December 2007. This action by GoU did not commit BEL to construct the		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			project since BEL still needed to secure full financing for the project and approval to proceed from investors, but the bridging loan from GOU did allow limited construction work to begin on site. Given that according to the Glossary of CDM terms the start date should be 'the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity' and the fact that prior to 24 December 2007 the project participant (BEL) had not committed to expenditures, the start date is considered justified. Financial closure: Financial closure was reached on 21 December 2007 with the signature of the Amended and Restated Implementation Agreement and the Power Purchase Agreement signed between Bujagali Energy Limited and Uganda Electricity Transmission Company Limited. The start date of the project activity is determined to be 3 days after the reaching of financial closure, on the date of the full notice to proceed to Salini. This is considered to be reasonable based on review of the documents concerned, and in line with the 'Glossary of CDM terms'. However a final conclusion can only be reached once the CARs and CLs cited above are closed out, including provision of the relevant evidence documents.		
7.2	Is it a new project activity (start date on or after August 2008) or an existing project?	DR# 1	It is an existing project with a start date before 02 August 2008.	OK	OK
7.3	**For a new project** which does not require a new methodology and has not published its PDD for stakeholder comments prior to the start date, then: a. Have the project proponents informed the DNA and/or UNFCCC secretariat in writing? How has this notification been verified? (i.e. confirmation from the DNA or UNFCCC) b. Was the notification made within 6 months of the project activity start date? c. Does the letter/ notification indicate the precise geographic location and provide a brief description of the proposed project? d. Have the project proponents informed the DNA and/ or UNFCCC secretariat of the progress of the project activity every subsequent two years after the initial notification?		Not applicable.	n/a	n/a

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
7.4	**For an existing project** which has a start date prior to the publication of the PDD for global stakeholder comments, has the project proponent provided the following: a. Evidence of 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? (e.g. Board minutes, notes etc) Is this sufficient? b. Reliable evidence that demonstrates real actions were taken to secure CDM status in parallel with the project's implementation? (e.g. contracts with consultants for CDM/PDD/methodology services, ERPAs, correspondence with CER buyers, DOEs, DNAs or the UNFCCC). Is this sufficient?	DR# 1, 10, 11, 12, 13, 14, 15, 16, 17, 18, 34, 64, 72, 73, 74, 75, 88, 89, 90	a. The PDD includes demonstration of prior consideration of the CDM from before the project start date. ERM CVS has validated the following documents cited in the GSP PDD: a. Extract of the Implementation Agreement between GoU and BEL (25 May 2007). Article 11 includes detailed agreement of the development of the project under the CDM including the feasibility of the emission reduction project, rights to credits, monitoring and reporting, the costs of developing the project as a CDM project, and the sharing of profits from the sale of credits. b. Extract of the Power Purchase Agreement between UETCL and BEL dated 25 May 2007 which states that the parties wish to generate marketable emission reduction credits. c. Extract of the Draft version of the PPA dated 20 August 2005, which includes a proposal on allocation of the CER revenues in section 15.18 [however the date of this document is incorrectly stated in the PDD as 31 July 2005]. d. Extract of the Presentation to the Investment Committee of Blackstone Group, the main investor and owner of Sythe Global, the largest Joint Venture partner in BEL, that is providing 2/3 of the equity investment for the project, dated April 16 2007. Sets out the economic attractiveness of the project as an investment including assessment of the Carbon Credit value. Blackstone committed approximately two thirds of the equity investment in the project and approval and commitment of funds by Blackstone was necessary before the project could go ahead. e. Extract of an investment memorandum submitted by Sithe Global to the investment committee of Blackstone Group dated 21 May 2007 which includes a statement that the project qualifies for the generation of carbon credits, and describes the agreement to allocate 40% of the carbon revenues to the project sponsors. ERM CVS has also reviewed the following additional documents that show CDM consideration from before the project start date: • Baseline Report submitted by AES to the CERUPT	CL 32, Minor Issue 1	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			programme in September 2002 • The Renewable Energy Policy for Uganda (GoU, 2007) which states that CDM financing will be sought for renewable energy investments b. The PDD includes a timeline of activities taken to secure CDM registration (table 5). ERM CVS has validated the following documents: • Proposal for development of a PDD for the project from Climate Focus dated 14 March 2008 • Consulting Services Agreement signed by Climate Focus on 18 June 2008 and signed by BEL on 08 July 2008 • 'CDM Development: Bujagali Hydropower Project. Phase 1 Report' prepared by Climate Focus dated 02 September 2008 which includes a detailed assessment of the eligibility of the project against the CDM requirements and the information that needs to be included in the PDD • Requests for validation proposals from Climate Focus to three DOEs dated 14 November 2008 • Request for validation proposal sent to ERM CVS dated 28 May 2009 • Covering letter for offer of validation services by a DOE dated 6 July 2009 [however the PDD states the first offer was received on 02 July 2009] • Project Information Sheet providing information needed for ERM CVS validation proposal completed by Climate Focus, 23 February 2010 • ERM CVS Validation proposal, 04 May 2010 • ERM CVS Validation Contract: signed, 29 June 2010 • Start of validation: PDD uploaded for GSP on 23 July 2010 Sufficient evidence has therefore been provided to demonstrate that real and continuing actions were taken to secure CDM status for the project activity. The project therefore complies with the requirements of the 'Guidelines on the demonstration and assessment of prior consideration of the CDM'. However evidence for the following events cited in the GSP PDD were not provided to ERM CVS: • 11 – 15 August 2008 Fact finding mission for PDD preparation		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			• 27 February 2009 First draft of PDD presented to project sponsors • January 2010 Further request for validation proposals **See CL 32** **See Minor issue 1**		
	b) Identification of alternatives (Additionality Tool)	*PDD B.5*			
7.5	Is the assessment of alternatives in compliance with the requirements of the methodology and the relevant tool(s) (e.g. the Tool for the demonstration and assessment of additionality)? Is the assessment consistent with section B.4?	DR# 81, 82	As per the VVM paragraph 105 and the additionality tool paragraph 4, no assessment of different baseline alternatives is required, since the baseline is specified by the methodology ACM0002 and according to the additionality tool only one credible and feasible alternative needs to be identified.	OK	OK
	c) Investment Analysis				
7.6	Has an investment analysis been used to demonstrate additionality? Is Investment analysis appropriate in this case to demonstrate the investment decision? (i.e. is financial attractiveness the key investment criteria?)		No	n/a	n/a
7.7	Has the project activity and investment decision been clearly defined/ framed? That is, has the CDM project activity been defined separately from the overarching project or facility and is the investment decision in this case clearly framed? (e.g. is the project to 'make cement' or is it to 'supply fuel to a cement factory'?)		Not applicable	n/a	n/a
7.8	Has the appropriate analysis Option been chosen? (as per the *Guidance on the Assessment of Investment Analysis*) • If **Option I** is chosen (simple cost analysis), is it demonstrated that the alternatives produce no economic benefits other than CDM income? • If **Option II** is chosen (investment comparison), does the proposed baseline scenario leave the PP no other choice than to make an investment to supply the same and (or substitute) products or services? • If **Option III** is chosen, is it appropriate in this case?		Not applicable	n/a	n/a
7.9	Is the most suitable financial indicator clearly identified (Project or Equity IRR, NPV, cost benefit ratio, or (levelised) unit cost)?		Not applicable	n/a	n/a
7.10	If **Option I** is chosen: Are the assumptions consistent for all alternatives assessed? If not, are the differences justified?		Not applicable	n/a	n/a
7.11	If **Option II** is chosen (investment comparison analysis): Are the assumptions for all alternatives compared consistent (including discount rates if applicable)?		Not applicable	n/a	n/a

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
7.12	If **Option III** is chosen: *Benchmark (BM) or Discount Rate (DR)* a. If an IRR indicator is used, is the choice of BM type consistent with the type of IRR calculated? (e.g. a Project IRR benchmark is appropriated for a WACC or Project IRR analysis; an Equity IRR benchmark is appropriate for an Equity IRR analysis) b. Is the BM or DR value justified with supporting evidence for its appropriateness? c. Is an appropriate BM or DR value chosen that is relevant for the sector (i.e. electricity generation, cement manufacture, yeast manufacture, hydropower etc)? d. Is an appropriate BM or DR value chosen that is relevant for the project activity (i.e. for this investor, country, risk of project, time of investment decision)? e. Is the chosen benchmark conservative and in line with other BM or DRs used in current or previous projects by the same investor? (including the BM or DR used in Feasibility Studies or other financial analyses of the project activity)		Not applicable	n/a	n/a
7.13	*Source of BM or DR* If an external BM or DR has been used: a. Is the BM or DR based on publicly available data sources? Have these data sources been validated? b. Are the assumptions underlying the referenced BM or DR also applicable to this project?		Not applicable	n/a	n/a
7.14	*Source of BM or DR* If an internal company BM or DR has been used: a. Is the project participant the only possible investor in the project? b. Is it sufficiently demonstrated that the internal benchmark has been used for similar projects with similar risk or would have been used for similar projects in the same sector and country/region? c. How has this been validated? d. Has a lower BM or DR been used in previous investment decisions by the project participant (in this project or similar others)? If so, are there verifiable circumstances that have led to a change in the BM or DR? e. Is the chosen BM or DR value appropriate in comparison with other comparable publicly available comparable BM and DRs?		Not applicable	n/a	n/a

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	f. Is the BM or DR consistent with others used in similar projects (and validated by CVS)?				
7.15	*Risk Premiums* a. Are risk premiums applied in the development of the BM or DR? b. If so, are they reasonable and justified? How has this been validated?		Not applicable	n/a	n/a
	Assumption and Input Values, calculations				
7.16	Are all references made in the investment analysis correctly referenced/ sourced? Have these sources been verified?		Not applicable	n/a	n/a
7.17	Have values from a **feasibility study report** (FSR) approved by national authorities been used? If so: a. Has the FSR been the basis of the decision to proceed with the investment in the project? How has this been verified? b. Are the values used in the PDD and associated annexes valid and consistent with the FSR? c. At the time of the investment decision, are the input values from the FSR valid and applicable (based on specific local and sectoral expertise and knowledge)?		Not applicable	n/a	n/a
7.18	*Technical assumptions* a. Are the technical assumptions reasonable? b. Are the assumptions adequately supported by evidence/ justification? c. What evidence has been provided to support critical technical assumptions? Have **technical assumptions** and input values been verified by: assessing them against the available evidence and expertise; cross-checking the parameters against 3rd party or publicly available sources; reviewing feasibility reports; reviewing information of other similar projects; reviewing project information presented in permit applications etc; referring to a sector or technical expert; etc?		Not applicable	n/a	n/a
7.19	*Financial Assumptions* a. Are the revenue and price financial assumptions reasonable? b. Are the assumed costs reasonable? Do they all accrue to the CDM project activity only (rather than to other parts of the facility)? c. Are all the assumed taxes applicable for the different alternatives and applicable for the whole assessment period?		Not applicable	n/a	n/a

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	d. Are the assumptions adequately supported by evidence/ justification? What evidence has been provided to support critical financial assumptions? Have the financial assumptions and input values been verified by checking them against feasibility studies, quotes, receipts, third-party forecasts, annual reports, and financial analyses (such as those presented to banks), etc?				
7.20	*Timing of assumptions* a. Are all assumed input values valid for the time of the investment decision? b. Are all capex costs valid at the time of the investment decision? Are there any sunk costs? c. Are all revenues and costs reasonable for the whole period as forecast? d. Are changes in costs or revenues scheduled or likely? Have such changes been incorporated and justified? e. Are the costs and revenues entered in the correct year when they will occur?		Not applicable	n/a	n/a
7.21	*Revenues* Are all benefits of all the assessed alternatives incorporated in the analysis? (e.g. including revenues from by-products, reduced costs etc; consult with sector expert)		Not applicable	n/a	n/a
7.22	*Costs* Are all costs of all the assessed alternatives incorporated in the analysis? (e.g. including permit and licence costs, transport costs etc; consult with sector expert)		Not applicable	n/a	n/a
7.23	Are there any policies, subsidies, incentives, grants, tax breaks etc that apply to any of the alternatives? Are these incorporated in the analysis? (refer to *Clarifications on the consideration of national and /or sectoral policies and circumstances in baseline scenarios*, currently located at http://cdm.unfccc.int/EB/022/eb22_repan3.pdf)		Not applicable	n/a	n/a
7.24	Is the assumed **period of assessment** appropriate? How has this been demonstrated? (i.e. based on economic lifetime of equipment/ assets or other dependent factors)		Not applicable	n/a	n/a
7.25	Is any **residual value** of the project activity assets included in the analysis? Are residual value assumptions reasonable and justified and consistent with local accounting rules, international best practice and industry experience?		Not applicable	n/a	n/a
	Calculations				
7.26	Has the project participant supplied unprotected and traceable		Not applicable	n/a	n/a

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	spreadsheet versions of all investment analysis?				
7.27	From the investment analysis provided, is it possible to reproduce the results?		Not applicable	n/a	n/a
7.28	Have the listed input values been consistently applied in all calculations?		Not applicable	n/a	n/a
7.29	Are the computations/ formula correct? (this includes the computations implicit in input values, such as technical calculations of the amount of energy demanded or sold etc)		Not applicable	n/a	n/a
7.30	*Depreciation* a. Are deprecation costs applied to depreciable assets only (not land)? b. Are the depreciation and major repair and maintenance costs consistent with the assessment period and the residual values? c. Are depreciation costs/ periods consistent with local accounting regulations? d. Are **depreciation** costs (and other non-cash items) related to the project activity excluded (not deducted) from net Cash Flow used for calculating the financial indicator (e.g. IRR, NPV)?		Not applicable	n/a	n/a
7.31	*Tax* a. Is the treatment of **taxation** consistent with the chosen benchmark or discount rate? (i.e. taxation should only be treated as an expense in the IRR/NPV calculation if the chosen BM or DR is intended for post-tax calculations? For post-tax BMs or DRs: b. Are interest costs included in the calculation of net taxable income and thus tax? c. Are interest costs calculated in accordance with the *Guidance on the Assessment of Investment Analysis* d. Are depreciation costs included in the calculation of net taxable income and thus tax?		Not applicable	n/a	n/a
7.32	*Interest costs* If a Project IRR has been used, are the costs of financing expenditures (i.e. loan repayments and interest) excluded from the calculation of Project IRR? (financing costs should not be deducted from Net Cash Flow) If an Equity IRR has been used, is the debt portion of the investment cost excluded as a cash outflow and the interest costs and principal repayments included as costs?		Not applicable	n/a	n/a
7.33	**Recommenced project:** If the implementation of the project ceased and then recommenced due to consideration of the		Not applicable	n/a	n/a

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	CDM, then: a. Are input values valid and applicable at the time of making the decision to recommence the project? b. Are capital costs incurred prior to the revised project activity start date input as the recoverable value of the assets (limited to the potential reuse/ resale of tangible assets)? c. How has the fair market value of the capital expenditures been calculated and validated? (e.g. by chartered specialists). Is this fair market value reasonable and justified?				
7.34	**Sensitivity analysis**: a. Are all variable and critical costs and revenues in the analysis included in the sensitivity analysis? b. Is the assessed range of variations reasonable in light of the reliability of the estimated input values and the likely range? c. If some variations create scenarios that change the conclusion/ result of the analysis, how likely/ probable are such scenarios (in the opinion of the DOE)? d. Is the sensitivity analysis possible to reproduce?		Not applicable	n/a	n/a
	d) Barrier Analysis	*PDD Step 3*			
7.35	Has a barrier analysis been used?		Yes	OK	OK
7.36	Is a complete list of credible, feasible and legally compliant alternatives identified?	DR# 1, 3, 21, 81, 82	As per the VVM paragraph 105 and the additionality tool paragraph 4, no assessment of different baseline alternatives is required, since the baseline is specified by the methodology ACM0002 and according to the additionality tool only one credible and feasible alternative needs to be identified. Several alternative scenarios are identified in section B.5 for the purpose of comparison in the barriers analysis. The alternatives were assessed in detail by the independent third party that conducted the Economic and Financial Evaluation Study, and the barriers listed in the PDD are found to be in line with those alternatives considered as possible alternatives in the study. Based on review of the third party study, the list comprises a complete list of credible, feasible and legally compliant alternatives, and no reasonable alternatives are excluded.	n/a	n/a
7.37	Is a complete list of barriers that prevent the alternatives and the proposed CDM project activity from occurring identified?	DR# 1	2 Barriers are identified in the GSP PDD: A barrier due to the financial position of the Government of Uganda;	OK	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			Investment barriers. The completeness of these barriers is assessed in more detail below.		
7.38	Do any such identified barriers have a clear and direct impact on the financial returns of the project activity? (these are not barriers and should be assessed in the investment analysis)	DR# 1, 21, 39, 85	According to the 'Guidelines for objective demonstration and assessment of barriers' (EB 50 annex 13), '*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*'. However, both barriers listed in the GSP PDD relate to the challenges and risks faced by implementing the project and cannot be clearly and directly mitigated by additional financial means and do not directly relate to the financial rate of return of the project. The barrier due to the financial position of the government of Uganda as described in the GSP PDD relates to the risk of default in the payments by the electricity transmission company, UETCL, a company owned by the GoU. The Multilateral Investment Guarantee Agency (MIGA) of the World Bank Group is providing $115 million in guarantee coverage for the Bujagali hydropower project. The guarantee is insuring against the risk of breach of contract (i.e. default) by UETCL. The insurance is for up to 20 years. The fact that MIGA is providing insurance illustrates the fact that the financial position of the GoU was a real barrier to the project developer and investors in the project, although the fact that insurance coverage was granted partially mitigates the risk of default and therefore partially mitigates the barrier due to the financial position of the GoU as a whole. However MIGA was only willing to provide coverage up to US $115 million, which is approximately one year of revenues from electricity sales. Therefore the guarantee only partially mitigates the risk to the project developer, and there remains a risk to the project developer that cannot be fully mitigated by insurance premiums, therefore the remaining risk cannot be incorporated into a cash-flow analysis. **See CL 11** The investment barrier as described in the GSP PDD relates to the overall investment conditions in Uganda, and in the power	CL 11	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			sector in the country in particular. The investment conditions described would have an impact on the willingness of investors to provide financing to the project activity, due to real or perceived risks associated with investment in the country, as demonstrated by the credit rating of the country and other sources demonstrating the investment conditions in Uganda reviewed by ERM CVS. It is difficult to monetise and quantify these real or perceived risks as additional costs, therefore the barrier is not considered to have a clear and direct impact on the financial returns of the project activity. Instead, the barrier affects the willingness of investors to commit funds to the project.		
7.39	Are the identified barriers real and substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics? How has the reliability and credibility of the sources and assumptions used been assessed?	DR# 1, 37, 40, 45, 51, 53, 65, 68,	The sources of data cited in the PDD to substantiate the barriers analysis include: • The Power Purchase Agreement (PPA) between UETCL and BEL • The Economic & Financial Evaluation Study prepared by a third party – Power Planning Associates energy & management consultants • Monthly Economic & Financial indicators Report of the Bank of Uganda, January 2009 • Complete Sovereign Rating History by Fitch Ratings • The World Bank 'Doing Business 2010' Report The documented evidence is all sourced from third party documents, and for the most part the documents are publicly available, with the exception of contracts such as the PPA and Guarantee Agreement. These contracts however are signed with authoritative and reliable third parties such as GoU and are therefore considered to be reliable. ERM CVS has confirmed the arrangements in the PPA and Guarantee agreement through interviews with officials from the Energy Ministry of the GOU and from the electricity transmission company UETCL in Kampala, and therefore the reviewed documents are confirmed as authentic and credible. However sufficient documentation/referencing is not given in the PDD to support all statements or assumptions made in the barrier analysis section. Therefore a conclusion on whether the identified barriers real and substantiated by independent sources of data can only be made once all the evidence/sources/justification for all statements and assumptions are provided. The Guarantee Agreement between GoU and BEL is cited in	CAR 5	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			the PDD but was not provided to ERM CVS. Please see **CAR 5**. In addition to the documents referenced in the GSP PDD and provided by the project participants, ERM CVS has undertaken its own research on the project in order to assess the claims made in the barrier analysis section. In addition to the documents cited above, ERM CVS has reviewed the following third party documents that it has sourced through its own research: • Multilateral Investment Guarantee Agency – project details page for the Bujagali Hydropower Project (website accessed 27 Aug 2010) • 2010 Index of Economic Freedom, published by the Wall Street Journal & the Heritage Foundation • ENABLE Project (Supported by the European Commission): Energy Sector Policy Overview Paper – Uganda • Investing in Uganda's Energy Sector, a paper by the Uganda Investment Authority • United Nations Conference on Trade And Development (UNCTAD) - Investment Policy Review: Uganda • US Department of State - 2009 Investment Climate Statement – Uganda • World Bank – Investment Climate Report, Uganda These independent third party reports are all publicly available and were reviewed to cross check and corroborate information provided in the PDD and evidence documents provided by the PPs		
7.40	For each barrier, is at least one of the following types of evidence provided that is relevant and substantiates the indentified barrier? (a) Relevant legislation, regulatory information or industry norms; (b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc; (c) Relevant statistical data from national or international statistics; (d) Documentation of relevant market data (e.g. market prices,	DR# 01, 5, 23, 51	Barrier due to the financial position of the Government of Uganda: Several documentary references are cited in the PDD in relation to this barrier, including the Economic and Financial evaluation study, the PPA, the Guarantee Agreement between GOU and BEL, and official statistics provided by the Bank of Uganda. The Monthly Economic and Financial indicators report for January 2009 provided by the Bank of Uganda satisfies type (c) 'relevant statistical data from national or international statistics' given that it provides relevant statistical data on a national basis concerning the financial position of the government of Uganda.	CAR 5	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	tariffs, rules); (e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others.		Investment barrier: Insufficient evidence is cited in the PDD to support the claims made in relation to this barrier. Please refer to **CAR 5**.		
7.41	Is the proposed project taking place in a least developed country (LDC)? In this case it is sufficient to transparently describe the relevant barriers, as less stringency is needed with regards to data availability in the actual demonstration of barriers. Projects in LDCs are not bound by the provisions in the 'Guidelines for objective demonstration and assessment of barriers' (questions 7.42 to 7.45) and may use other approaches that are more adapted to the local circumstances.	DR# 85, 91	Yes, Uganda is classified as a least developed country (LDC) according to the list published by the UN Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island States (UN-OHRLLS). Therefore whilst assessing the barriers analysis ERM CVS has taken account of the provisions of the 'Guidelines for objective demonstration and assessment of barriers' but has noted that the project is not bound by these provisions and that other approaches may be followed.	OK	OK
7.42	If demonstrating barriers related to the lack of access to capital, technologies and skilled labour, do the project proponents provide information on the nature of the companies and entities involved in the financing and implementation of the project in accordance with guideline 4 of the 'Guidelines for objective demonstration and assessment of barriers'? How has this information been validated? Does the information on the nature of the companies/entities involved lend credibility to the claimed barriers relating to lack of access to capital, technologies or skilled labour?	DR# 1, 42, 43, 54, 55, 56, 59, 60, 61, 92, 93, 94, 95, 96, 97,	The PDD claims an investment barrier due to the general difficulties of investing in Uganda faced by private sector investors, due to the fact that other projects have only been financed with international grants and multi-lateral lender loans to the GOU, and because the project is a capital-intensive long payback period project compared to the short term less capital intensive power sector alternatives. The PDD does not specifically argue that the project developers did not have access to capital, however it argues that assigning such capital to a project of this nature given the investment conditions in the power sector in the host country was very challenging and required the addition of carbon revenues. In order to assess the context for the barriers analysis further information has been reviewed by ERM CVS on the nature of the companies involved in developing the project. The Bujagali Hydropower Project is sponsored by Bujagali Energy Limited, a project-specific company owned by Industrial Promotion Services (Kenya) Limited ('IPS Kenya') and SG Bujagali Holdings Ltd, an affiliate of Sithe Global Power, LLC (USA) ('Sithe Global'). This information should include the nature of each company, its organisational structure and ownership, and relevant financial information. IPS Kenya: IPS Kenya is a private industrial development company based in Kenya, established in 1963. IPS Kenya is one of a group of more than 50 IPS companies set up by the Aga Khan Fund for Economic Development (AKFED) to provide venture capital, technical assistance and management support to encourage and expand private enterprise in	OK	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			countries of sub-Saharan Africa and South Asia. IPS Kenya has activities in the energy sector, food and agro processing, textiles, printing and packaging, pharmaceuticals, and leather goods. ERM CVS has reviewed the publicly available websites and brochures of AKFED to confirm this. IPS Kenya is 50 percent owned by the Aga Khan Fund for Economic Development (AKFED), 15 percent by the International Finance Corporation (IFC), and 14.5 percent by the state-owned German Development Corporation, DEG. ERM CVS has reviewed a signed statement from IPS Kenya of its shareholders and a press release from the IFC confirming their shareholdings. In addition to participating in the Bujagali Hydropower project, IPS also has experience of similar power sector investments including the 74MW Kipevu II Power Plant in Kenya and the 288MW Azito Power Plant in Ivory Coast. ERM CVS has reviewed the audited financial accounts of IPS Kenya as stated in the annual reports for 2005 and 2006, which show that the company made a profit of KSH 465 million in 2005 and KSH 709 million in 2006 (approximately US $5.8m and $8.8m respectively). The company held reserves of share capital of approximately KSH 849m in 2006 (approx $10.5m). The controlling stake (50%) in IPS Kenya is held by AKFED. ERM CVS has reviewed a list of shareholders in IPS Kenya and a signed statement from IPS Kenya of its shareholders and their holdings. AKFED is the umbrella entity for the economic development arm of the Aga Khan Development Network, and was incorporated in 1984 and is registered in Switzerland. 100% of the capital of AKFED is controlled by his Highness the Aga Khan. The AKDN works in over 25 countries around the world, employing around 60,000 people. The AKDN's annual budget for non-profit development activities in 2008 was approximately US$ 450 million. The project companies of the Aga Khan Fund for Economic Development generate annual revenues of US$ 1.5 billion, and all surpluses are reinvested in further development activities. Sithe Global: Sithe Global is an international development company engaged in the development, construction, acquisition and operation of electric generation facilities around the world. Sithe Global was founded in 2004 by the investment firm Reservoir Capital and is incorporated in the USA. Sithe Global is 80% owned by the Blackstone Group and 20% by		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			Reservoir Capital. Blackstone Group is a leading global alternative asset manager and provider of financial advisory services listed on the New York Stock Exchange with total assets under management of $113.5 billion as of March 31, 2008. Blackstone is an experienced and active investor in the energy sector. Reservoir Capital is an investment company specialising in investment opportunities 'found in out of favor areas experiencing fundamental change and/or scarcity of capital' and has significant experience in energy sector investments. ERM CVS has validated this information by reviewing published information on the organisations' websites, reviewing the annual reports of IPS Kenya, and by reviewing written statements from AKFED. The information reviewed suggests that the project developer organisations are experienced in developing power sector projects in developing countries and are well capitalised, with access to international capital investment sources and development finance. However the information also confirms that the organisations, particularly Sithe Global, require strong returns on investment and make investment decisions subject to a full assessment of the risks and barriers involved. Therefore whilst lack of access to capital and technologies/skills were not claimed as barriers in the PDD, the information reviewed does not contradict the claims made in the PDD that the project is not an attractive investment opportunity in the absence of CER revenues due to the general difficulties of investing in Uganda faced by private sector investors, due to the fact that other projects have only been financed with international grants and multi-lateral lender loans to the GOU, and because the project is a capital-intensive long payback period project compared to the short term less capital intensive power sector alternatives. However the information reviewed, in itself, does not constitute evidence of a specific barrier either.		
7.43	Has the PP demonstrated, for each of the barriers, that in similar circumstances (in similar industries/sectors, in companies of similar size and ownership structure, in similar projects) the barriers actually prevented the implementation of other project(s)?	DR# 1	Basic details of the previous attempt to develop the Bujagali project are described in the PDD, however there is not sufficient information to fully evaluate whether this substantiates the identified barriers. Furthermore ERM CVS is aware of other power sector projects in the host country that	CL 12	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	Note that this approach is not mandatory and that other approaches to enhance objectivity of barrier analysis may also be pursued. (Guideline 3 of the 'Guidelines for objective demonstration and assessment of barriers')		have not gone ahead. Information on other similar investments that may have been prevented by the cited barriers is not mentioned. **See CL 12**		
7.44	If barriers related to increased risks of damage (i.e. that the equipment is damaged due to technological barriers, lack of know-how etc.) are claimed, have these been quantified by the calculation of probability of loss and loss expenses, and can the underlying data and assumptions can be objectively and transparently justified? Note: This quantitative approach to barriers is an option in case sufficient data is available, as a limited number of projects may have the data to follow this approach (Guideline 5 of the 'Guidelines for objective demonstration and assessment of barriers').		Not applicable, since barriers related to increased risks of damage are not claimed.	n/a	n/a
7.45	If PPs claim investment barriers, does the PDD demonstrate that the financing of the project was assured only due to the benefits of the CDM? Is it demonstrated that the loan approval (or other significant financing decision(s)) by the lender takes explicitly the CDM registration into account? (Guideline 6 of the 'Guidelines for objective demonstration and assessment of barriers').	DR# 1, 18, 50, 51, 62, 63, 64, 69, 70, 72, 73, 74, 75, 85	The PDD claims investment barriers, due to the difficulties of investing in Uganda faced by private sector investors, due to the fact that other projects have only been financed with international grants and multi-lateral lender loans to the GOU, and because the project is a capital-intensive long payback period project compared to the short term less capital intensive power sector alternatives. The PDD does not demonstrate that the financing of the project was assured only due to the benefits of the CDM. However, the project participants have demonstrated that CDM revenues were mainstreamed into project planning and development from a very early stage – indeed before the project developer BEL was even formed. ERM CVS has reviewed evidence of early serious consideration and accounting of CER revenues including the Baseline Report submitted by AESNP to the CERUPT programme in September 2002. ERM CVS has also reviewed extracts of various drafts of the Implementation agreement and PPA with GoU which include detailed consideration of carbon credit revenues (see section 7.4 of the validation protocol). Evidence is not available that the loan approval or loan financing agreements for the project explicitly take CDM into consideration, however ERM CVS has validated that CER revenues were part of the decision by the equity investors, Blackstone Group, to invest in the project (Blackstone Group are investing approximately 2/3 of the equity in the project): ERM CVS has reviewed: • an extract of the Presentation to the Investment	CL 13	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			Committee of Blackstone Group, dated April 16 2007, which sets out the economic attractiveness of the project as an investment including assessment of the Carbon Credit value; • an extract of a key investment memo submitted to the investment committee of Blackstone Group dated 21 May 2007 which includes mention of carbon credits In summary, CER revenues were an important consideration in the decision of the equity financers to contribute funds, which was itself a precondition of the loan agreements. The project could not have gone ahead without commitment of equity funding by the project developer companies, and therefore it is clear that CER revenues were an important factor in the ability of the project to secure financing. **Please see CL 13** Although the PP has not demonstrated that 'the financing of the project was assured *only* due to the benefits of the CDM', Guideline 7 of the 'Guidelines for objective demonstration and assessment of barriers' stipulates that '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'.		
7.46	Based on the evidence reviewed, and conservative interpretations of this evidence, can it be confirmed that the identified barriers are real?		Further evidence is required – please see CARs and CLs above.	CL 11, 12, 13 CAR 5	OK
7.47	Based on the evidence reviewed, and conservative interpretations of this evidence, can it be confirmed that the identified barriers actually prevent the implementation of the proposed CDM project activity by the project participant or other potential project participants? How has this been validated?		Further evidence is required – please see CARs and CLs above.	CL 11, 12, 13 CAR 5	OK
7.48	Is at least one of the alternatives remaining (i.e. is not prevented by the barriers)? How has this been validated?	DR# 1, 7, 21, 45, 53	The identified barriers do not prevent the implementation of the baseline alternative, i.e. that 'electricity delivered to the grid would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources', in other words the continuation of the current situation. In Uganda, the current grid is composed mainly of two hydroelectric plants, Naalubale (Owen Falls) and Kiira (Owen Falls Extension), which are existing plants and therefore do not face investment barriers, and by diesel or oil fuelled generators typically between 10 and 50 MW in capacity that	OK	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			are containerised, portable, and operated on short-term PPAs typically of 3-5 years (ERM CVS has reviewed information on the grid make up from UETCL). These generators are less capital intensive, however face higher running costs and are therefore more expensive in the long term due to the price of imported fuel. These plants do not face the same investment barriers or barriers due to the financial position of the GOU because they are smaller investments, they have shorter payback periods due to the lower upfront investment costs and short term PPAs with relatively high electricity purchase prices, and because they are portable and can be moved to another country, thus mitigating any risks to the owners of the plants associated with possible default on payments by the GOU. The fact that several such plants are operating in Uganda supports the claim that these plants are not prevented by any barriers. ERM CVS has reviewed key studies on the energy sector in Uganda to confirm this including: • ENABLE Project (Supported by the European Commission): Energy Sector Policy Overview Paper – Uganda • Investing in Uganda's Energy Sector, a paper by the Uganda Investment Authority And has also reviewed the third party Economic and Financial Evaluation Study for the project which provides a very detailed discussion of the Ugandan electricity sector and possible alternatives to the project activity for electricity generation in Uganda.		
7.49	Is it clearly explained how approval of the project in the CDM would enable the proposed project activity to surmount the barrier, in an objective way? Is the rationale reasonable and justified with transparent and documented evidence, and conservative interpretations of this evidence?	DR# 1, 7, 21, 45, 53	The PDD describes how CDM revenues will be shared between the project developer and the GoU, increasing the attractiveness of the project to investors and also directly mitigating the risks associated with the financial position of the government of Uganda due to the fact that a secure revenue stream in Euros is obtained which mitigates currency fluctuation risks and the risks of default on the part of the GoU. The PDD provides a comparison between the size of the CDM revenues from the project and the financial commitments of the GoU to buy electricity from the project, which helps to demonstrate in an objective way the impact of CDM revenues, and the PDD also describes how CERs were a critical component in gaining equity financing for the project therefore overcoming the investment barrier. ERM CVS has confirmed this information by reviewing the third party Economic and	CL 33	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			financial evaluation study, as well as consulting other independent reports into Uganda's energy sector: • ENABLE Project (Supported by the European Commission): Energy Sector Policy Overview Paper – Uganda • Investing in Uganda's Energy Sector, a paper by the Uganda Investment Authority However the PDD should further justify how the CDM helps to overcome all the aspects of the barriers cited in the PDD. Please refer to **CL 33**.		
7.50	Overall, is the Barrier Analysis presented credible and compliant with the applicable Tools?		To be confirmed based on the resolution of the issues identified above.	CL 11, 12, 13, 33 CAR 5	OK
	e) Common Practice Analysis	*PDD Step 4*			
7.51	Is the proposed project activity a 'first of its kind'? Has sufficient evidence been provided to validate this claim?	DR# 1	The project is not claimed to be the first of its kind.	OK	OK
7.52	Has common practice analysis been undertaken?	DR# 1	Yes, a common practice analysis was undertaken as described in the PDD.	OK	OK
7.53	Is the geographical scope of the common practice analysis appropriate for the assessment related to the project activity's technology or industry type?	DR# 1	The geographical scope of the analysis is limited to the host country. This is considered reasonable given that the entire host country is included. Neighbouring countries do not share the same regulatory framework with respect to the power sector and have different socio-economic conditions and different investment climates therefore it is considered reasonable to limit the geographical scope to the host country. Although the geographical scope of the analysis is the host country, this is not stated explicitly in the PDD. **Minor Issue 2**	Minor Issue 2	OK
7.54	Have all comparable projects been included in the common practice analysis? How was this assessed (by the DOE)? If some projects have been excluded as non-comparable, is the exclusion reasonable and justified?	DR# 1, 7, 34	Two other large hydro power plants existing in Uganda are mentioned in the PDD: Naalubale (Owen Falls) (180MW) and Kiira (Owen Falls Extension) (200MW). ERM CVS has confirmed, by means of its own research, that no other large scale hydro projects exist, apart from these two mentioned plants, and that the next largest operational hydropower plant in the host country is the 10.5MW Mobuku III project in Kasese District. This was confirmed based on Data provided by the electricity transmission company UETCL, and by review of the GOU Renewable Energy Policy for Uganda (2007) which provides a list of all hydro sites in Uganda, both active and planned, from micro hydro to the largest power stations. The PDD only considers other 'large hydropower plants',	CL 14	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			however no definition of this is given in the document. **Please see CL 14**		
7.55	Have similar and operational projects other than CDM project activities been undertaken in the region?	DR# 1, 7, 34	Yes, two other plants are operational: see above.	OK	OK
7.56	Are these widely observed and commonly carried out? If so: a. How have the essential distinctions with the proposed CDM project activity been assessed? b. Are such distinctions justified with sufficient evidence? c. If inaccessibility of data is the reason why some projects have not been included in the analysis, is justification of this claim provided?	DR# 1, 7, 34	Relative to the estimated potential for large hydropower development in the host country (2,000 MW – from the GOU Renewable Energy Policy for Uganda, 2007) the current 380 MW installed capacity is not considered to represent a technology that 'widely observed and carried out' in the host country. Nevertheless, two similar projects have been built in the past and therefore the reasons why these previous projects are considered to have essential distinctions with the proposed project activity have been assessed by ERM CVS. The PDD states that the 2 projects were publicly financed through grants and loans by the World Bank to the GOU, and that no private investment was involved. However no evidence is cited to support this information. **Please see CL 15**	CL 15	OK
7.57	Overall, is the proposed CDM project activity considered common practice?		To be confirmed based on the resolution of the CLs raised above	TBC	OK
8.	**Emissions Reductions**	PDD B.6			
	Explanation of methodological choices				
8.1	Is it explained how the procedures provided in the Methodology and applicable Tools are applied by the proposed project activity? *(i.e. Are the required steps clearly followed?)*	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	The PDD only states the procedures applicable to calculate the emission factor applicable for project activity according to the "Tool to calculate the emission factor for an electricity system" (Version 2). However, PP has omitted the description about procedures applicable for project emissions, baseline emissions and emission reductions calculation **CAR 6**.	CAR 6	OK
	Project emissions:				
8.2	Is every choice of options for calculating **project emissions** offered by the methodology correctly justified? Is this justification in line with the situation as evidenced by site visits, local knowledge and supporting documentation?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Project emissions are not described in the PDD – see **CAR 6**	CAR 6	OK
8.3	Are the formulae required for the determination of **project emissions** correctly presented, enabling a complete identification of parameters to be used and / or monitored?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Project emissions are not described in the PDD – see **CAR 6**	CAR 6	OK
	Baseline emissions:				

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
8.4	Is every choice of options for calculating **baseline emissions** offered by the methodology correctly justified? Is this justification in line with the baseline scenario?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Baseline emissions only include CO_2 emissions from electricity generation in fossil fuel fired grid-connected power plants and small off-grid generators that could be displaced due to the project activity. However, no clear explanation about this baseline option has been included in the PDD – refer to **CAR 6** and **CL 1** The electricity emission factor calculation is a combination of existing grid-connected power plants and small off-grid fossil-fuels generators in use during the load shedding. The calculation is in line with the choice of baseline scenario and with the provisions of the methodology.	CAR 6 CL 1	OK
8.5	Are the formulae required for the determination of **baseline emissions** correctly presented, enabling a complete identification of parameters to be used and / or monitored?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	All formulae and parameters required for the determination of the electricity emission factor are presented as identified by the "Tool to calculate the emission factor for an electricity system" Version 02, namely: Step 1: The chosen electricity system is the Uganda national electricity grid managed by Uganda Electricity Transmission Company Limited (UETCL). (1). Discrepancies were noted between the information provided in Figure 6 and Table 7 in the PDD (e.g. Lugogo stated as 1000MW in Figure 6 but as 50MW in Table 7, the locations of the power plants were not recorded on the map, and the power plants on the map were not recorded in the PDD) – refer to **CL 16** Step 2: Option II was chosen to include both grid and off-grid power plants, as a considerable amount of electricity is produced by small diesel generators which mainly operate during load-shedding intervals. The total capacity of off-grid generators makes up approximately 30% of the total UETCL capacity (592MW in 2009). The existing data for off-grid diesel generators (with capacity ranging between 100kW and 5,000kW) was reportedly on "direct use on a plant-by-plant basis" The procedures related to off-grid power generation (given in Annex 2 of the Tool) were followed to calculate the OM, with the exception of the following: (2). No justification/real demonstration was provided to prove that off-grid power generators are not connected to the grid and or that the generators are kept in stand-by mode and only supply power when the grid fails. Evidence is required to substantiate why the definition of "off-grid	CL 16-24 CAR 7-9	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			power plant" can be applied – refer to **CL 17** (3). Insufficient referencing is provided in the PDD for the off-grid generators listed in the Excel spreadsheet (*"9_Baseline_calculations_-ver_3.9")*. A comprehensive list of the off-grid generators should be included in Annex 3 in the PDD (and a map depicting their general location should be provided – refer to **CL 18**. (4). A clear explanation is required why all off-grid power generators are diesel based and no other fossil or non-fossil fuels are used. The guidance of Annex 2 of the Tools stated that "no systematic bias should be introduced" – refer to **CL 19**. (5). The option "*Direct use of data on a plant-by-plant basis*" was selected, but the parameters $GRID_p$ and $SWITCH_p$ were not justified individually and the parameters $OMC_{p,y}$ and $TEL_{p,y}$ were not included for each generator – refer to **CL 20** (6). The historical data series provide in the Excel file *"9_Baseline_calculations_-ver_3.9"* does not fulfil the tool's requirements for ex-ante calculation for off-grid power generators, namely *"for off-grid power plants, use a single calendar year within the 5 most recent calendar years prior to the time of submission of the CDM-PDD for validation*". Generators with incomplete data series should be excluded – refer to **CAR 7** (7). The sector classification "business" is not valid (Step 1.3 Annex 2), and the sector was not defined clearly and unambiguously – refer to **CL 21** (8). The exclusion procedure applied for off-grid plants (Step 2 of Annex 2) is not credible as no calculation or supporting data/evidence were provided to demonstrate that $OMC_{p,y} > TEL_{p,y}$. The additional data/parameters for each power generator were not provided and provide reasons/motivations for exclusion of some power generators were not given – refer to **CL 22** (9). Evidence of the procedure applied for daily load shedding was not available in the PDD. The data set provided in the attached spreadsheet was incomplete as no data from September 2008 was provided – refer to **CL 23** Step 3: The Simple Adjusted OM was chosen with an ex-ante data vintage calculation, which is line with the guidelines of the		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			"Tool for the calculation of the Grid Emission Factor". However, the historical data for 2009 does not fulfil the data requirements, as the data for November and December are not based on real operating records and are estimated based on an average for the year as a whole. In addition no data was available for the off-grid power generators for 2009. Assumptions and average data are not in compliance with the requirements of the tool. If the data is not available a procedure to collect or infer the data to the entire electricity system should be proposed for consideration to define the appropriate procedure applicable (i.e. request for deviation or clarification or revision). Furthermore, the original source documents were not available from the UETCL for 6 months in 2008 (i.e. June 2008, August – December 2008) and 12 months in 2009 – refer to **CAR 8** Step 4: The OM was calculated based on average efficiency and electricity generation of grid-connected and off-grid power plants. However the following aspects need to be addressed: (11). Hourly electricity generation data was used to calculate the Lambda curves (LD Curve 2005 – 2008) but no third party evidence (i.e. source documents) were provided to support the data used. – refer to **CL 24** (12). The data and calculation of the Lambda for the year 2009 were not included in the excel file, but it was determined in the spreadsheet (*Inputs&Outputs* worksheet) that the 2009 lambda is equal to the 2008 Lambda. Evidence is required to support this – refer to **CAR 9** The calculation procedure has followed the guidelines from the methodology and tools but the procedure should be checked again once the above CARs and CLs have been resolved. Step 5: The option of the set of five power units that were built most recently was selected. Step 6: The BM calculation was determined as per the guidance in Step 4(a) for the Simple OM opinion A1. Step 7: The formulae for CM calculation have been presented correctly according to the tool.		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			The final validation of OM and CM is pending on the resolution of the CARs and CLs identified above.		
8.6	Are the applicable Tools and methods to calculate parameters correctly applied?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Yes, according to the Excel file *"9_Baseline_calculations_-ver_3.9",* tools and methods are according to the "*Tool to calculate the emission factor for an electricity system* Ver. 2"	Ok	OK
	Leakage:				
8.7	Are all potential sources of leakage correctly identified in accordance with the applied Methodology?	DR#1, 80	According to ACM0002 '*no leakage emissions are considered*'	OK	OK
8.8	Are the formulae required for the determination of leakage emissions correctly presented, enabling a complete identification of parameters to be used and / or monitored?	DR#1, 80	Not applicable	n/a	n/a
8.9	Are the applicable Tools and methods for calculating leakage correctly applied?	DR#1, 80	Not applicable	n/a	n/a
	Emissions Reductions:				
8.10	Are the parameters and equations used to calculate emission reductions applicable? Are the applicable parameters and equations correctly applied?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Yes, according to the file "*9_Baseline_calculations_-ver_3.9*", all parameters and equations reductions are correct.	OK	OK
	Data and Parameters	PDD B.6.2			
8.11	Is the list of parameters presented in chapter B.6.2 of the PDD considered to be complete with regard to the requirements of the applied methodology and any applicable tools?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	The list of parameters presented in chapter B.6.2 of the PDD, is not complete according to the requirements of the applied methodology and applicable tool(s), as the parameters (CAP_p, $FUEL_p$, $GRID_p$, $SWITCH_p$, $FC_{p,i,y}$, $NCV_{p,i,y}$, $OMC_{p,y}$, $Tel_{p,y}$) were not included in Section B.6.2. The estimation of installed capacity and operating hours was also not carried out according to the guidance of Tool – refer to **CAR 10**	CAR 10	OK
8.12	What evidence is available to validate the accuracy and appropriateness of assumptions, data and parameters used in the calculation of **project emissions**? Are the values used considered reasonable in the context of the proposed CDM project activity?		No project emissions need to be accounted for hydro projects applying methodology ACM0002 that have a power density greater than 10w/m2.	OK	OK
8.13	For each parameter: a. Title in line with Methodology? b. Data unit correctly expressed? c. Appropriate description? d. Source clearly referenced? (and appropriate?) e. Correct value provided?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	The PDD does not document transparently in section B.6.2 in the PDD that the emission factors for the simple adjusted OM and the BM will be calculated *ex ante*. <u>Data and Parameters not monitored:</u> Approved consolidated baseline and monitoring methodology	CAR 8, 9, 11, 12, 14, 15 CL 18, 24, 25, 26	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	f. Has this value been verified? g. Choice of data correctly justified? h. Measurement method correctly described?		ACM0002. "Consolidated baseline methodology for grid-connected electricity generation from renewable resources". Version 11: GWP_{CH4} / $EG_{historical}$ / ó$_{historical}$ / $DATE_{BaselineRetrofit}$ / $DATE_{hist}$ / a - h These parameters are not required in this PDD as this is a new hydropower plant (with a power density greater than 10W/m^2) and not a retrofit or capacity increase of an existing power plant (i.e. no existing renewable energy plants exist on the site). Ok EF_{Res} a This parameter is not reflected in the PDD, as the power density of the project is greater than 10W/m^2 (i.e. '*the reservoir area is 388ha, plant capacity is 250MW, resulting in a power density of 64.4 W/m^2*'), therefore the project emissions from water reservoir is zero ($PE_{HP,y}$=0). All parameters relevant to hydropower projects should be reflected in the PDD – **CAR 12** **CAR 12** b c d e f g h CAP_{BL} a This is a new hydropower project, with no previous reservoir, but the monitoring parameter is not reflected in the PDD, as required by ACM0002 – **CAR 12**. **CAR 12**. b c d e f g		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			h A_{BL} a This is a new hydropower project, with no previous reservoir, but the monitoring parameter is not reflected in the PDD as required by ACM0002 – **CAR 12**. **CAR 12** b c d e f g h A_{PJ} a The title is in line with ACM0002, however this parameter was recorded erroneously under Section B.6.2 should be reflected under Section B.7.1 as **Data and parameters monitored** (in accordance with ACM0002) – **CAR 12** **CAR 12** b The data unit is correctly reflected as m^2. Ok c An appropriate description (as reflected in ACM0002) is provided. Ok d The Source of data is given as "Bujagali Hydropower Project Social and Environmental Assessment Report, by Burnside International Limited, December 2006. e The value provided is correct Ok f DOE viewed the SEA report Ok g The '*justification of the choice of data or description of measurement methods and procedures actually applied'* is generic as reflected in ACM0002, and project specific justification/measurements were not included in the PDD – refer to **CL 26** **CL 26** **CL 26** Provide clarity on the measurement method applied to determine the area of the new reservoir.		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			h Clarity is required on the measurement method applied to determine the area of the new reservoir – refer to **CL 26** **CL 26** Methodological Tool (Version 02). "Tool to calculate the emission factor for an electricity system": $EG_{m,y}$, EG_y, $EG_{k,y}$, $EG_{n,h}$ a Title is in line with the Tool, however the parameter $EG_{n,h}$ is not applicable to this project activity. Furthermore, the data will be monitored throughout the crediting period, and the Tool requires this to be reflected under the monitoring methodology, and therefore it should be reflected in section B.7.1 in the PDD. **CAR 12** b The data unit is correctly expressed in Section B.6.2 as MWh, but the data in the spreadsheets is recorded in kWh, and is reflected as GWh in Table 7 in the PDD. Consistency is required throughout the PDD and between documents – refer to **CAR 11** **CAR 11** c The description (as reflected in the tool) is provided, however, a project specific description should be provided (i.e. the reference to power plant/unit *n* is not relevant) – refer to **CAR 11** **CAR 11** d The source of data is listed as the Ugandan Electricity Transmission Company Limited (UETCL), which is correct for grid connected power plants. However, the data for off-grid power plants (treated as other power units *m*) was obtained from the Ugandan Revenue Authority – refer to **CAR 11** and **CL 18** **CAR 11** **CL 18** e The values for the grid connected power plants/units were not provided in Section B.6.2 or Annex 3 of the PDD, but are included within Table 7 in the PDD, but the values for off-grid power plants are not included in the PDD. The actual values, including detailed information of the time series of data used must be provided in **CAR 11**		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			Annex 3 (for power plants/units *k* and *m*) – refer to **CAR 11** f The values will be checked against data provided by UETCL and URA. TBC g The choice of data for grid-connected power plants/units is correctly justified (as the UETCL is responsible for power transmission in Uganda), however, the data for grid connected small diesel generators was obtained from the Ugandan Revenue Authority (as a tax incentive is available for small power generators) – refer to **CAR 11** **CAR 11** h The *justification for the choice of data or description of measurement method and procedures actually applied* in the PDD is limited to calculation of the BM emission factor (i.e. the use of data from the five most recently built power units). But the description of the measurement method did not include the option chosen for the selection of the vintage of data to be used (i.e. calculated *ex ante* or *ex post*) as required by the Tool – refer to **CAR 11** **CAR 11** **$EG_{j.h.y}$ / $EG_{k,h,y}$** a - h The title is not in line with the ACM0002 or the Tool, as the 'Net electricity generated and delivered to the grid by low-cost/must run (k) and non-low-cost/must run (j) power plants' should both be reflected under $EG_{k,y}$ and $EG_{m,y}$ above, and the explanation for the calculation of the emission factor for the simple adjusted OM should be included in the previous table and in Annex 3 – **CAR 12** **CAR 12** **Plant names of the set of plants *m* representing the build margin** a - h The title is not in line with the ACM0002 or the Tool, as this information should be reflected transparently in Annex 3 in accordance with the CDM-EB's GUIDELINES FOR COMPLETING THE **CAR 12**		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			PROJECT DESIGN DOCUMENT – refer to **CAR 12** **Energy companies representing the operating margin.** a - h The title is not in line with the ACM0002 of the Tool, as this information should be reflected transparently in Annex 3 in accordance with the CDM-EB's GUIDELINES FOR COMPLETING THE PROJECT DESIGN DOCUMENT – refer to **CAR 12** **CAR 12** **$FC_{i,m/j/k/,y}$** a Title is not in line with the Tool, which requires the data parameter to be reflected as $FC_{i,m,y}$, $FC_{i,y}$, $FC_{i,k,y}$ – refer to **CAR 14** $FC_{i,n,y}$ and $FC_{i,n,h}$ are not required as the *Dispatch data analysis OM* option was not selected for this project activity. **CAR 14** b The data unit was selected as '*liters*' in Section B.6.2, but is recorded as '*Weight of Diesel (ton)*' in the spreadsheet – refer to **CAR 14** **CAR 14** c The description provided is not in accordance with the Tool, and no reference is made to $FC_{i,y}$ (i.e. fossil fuel used by the project activity diesel generator and the diesel generator at the transmission station) – refer to **CAR 14** **CAR 14** d The source of data is listed '*EUTCL'* and the '*Ugandan Department of Commissioner, Customs and Excise'*. However, in Section B.4 the latter is referred to as '*Customs and Excise Department of Uganda Revenue Authority'*. Consistency and accuracy is required throughout the PDD – refer to **CAR 14** **CAR 14** e The values for the amount fossil fuel consumed were not provided in Section B.6.2 or Annex 3 of the PDD. The actual values, including detailed information of the time **CAR 14**		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			series of data used must be provided in Annex 3 (for power plants/units *k* and *m* and for the project electricity system) – refer to **CAR 14** f The values will be checked against data provided by UETCL and URA. TBC g The choice of data did not include the fossil fuel consumed by the project activity (e.g. diesel generators for the hydropower plant and the transmission line) – refer to **CAR 14** **CAR 14** h The description of the measurement method is not in accordance with the Tool, and it is not stated clearly in Section B.6.2 that the data will be collected once (*ex ante*) for each crediting period. Furthermore, the PDD states that equation 3 of the Tool is used to calculate the OM and BM emission factors, whereas the Baseline calculation spreadsheet applied equation 2– refer to **CAR 14** **CAR 14** **$NCV_{i,y}$** a Title is in line with the Tool Ok b The data unit is correctly expressed as GJ/liter. Ok c The description provided is in accordance with the Tool. Ok d The source of data is listed as '*IPCC*', but no information was provided on the availability of values from the fuel supplier/s and/or regional or national average default values – refer to **CL 25** **CL 25** e The Tool states that if IPCC default values are applied '*the lower limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories'* should be applied (i.e. 41.4TJ/GJ for diesel and 39.8TJ/Gg for HFO), whereas the PDD applies 43 TJ/kt for diesel and 40.4 TJ/kt for HFO) – refer to **CAR 15** **CAR 15**		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			f DOE confirmed the IPCC default values were applied as provided in '*Table 1.2 of Chapter 1 of Vol.2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories*' for diesel and HFO were applied (i.e. 43TJ/kt, 0.85kg/l and 40.4 TJ/kt, 0.93kg/l). However, the values for the lower limits must be applied – refer to **CAR 15** **CAR 15** g The choice of the value applied must be motivated/justified, providing evidence to support the use of IPCC default values – refer to **CL 25** **CL 25** h The description of the measurement method is not in accordance with the Tool, and it is not stated clearly in Section B.6.2 that the data will be collected once (*ex ante*) for each crediting period – refer to **CAR 14** **CAR 14** **$EF_{CO2,i,y}$** a Title is in line with the Tool but **$EF_{CO2,m,i,y}$** was omitted – **CAR 11** **CAR 11** b The data unit is correctly expressed as tCO_2/GJ. Ok c The description was not complete in accordance with the Tool, as '*in power unit* m' was omitted – **CAR 11** **CAR 11** d The source of data is listed as '*IPCC*', but no information was provided on the availability of values from the fuel supplier/s and/or regional or national average default values – refer to **CL 25** **CL 25** e The Tool states that if IPCC default values are applied '*the lower limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol.2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories'* should be applied (i.e. 72,600 kg/TJ for diesel and 75,500 kg/TJ for HFO), whereas the PDD applies 0.0741 tCO_2/GJ for diesel and 0.0774 tCO_2/GJ for HFO) – refer to **CAR 15** **CAR 15**		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			f DOE confirmed the IPCC default values were applied as provided in '*Table 1.4 of Chapter 1 of Vol.2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories*' for diesel and HFO were applied (i.e. 0.0741 tCO_2/GJ and 0.0774 tCO_2/GJ respectively). However, the values for the lower limits must be applied – refer to **CAR 15** — **CAR 15** g The choice of the value applied must be motivated/justified, providing evidence to support the use of IPCC default values – refer to **CL 25** — **CL 25** h The description of the measurement method is not in accordance with the Tool, and it is not stated clearly in Section B.6.2 that the data will be collected once (*ex ante*) for each crediting period – refer to **CAR 14** — **CAR 14** **$EF_{grid,BM,y}$** a Title is in line with the Tool. — Ok b The data unit is correctly expressed as tCO_2/MWh — Ok c The description was complete in accordance with the Tool, as '*build margin (BM) emission factor.* — Ok d The source of data is listed as '*calculated based on data supplied by UETCL as per the Tool…'* — Ok e A complete set of data is required for all power plants/units for 2005 – 2009 – refer to **CL 24**, **CAR 8** and **CAR 9** — **CL 24** **CAR 8** **CAR 9** f The DOE will re-validate the calculations once the above CARs and CLs have been addressed. — **CL 24** **CAR 8** **CAR 9** g The choice of the value applied must be motivated/justified, providing a full set of data from from UETCL – refer to **CL 24**, **CAR 8** and **CAR 9** — **CL 24** **CAR 8** **CAR 9** h The description of the measurement method states that the data was provided by UETCL. This will be confirmed once the above CARs — **TBC**		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			and CLs have been closed out. **$EF_{grid,OM,y}$** a Title is not in line with the Tool, as the emission factor for the simple adjusted operating margin should be expressed as $EF_{grid,OM-adj,y}$ – refer to **CAR 14** — **CAR 14** b The data unit is correctly expressed as tCO_2/MWh — Ok c The description was incomplete and was not stated as '*simple adjusted operating margin CO2 emission factor' – refer to* **CAR 14** — **CAR 14** d The source of data is listed as '*calculated based on data supplied by UETCL as per the Tool…'* — Ok e A complete set of data is required for all power plants/units for 2005 – 2009 – refer to **CL 24**, **CAR 8** and **CAR 9** — **CL 24** **CAR 8** **CAR 9** f The DOE will re-validate the calculations once the above CARs and CLs have been addressed. — **CL 24** **CAR 8** **CAR 9** g The choice of the value applied must be motivated/justified, providing a full set of data from from UETCL – refer to **CL 24**, **CAR 8** and **CAR 9** — **CL 24** **CAR 8** **CAR 9** h The description of the measurement method states that the data was provided by UETCL. This will be confirmed once the above CARs and CLs have been closed out. — **TBC** **$EF_{grid,CM,y}$** a Title is in line with the Tool. — Ok b The data unit is correctly expressed as tCO_2/MWh — Ok c The description was incomplete and not stated as in ACM0002 – refer to **CAR 12** — **CAR 12** d The source of data is listed as '*calculated based on data supplied by UETCL as per the Tool…'* — Ok e A complete set of data is required for all power plants/units for 2005 – 2009 – refer to — **CL 24** **CAR 8**		

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			CL 24, **CAR 8** and **CAR 9** **CAR 9** f The DOE will re-validate the calculations once the above CARs and CLs have been addressed. **CL 24** **CAR 8** **CAR 9** g The choice of the value applied must be motivated/justified, providing a full set of data from from UETCL – refer to **CL 24**, **CAR 8** and **CAR 9** **CL 24** **CAR 8** **CAR 9** h The description of the measurement method states that the data was provided by UETCL. This will be confirmed once the above CARs and CLs have been closed out. **TBC**		
8.14	Will the data and parameters result in a conservative estimate of emissions reductions?		This is to be confirmed, based on the resolution of the CARs and CLs identified above	CAR 8, 9, 11, 12, 14, 15 CL 18, 24, 25, 26	OK
	Ex-ante calculation of emission reductions	PDD B.6.3			
8.15	Is the projection based on the same procedures as used for future monitoring?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	This is to be confirmed, based on the resolution of the CARs and CLs identified above	CAR 8, 9, 11, 12, 14, 15 CL 18, 24, 25, 26	OK
8.16	Are the GHG calculations documented in a complete and transparent manner?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	This is to be confirmed, based on the resolution of the CARs and CLs identified above	CAR 8, 9, 11, 12, 14, 15 CL 18, 24, 25, 26	OK
8.17	Are detailed calculations provided in a traceable spreadsheet showing relevant information?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Yes, detailed calculations are provided in the spreadsheet Excel file: *9_Baseline_calculations_-ver_3.9* However, the spreadsheet should be completed and adjusted according to the CARs and CLs raised above	CAR 8, 9, 11, 12, 14, 15 CL 18, 24, 25, 26	OK
8.18	Can the calculation of baseline emissions be replicated using the data and parameters supplied in the PDD?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Yes, the calculation of baseline emissions can be replicated using the data and parameters supplied in the PDD.	OK	OK
8.19	Is the data provided in this section consistent with data as presented in other chapters of the PDD?	DR#1, 6, 79, 80, 84, 99	Yes, the data provided in this section is consistent with the data as presented in other chapters of the PDD With exceptions of request of clarification requested above.	OK	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
		SV IV#10, 12			
	Summary of ex-ante estimation of emission reductions	PDD B.6.4			
8.20	Is the form/ table required for the indication of projected emission reductions correctly applied? And is the data provided in this section consistent with data as presented in other chapters of the PDD?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Yes, the table for the expected project emission reductions is correctly applied.	OK	OK
8.21	Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	A proposed schedule/project timeline for the project design/construction/and implementation was not viewed during the site visit, therefore **CL 4** was raised. The construction of the Bujagali hydropower plant and the Bujagali Interconnection Project (i.e. the transmission line connecting the project to the national grid) are both being co-ordinated by BEL and are due to be completed during Q1 of 2011.	CL 4	OK
9.	**Monitoring Plan**	PDD B.7			
	(a) Compliance of the MP with the methodology				
9.1	Are all necessary parameters required for the type of project by the methodology and applicable tools contained in the monitoring plan?	DR #1, 80, 84	No, the installed capacity of the project is not included as one of the monitoring parameters. Also the PDD includes the monitoring of 'EGy' (Electricity delivered to the grid in year y) and 'EGx' (Electricity supplied from the grid in year y), but does not specifically include the monitoring of EGfacility,y, as required by ACM0002 v11, which would presumably be the sum of these two parameters. The PDD also includes 3 parameters (FCproject plant diesel,y, NCVDiesel,y, and EFCO2diesel) that are not required to be monitored for hydro project by ACM0002 v11. Please refer to **CAR 16**	CAR 16	OK
9.2	For each parameter, is the: a. Title in line with methodology? b. Data unit correctly expressed? c. Parameter appropriately described? d. Source clearly referenced? e. Correct value provided for estimation? f. Has this value been verified? g. Measurement method correctly described? h. Correct reference to standards? i. Indication of accuracy provided? j. QA/QC procedures described? k. QA/QC procedures appropriate?	DR #1, 80, 84	**EG_y** (Electricity delivered to grid in year y) a: This parameter is monitored in addition to the parameters required by ACM0002 v 11, in order to calculate EGfacility,y. However EGfacility,y is not included in the monitoring plan – please see **CAR 16** — **CAR 16** b: Data unit is reflected correctly as MWh/y — Ok c: Yes — OK d: The source of data to be used is reflected as — Ok	CAR 16 CL 26, 27, 28	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK

	'measured by two calibrated meters'	
e	The value provided in the PDD was taken from the Bujagali hydropower station design documents as 1,305,000 MWh.	OK
f	The value is as provided in the design documents, and will be measured on site.	Ok
g	The measurement method is in alignment with the measurement methods for EGfacility,y in ACM0002, however more information is required regarding the type of metering equipment to be installed – refer to **CL 28**	**CL 28**
h	No reference was made to specific standards, or to manufacturer's specifications, but it is stated that '*meters will be calibrated periodically*'. Please see **CL 27**	**CL 27**
i	Section B.7.2 states that accuracy of meters will be at least 0.5%	OK
j	QA/QC procedures state that '*data will be cross-checked with electricity invoices and sales documents*', in accordance with ACM0002.	OK
k	QA/QC procedures are appropriate.	OK

EG_x (Electricity supplied from the grid in year y)		
a	This parameter is monitored in addition to the parameters required by ACM0002 v 11, in order to calculate EGfacility,y. However EGfacility,y is not included in the monitoring plan – please see **CAR 16**	**CAR 16**
b	Data unit is reflected correctly as MWh/y	Ok
c	Yes	OK
d	The source of data to be used is reflected as 'measured by two calibrated meters'	Ok
e	The value provided in the GSP PDD is consistent with the Bujagali hydropower station design documents	OK
f	The value is as provided in the design documents, and will be measured on site.	Ok

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			g The measurement method is in alignment with the measurement methods for EGfacility,y in ACM0002, however more information is required regarding the type of metering equipment to be installed – refer to **CL 28** — **CL 28** h No reference was made to specific standards, or to manufacturer's specifications, but it is stated that '*meters will be calibrated periodically*'. Please see **CL 27** — **CL 27** i Section B.7.2 states that accuracy of meters will be at least 0.5% — OK j QA/QC procedures state that '*data will be cross-checked with electricity invoices and sales documents*', in accordance with ACM0002. — OK k QA/QC procedures are appropriate. — OK A_{PJ} a The title is in line with ACM0002 — OK b The data unit is correctly reflected as m^2. — Ok c An appropriate description (as reflected in ACM0002) is provided. — Ok d The Source of data is "Bujagali Hydropower Project Social and Environmental Assessment Report, by Burnside International Limited, December 2006. — OK e The value provided is correct — OK f ERM CVS has reviewed the report — OK g The '*justification of the choice of data or description of measurement methods and procedures actually applied*' is generic as reflected in ACM0002, and project specific justification/measurements were not included in the PDD h Clarity is required on the measurement method applied to determine the area of the new reservoir – refer to **CL 26** — **CL 26** Parameters from the Approved consolidated baseline and monitoring methodology ACM0002. "Consolidated baseline methodology for grid-connected electricity generation from		

<table>
<tr><th></th><th>Checklist Question</th><th>Reference</th><th>Comment</th><th>Draft Conclusion OK/CAR/CL</th><th>Final Conclusion OK/ NOT OK</th></tr>
<tr><td></td><td></td><td></td><td>
renewable resources". Version 11 not included in the PDD Section B.7.1:
$w_{steam,CO2,y}$ / $w_{steam,CH4,y}$ / $M_{steam,y}$
a - k These parameters are not required in this PDD as this project activity is a new hydropower plant (with a power density greater than 10W/m^2) and not a geothermal power plant. Ok

$EG_{PJ\ Add,y}$
a - k This parameter is not required in the PDD as this project activity is a new hydropower plant (not a capacity addition, retrofit, or replacement) and no project plants/units are to be added under the project activity. Ok

<table>
<tr><th>TEG_y</th><th></th></tr>
<tr><td>a - k</td><td>This parameter (for total electricity produced by the project activity) is not required in the PDD as this project has a power density greater than 10W/m^2, and ACM0002 states this parameter is 'applicable to hydro power project activities with a power density greater than 4W/m^2 and less than or equal to 10W/m^2'. OK</td></tr>
</table>

<table>
<tr><th>$PE_{FF,y}$</th><th></th></tr>
<tr><td>a</td><td>This parameter ('for project emissions from fossil fuel consumption in year y' for the purpose of generating electricity) is not required since the project does not include use of back-up fossil fuel fired power capacity for supply to the grid. OK</td></tr>
<tr><td>b</td><td></td></tr>
<tr><td>c</td><td></td></tr>
<tr><td>d</td><td></td></tr>
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	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			j k **Cap_{PJ}** a This parameter was omitted from the PDD – refer to **CAR 16** — **CAR 16** b c d e f g h i j k		
9.3	Do all means/ methods of monitoring described in the plan comply with the requirements of the methodology?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Please refer to the CARs and CLs raised above.	CAR 16 CL 26, 27, 28	OK
	(b) Implementation of the MP				
9.4	Are the arrangements described in the plan feasible and practical within the project design? How has this been verified (review procedures, interviews, project plans, and physical inspection)?	DR#1, 6, 79, 80, 84, 99 SV IV#10, 12	Although the project is still under construction and the monitoring plan is not yet operational, the arrangements are considered feasible within the project design since the electricity supplied by the project to the grid will be monitored in conjunction with the grid company. Based on interviews with on site personnel, the monitoring arrangements are considered to be within the competencies of the project developer. However since the electricity from the project will be purchased via a capacity payment (i.e. fixed payment rather than per MWh generated) the PP should clarify how electricity invoices can still be used to cross check the generation amount. Furthermore the monitoring plan does not give sufficient detail on meters and their locations. A schematic diagram is not provided. Sufficient details are not provided of how import and export of electricity will be monitored – i.e. whether bi-directional or uni-directional meters will be used and the plans for back-up metering in case of emergency. The monitoring	CL 29	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			plan does provide sufficient information on which regulatory or national standards will be used for ensuring accuracy and calibration purposes. Please see **CL 29**		
9.5	Is the operational and management structure clearly described and in compliance with the envisioned situation? Are responsibilities and institutional arrangements for data collection and archiving clearly provided?	DR# 1	The operational and management structure is not clearly described in the PDD – please see **CL 30**	CL 30	OK
9.6	Is necessary equipment in place or readily available? Are calibration requirements feasible?	DR# 1 SV	The project is still under construction and no monitoring equipment was yet in place at the time of the site visit. However based on ERM CVS's sectoral knowledge the equipment is readily available internationally and can be purchased and installed by the project developer without difficulty. Calibration requirements are not specified in sufficient detail in the PDD – please refer to **CL 27**	CL 27	OK
9.7	Does the monitoring plan provide current good monitoring practice?		To be confirmed based on the resolution of the CARs and CLs raised above	CAR 16 CL 26-30	OK
9.8	If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?	DR# 1	Not applicable. All provided information is contained in section B.7	n/a	n/a
9.9	Are the means of implementation of the monitoring plan, including data management and QA/ QC procedures, sufficient to ensure that the emission reductions achieved can be reported ex-post and verified?	DR# 1, 79	Data management and QA/QC procedures are not specified with sufficient detail in the PDD. In addition, The requirements of the PDD guidelines for data to be kept until 2 years after the end of the crediting period or the last issuance of CERs, whichever occurs later, are also not addressed. Please see **CL 31**	CL 31	OK
9.10	In the DOE's opinion, is the project participant able to implement the monitoring plan?	DR# 42, 43, 46, 47, 59, 60, 61, 92, 93, 94, 95, 97, 98	Yes, the project participant includes constituent companies that are experienced in operating power plants, therefore they are capable of implementing the monitoring plan. This has been checked against published information on the companies themselves including their websites and brochures.	OK	OK
10.	**Sustainable Development**				
10.1	Does the Letter of Approval from the Host Party confirm that the project activity contributes to the sustainable development of that country?	DR#1	The letter of approval has not yet been provided Please see **CAR 2**	CAR 2	OK
11.	**Environmental Impacts**	PDD D.			
11.1	Has an analysis of the environmental impacts of the project activity been undertaken? How is this evidenced?	DR# 19, 20, 21, 25, 26, 27, 28, IV 8-9, 10-11, 12-13,	The initial Environmental Impact Assessment was conducted in 2001 by AES Nile Power (the previous Project Participant) which included a Resettlement Action Plan, Cultural Property Management Plan and a Community Development Action Plan. The Bujagali Hydropower Project Social and Environmental	OK	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
		18-20	Assessment was compiled in December 2006 and the Social and Environmental Action Plans for the Bujagali Hydropower Project were developed by BEL (2007) and included (amongst others) PUBLIC CONSULTATION AND DISCLOSURE PLAN (PCDP), The environmental impacts of the hydropower project are minimal, as the new area to be inundated (80ha) is limited by the very deep nature of the Victorian Nile River basin, the effects in the hydrology (flow of the river) and water quality are also expected to be minimal once the construction phase has been completed, as the Bujagali hydropower project is designed to be a run-of-river project, and the hydrology is determined by the upstream release from the Nalubaale and Kiira hydropower plants, however various social impacts were identified (especially the resettlement of communities). A Public Hearing for the proposed Bujagali Hydropower project was held in Jinjja on 11 April 2007 to address concerns raised by local communities. The NEMA also has an internal Committee which advises on the Bujagali project		
11.2	In accordance with the laws and regulations in the Host Country, does this project require an EIA? Has an EIA been conducted for this project? Is this EIA valid for the current project? Has this EIA been approved? How has this been verified?	DR# 19, 20, 21, 25, 26, 27, 28, IV 8-9, 10-11, 12-13, 18-19, 20.	EIA are required for the hydropower plant, the new transmission line and the extension of the piped water project. These EIAs have been compiled, submitted and approved by NEMA. The three EIA's (for the Bujagali Hydropower Project, the Bujagali Power Transmission Line and the Bujagali supply pipe water extension project) were authorised and approved by Uganda's National Environmental Management Authority (NEMA) in December 2007, July 2001 and June 2010 [IV 18-19] respectively (after due consultation with other government departments, affected communities and NGOs).	OK	OK
11.3	Does the environmental analysis undertaken and presented for the project activity include an analysis of transboundary impacts? Are any transboundary impacts likely?	DR# 19, 20, 21, 25, 26, 27, 28, IV 8-9, 10-11, 12-13, 18-20	A separate cumulative assessment was included in the Strategic/Sectoral Social and Environmental Assessment (SSEA) conducted under the strategic planning for the Nile Equatorial Lakes Subsidiary Action Program within the Nile Basin Initiative (NBI). The Nile Basin Initiative (NBI) is a partnership initiated and led by the riparian states of the Nile River through the Council of Ministers of Water Affairs of the Nile Basin states (Nile Council of Ministers, or NILE-COM).	OK	OK
11.4	Is the analysis in the PDD fully consistent with the findings of the EIF? Are all significant impacts and mitigation measures	DR# 19, 20, 21, 25,	The summary of the environmental impacts included in the PDD is consistent with the findings of the EIA, as verified	OK	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	identified in the EIF mentioned in the PDD?	26, 27, 28, IV 8-9, 10-11, 12-13, 18-20	through discussions with the relevant government departments, and cross-referenced with the documents available on the World Bank website.		
11.5	Does the analysis conclude that the project will create any unacceptable adverse environmental impacts?	DR# 19, 20, 21, 25, 26, 27, 28, IV 8-9, 10-11, 12-13, 18-20	The analysis concludes that the project will not create any unacceptable adverse environmental impacts.	OK	OK
12.	**Local Stakeholder Consultation**	PDD E.			
12.1	Have comments from relevant stakeholders been invited prior to the publication of the PDD on the UNFCCC website? How has this been verified?	DR# 26, 27, 28 IV# 1, 2, 3, 4, 18, 19	Yes, several rounds of local stakeholder consultation and engagement have been carried out on the project and have included consultation with groups including Local communities (including government officials and local residents); Government agencies; Non-government organizations (environmental and other interest groups); Businesses (including tourist-related interests in the area); and Cultural groups (the Kingdoms of Buganda and Busoga). These have been carried out under the framework of a Public Consultation and Disclosure Programme (PCDP). ERM CVS has reviewed the documents including the • Public Disclosure and Consultation Report compiled by BEL (provides an overview of the Public Disclosure and Consultations that were conducted) • Bujagali Hydropower Project Public Consultation and Disclosure Plan, prepared by BEL • Bujagali Hydro Power Project Public Consultation Report for September 2008, prepared by BEL Specific consultation activities are described in detail in the PDD, and include notices in newpapers, meetings, contact with NGOs and local government, socio-economic audit surveys, and consultation committees at a local level. The accuracy of the information in the PDD has been confirmed by review of the Community Development Action Plan and the Public consultation report, prepared by BEL. These measures were confirmed through interviews with relevant stakeholders including national and local government representatives, as well as local stakeholders and the witness NGO appointed to witness and oversee the various consultation processes.	OK	OK
12.2	Have all relevant local stakeholders been invited? How has this been assessed?:	DR# 26, 27, 28	(a) Yes, all relevant local stakeholders have been given an opportunity to provide comments and have been engaged	OK	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
	a. Have appropriate media been used to invite comments by local stakeholders? b. Have all stakeholder groups has access to information? c. Have all stakeholder groups had a reasonable chance to comment?	IV# 1, 2, 3, 4, 18, 19	in the process of project planning and development from an early stage. This has been confirmed by review of the Community Development Action Plan and the Public consultation report, prepared by BEL, and through interviews with relevant stakeholders including national and local government representatives, as well as local stakeholders and the witness NGO appointed to witness and oversee the various consultation processes. (b) All stakeholder groups have had access to information since information was provided in a number of public forums including national newpapers, local consultation committees, direct engagement with stakeholder groups, and through various NGOs. (c) Yes, all stakeholder groups have had reasonable chance to comment. The stakeholder engagement and consultation process began in 2006, before the project was finally agreed or started its development. The engagement has continued to date. The adequacy of the stakeholder engagement process has been further confirmed by review of the World bank's Inspection Panel report into the Project, which assessed in detail various aspects of the project and its merits, including the environmental and social context of the project, the environmental assessment processes undertaken on the project, disclosure of project documentation, the environmental impacts and mitigation measures, hydrological and climate change risks, the economic and environmental analysis of alternatives, poverty reduction aspects, the involuntary resettlement resulting from the project and how it was managed including compensation and livelihood restoration, and the project's impact on cultural and spiritual values and specific consultation activities on this aspect. The report concludes that sufficient consultation activities have taken place such that the project development could be approved according to international standards and criteria.		
12.3	Is the summary of comments received as provided in the PDD complete? (what has been done to check this i.e. Document review etc)	DR# 26, 27, 28 IV# 1, 2, 3, 4, 18, 19	Because of the depth and scale of the consultation activities, the PDD can only present a brief summary of the comments received from stakeholders. Nevertheless this summary is an accurate reflection of the broad issues that were raised by stakeholders. ERM CVS has reviewed: • The Public Disclosure and Consultation Report compiled by BEL (provides an overview of the Public	OK	OK

	Checklist Question	Reference	Comment	Draft Conclusion OK/CAR/CL	Final Conclusion OK/ NOT OK
			Disclosure and Consultations that were conducted) • Bujagali Hydropower Project Public Consultation and Disclosure Plan, prepared by BEL • Bujagali Hydro Power Project Public Consultation Report for September 2008, prepared by BEL • The Community Development Action Plan And has confirmed the information by means of interviews on site with government representatives and stakeholders, as well as the witness NGO assigned to oversee the consultation process.		
12.4	Has due account been taken of any stakeholder comments received and is this adequately and clearly described in the PDD?	DR# 26, 27, 28 IV# 1, 2, 3, 4, 18, 19	Yes, due account of comments was taken and this has been summarised in the PDD. ERM CVS has reviewed: • The Public Disclosure and Consultation Report compiled by BEL (provides an overview of the Public Disclosure and Consultations that were conducted) • Bujagali Hydropower Project Public Consultation and Disclosure Plan, prepared by BEL • Bujagali Hydro Power Project Public Consultation Report for September 2008, prepared by BEL • The Community Development Action Plan And has confirmed the information by means of interviews on site with government representatives and stakeholders, as well as the witness NGO assigned to oversee the consultation process.	OK	OK
12.5	In the DOE's opinion, is the local stakeholder consultation process that has been conducted adequate?		Yes, the local stakeholder consultation process is considered to be conducted adequately and follows the host country practices.	OK	OK

Appendix C: REMEDIATION FORM

Corrective Action Requests (CARs), Clarification Requests (CLs), Forward Action Requests (FARs) and Minor Issues

Corrective action requests	Reference to checklist question	Summary of project participants' response	Final conclusion
CAR 1. Update Section A.3 in the PDD to include the Government of Uganda, Ministry of Energy and Mineral Development as a Project Participant.	5.1	The information was inserted in section A.3 of the PDD as requested.	The Government of Uganda (i.e. the host Party) wishes to be considered a project participant, and this has been specified in the table in section A.3 of the PDD. CAR Closed
CAR 2. Provide a Letter of Approval from the DNA for Uganda.	5.1 / 5.2	The LoA has been provided	The LoA from the Government of Uganda was provided [DR 122]. The letter confirms that a. Uganda has Ratified the Kyoto Protocol; b. Participation in the CDM is voluntary; c. The project activity meets the Sustainable Development requirements of the DNA; and d. The letter references the precise project title. CAR closed.
CAR 3: The description of the project boundary in table 3 should be corrected to appropriately describe and account for sources of project emissions.	6.8	Relevant descriptions to justify the exclusion of CH_4 as project emissions for ex-ante ER calculations are given in table 3 of the PDD.	The PDD has been amended to include as a source of project emissions potential CH_4 emissions from the reservoir. All sources of emissions are now correctly accounted for. CAR Closed
CAR 4: The date of the amended and restated implementation agreement, and amended and restated PPA should be corrected in the PDD.	7.1	Dates amended in PDD	The date has been corrected in the revised PDD. The date has been confirmed against the agreements reviewed by ERM CVS [DR 50, 51]. CAR closed
CAR 5: Evidence/reference sources should be stated in the PDD for all statements or claims made in the barrier analysis section, and the relevant documents should be provided to ERM CVS. In addition, further justification, with references, should be provided for the claimed barriers.	7.39	References for all statements were added; Repetitive arguments were removed; Statements without a clear reference were removed; Arguments were re-addressed and clarified where needed. The impact of CDM revenues on alleviating the barriers was further elaborated.	The following references have been supplied and reviewed, and ERM CVS can confirm that they support the statements made in the PDD: • Extract of PPA between UETCL and BEL dated 13 Dec 2005 indicating that electricity purchases will be made in US$ [DR 69, 70] • Article from the World Bank 'Uganda's President, the Aga Khan, Cut Ribbon on Bujagali Dam Project' (21 Aug 2007) indicating that 'Bujagali is the largest single private sector investment in East Africa, the biggest independent power project in sub-Saharan Africa' [DR 139] • Article from This is Africa news service (01 Oct 2009) indicating that 'The 250 megawatt Bujagali dam is the largest private investment project ever in East Africa' [DR 138] • World Bank MIGA Document 'Snapshot Africa: Benchmarking FDI Competitiveness' illustrating FDI inflows for Uganda [DR 137] • Guarantee agreement whereby the GOU has provided a sovereign guarantee of the performance of UETCL under the PPA [DR 100] The documentation provided gives sufficient justification for the claimed barriers. The barriers analysis is validated in section 3.6 of the validation report. CAR closed

CAR 6 Include a description of the applicable procedures followed to determine project emissions, baseline emissions and emission reductions calculations in the Section B.6 of PDD.	8.1 / 8.2 / 8.3 / 8/4	Ref. 4.4: Section B.4 in the PDD was updated. Ref. 8.1: The description of the emission reductions calculations has been included under B.6.3 in the PDD.	Section B.6.1 was updated to include the explanation of the methodological choices applied to determine project emissions, baseline emissions and emission reductions. Please refer to section 3.7 of the validation report for details of how this was validated. CAR Closed
CAR 7. Clarify the data sets to be used for the ex-ante calculation for the off-grid power generators, and update the baseline calculations accordingly.	8.5	Off-grid diesel generators were excluded entirely from the calculations.	The "Tool to calculate the emission factor for an electricity system" provides the option to choose whether to include or exclude off-grid power plants in the project electricity system. The revised PDD was updated to select Option 1 under Step 2 (i.e. to include only grid power plants). This option results in a more conservative calculation of the grid emission factor. CAR closed.
CAR 8. Please provide the complete and correct grid data, and provide supporting documents.	8.5	Data on grid connected plants have been updated as well as calculations in the excel sheet. Off-grid diesel generators were excluded entirely from the calculations.	The raw data for the grid connected power plants was provided by UETCL [DR#102,103,104,108], and off-grid power plants are no longer included in the emission reduction calculations, therefore data is not required. Please refer to section 3.7 of the validation report for details of how this was validated. CAR closed.
CAR 9. Include the data, supporting evidence and calculation for Lambda for the year 2009 in the baseline spreadsheet, and provide evidence to support the assumption that the 2009 Lambda is equal to the 2008 Lambda (in the *Inputs&Outputs* worksheet) in the excel file.	8.5	The data and calculations have been updated in the excel data sheet.	The calculation of Lambda for the year 2009 was updated in the spreadsheet provided in *Annex 3. Baseline Calculations*. UETCL provided a letter of certification authenticating the data [DR#102,103,104,108]. ERM CVS re-performed the calculations and these were found to be correct. CAR closed.
CAR 10. (a) The parameters (CAP_p, $FUEL_p$, $GRID_p$, $SWITCH_p$, $FC_{p,i,y}$, $NCV_{p,i,y}$, $OMC_{p,y}$, $TeI_{p,y}$) were not included in the list of parameters in B.6.2. (b) The only data available in the Baseline Calculation spreadsheet was for monthly diesel consumption, and Step 4 - Option 2 of the Tool was not used to determine $EG_{p,y}$. (c) The estimation of installed capacity and operating hours was not according to the guidance of Tool.	8.11	Off-grid diesel generators were excluded entirely from the calculations.	The "Tool to calculate the emission factor for an electricity system" provides the option to choose whether to include off-grid power plants in the project electricity system. The revised PDD was updated to select Option 1 under Step 2 (i.e. to include only grid power plants). This option results in a more conservative calculation of the grid emission factor. CAR closed.

CAR 11. (a) Please provide detailed information of the time series of data applied for the electricity generated at existing power plants/units (for grid connected and off-grid power plants/units). Please indicate the entity responsible for providing the data (i.e. the source of the data), and ensure accuracy and consistency in the data units applied throughout the PDD and between the PDD and the spreadsheet. (b) Please provide the amount of fossil fuel type *i* consumed by the power plant/unit *m* and *k* (and in the project electricity system $FC_{i,y}$), and update the parameter for the CO_2 emission factor ($EF_{CO2,m,l,y}$) to reflect the fossil fuel type *i* used in power unit *m* in year *y*. (c) Please provide justifications for the choice of values selected/applied for all parameters (including why the IPCC default values have been applied for $NCV_{i,y}$ and $EF_{CO2,l,y}$).	8.13	(a) Annex 3 refers to the data sheet including detailed information on grid plants plus ER calculations. The data sheet has been updated based on recent information received from UETCL. All the information can be found in the excel sheet. Off-grid diesel generators were excluded entirely from the calculations. (b) The amount of fossil fuel per plant has been indicated in the data sheet. Each fuel type has one EF and these parameters do not change per power plant. (c) The values and information from grid connected plants are acquired from the Ugandan authorities. The PDD has been updated and additional justifications were added.	(a) The detailed information, data from UETCL and the emission reduction calculations were provided in Annex 3 within the Baseline Calculation spreadsheet. The data units in the spreadsheet, in Table 7 in the PDD and in Section B.6 were corrected to ensure consistency. Option 1 (under step 2 in the Tool to calculate the emission factor) was selected, and therefore off-grid diesel generators were excluded from the calculations – this results in a more conservative calculation of the baseline. (b) The amount of fossil fuel consumed by each power unit per month was provided in the EF calculation worksheet in the Baseline calculations spreadsheet (Annex 3). (c) The justifications for choice of values applied were updated accordingly in the PDD. Please refer to section 3.7 of the validation report for details of how the baseline emissions calculations were validated. CAR closed
CAR 12 (a) Please include the '*data and parameters not monitored*' for hydropower plants as required by ACM0002 and the tool for the calculation of the grid emissions factor in Section B.6.2 in the PDD, and remove the parameters that will be monitored throughout the crediting period. (b) Remove data parameters that are not applicable to this project activity from Section B.6.2, and remove data	8.13	(a) The parameters not monitored that are required by the methodology and the grid tool have been listed in the revised PDD. Parameters that need to be monitored have been moved to section B.7.1 (i.e. A_{PJ}), in line with the methodology and the guidance to complete the	(a) Section B.6.2 was updated in the PDD to include the parameters EF_{Res}, CAP_{BL} and A_{BL} and to remove the parameter for A_{PJ}. (b) Section B.6.2 was updated in the PDD to remove data parameters (EGn,h / EGy / EGj.h.y / EGk,h,y / Energy companies representing the operating margin) which were not required by ACM0002 or the 'Tool to calculate the emission factor for an electricity system'. (c) Project specific and correct descriptions of all data used have been provided, and relevant information/data is included in Annex 3 of the PDD Please refer to section 3.7 of the validation report for details of how the baseline emissions calculations were validated. CAR closed

parameters that are not required by ACM0002 or the 'Tool to calculate the emission factor for an electricity system' from Section B.6.2. (c) Project specific and correct descriptions of all data used must be provided, and the information/data used must be included in Annex 3 of the PDD.		CDM-PDD. (b) The parameters that are not applicable to the project were removed. (c) All information and data are included in the data sheet referenced under Annex 3.	
CAR 13. Document transparently in section B.6.2 in the PDD whether the emission factors for the simple adjusted OM and the BM will be calculated *ex ante* or *ex post*.	8.13	Clarification has been added to support the *ex ante* approach.	The PDD was updated and stated clearly in Section B.6.2 that the emission factors for the simple adjusted OM and the BM would be calculated *ex ante*. CAR closed.
CAR 14. (a) Correct the titles of the data parameters ($FC_{i,m/j/k/,y}$, and $EF_{grid,OM,,y}$) and ensure the correct source of data and data units are applied consistently within the PDD and between the PDD and the spreadsheet. (b) Please state clearly, in Section B.6.2, the data vintage selected for the fossil fuel consumed, the net calorific values and the CO_2 emission factors, and reference the correct equation under the 'justification of the choice of data' for $FC_{i,m,y}$. (c) Correct the table for the parameters $EG_{m,y}$ and $EG_{k,y}$ to be in accordance with the requirements of the methodology.	8.13	(a) The parameters have been corrected in the revised PDD and the correct source of data and data units are applied consistently within the PDD and between the PDD and the spreadsheet. (b) The data vintage of the data for the data & parameters used to calculated the grid emissions factor is stated as ex-ante in the PDD and the correct equation is referenced under the 'justification of the choice of data' for $FC_{i,m,y}$. (c) Parameters $EG_{m,y}$ and $EG_{k,y}$ have been corrected to be in accordance with the requirements of the methodology	(a) The titles of the parameters have been corrected and the correct units and data sources have been referenced. (b) Data vintages have been clearly stated, and correct equations have been referenced in the revised PDD. (c) The parameters were corrected in accordance with the methodology. Please refer to section 3.7 of the validation report for details of how the baseline emissions calculations were validated. CAR closed
CAR 15. Please correct the correct Values for $NCV_{i,y}$ and $EF_{CO2,I,y}$.	8.13	The correct values have been applied in the revised PDD and calculations.	$NCV_{i,y}$ The PDD was updated to reflect '*local data from Aggreko Uganda and Jacobsen Uganda Power Plants, certified by UETCL*. ERM CVS confirmed the correct values were applied [DR 146 and 147].

<table>
<tr><td></td><td></td><td></td><td>$EF_{CO2,l,y}$.
The PDD was updated to reflect 'the lower limit of the uncertainty at a 95% confidence interval as provided in Table 2.2 of Chapter 1 of Vol 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories'.
ERM CVS confirmed the correct IPCC default values were applied [DR 145].

CAR closed</td></tr>
<tr><td>CAR 16.
(a) Please include CAP_{PJ} (Installed capacity of the hydro power plant after the implementation of the project activity) in the monitoring plan, section B.7.1.
(b) Please include $EG_{facility,y}$ in the monitoring plan, section B.7.1
(c) Please remove parameters not relevant to hydro projects under ACM0002 from the monitoring plan</td><td>9.1</td><td>(a) CAP_{PJ} has been included in the monitoring plan.

(b) EGfacility,y has been included in the monitoring plan.

(c) Parameters not relevant have been removed.</td><td>(a) CAP_{PJ} was included in the monitoring plan.

<table>
<tr><td>Cap_{PJ}</td><td></td><td></td></tr>
<tr><td>a</td><td>This parameter was included in the updated PDD. CAR 16 was addressed.</td><td>OK</td></tr>
<tr><td>b</td><td>The data unit was presented correctly as W.</td><td>OK</td></tr>
<tr><td>c</td><td>The description of the parameter is in accordance with ACM0002</td><td>OK</td></tr>
<tr><td>d</td><td>The source of the data was referenced clearly.</td><td>OK</td></tr>
<tr><td>e</td><td>Yes</td><td>OK</td></tr>
<tr><td>f</td><td>ERM CVS verified that this value is correct according to the design documents [DR#2,3}</td><td>OK</td></tr>
<tr><td>g</td><td>The measurement methods were stated correctly.</td><td>OK</td></tr>
<tr><td>h</td><td>Yes</td><td>OK</td></tr>
<tr><td>i</td><td>No indication of accuracy was provided.</td><td>OK</td></tr>
<tr><td>j</td><td>No QA/QC procedures were described.</td><td>OK</td></tr>
<tr><td>k</td><td>This is approporiate.</td><td>OK</td></tr>
</table>

(b) $EG_{facility,y}$ was included in the monitoring plan.

<table>
<tr><td>$EG_{facility,y}$ (Electricity delivered to grid in year y)</td><td></td><td></td></tr>
<tr><td>a</td><td>This title is correct for this project activity.</td><td>Ok</td></tr>
<tr><td>b</td><td>Data unit is reflected correctly as MWh/y</td><td>Ok</td></tr>
<tr><td>c</td><td>The description of the parameter is in accordance with ACM0002.</td><td>OK</td></tr>
<tr><td>d</td><td>The source of data to be used is reflected as 'measured by two calibrated meters'</td><td>Ok</td></tr>
<tr><td>e</td><td>The value provided in the PDD was taken from the Bujagali hydropower station design documents as 1,305,000 MWh.</td><td>OK</td></tr>
<tr><td>f</td><td>The value is as provided in the design documents, and will be measured on site.</td><td>Ok</td></tr>
<tr><td>g</td><td>The measurement method is in alignment with the measurement methods for EGfacility,y in ACM0002 and details of the metering equipment to be installed (i.e. the ION 7550) were included in the PDD, and the brochure of the supplier (Schneider Electric) was included in Annex 6.2 of the updated PDD.</td><td>Ok</td></tr>
<tr><td>h</td><td>The QA/QC procedures and reference to standard to be applied (i.e. IEC standard) were included</td><td>OK</td></tr>
<tr><td>i</td><td>Section B.7.2 states that accuracy of meters will be at least 0.5% and the calibration procedures will follow the IEC Class 0.2S accuracy standard.</td><td>OK</td></tr>
<tr><td>j</td><td>QA/QC procedures state that 'data will be cross-checked with electricity invoices and sales documents', in accordance with ACM0002.</td><td>OK</td></tr>
<tr><td>k</td><td>QA/QC procedures are appropriate.</td><td>OK</td></tr>
</table>

(c) Parameters not relevant were removed from the monitoring plan.</td></tr>
</table>

			CAR closed

Clarification requests	Reference to checklist question	Summary of project participants' response	Final conclusion
CL 1 (a) Please describe the grid in the description of the baseline scenario. Please provide an explanation in the PDD of how the plant load factor was derived. (b) The PDD should give an explanation (in Section A.4.3) of how the same types and levels of services provided by the project activity would have been provided in the baseline scenario. (c) Please include a discussion of the sources and greenhouse gases that will be reduced due to the project activity, including all sources required by the methodology, in Section A.2 and Section A.4.3, in the PDD.	3.2 / 3.4 / 3.5 / 4.3 / 4.4 / 4.5 / 8.4	a) The composition of the Ugandan grid has been described under step 1 of section B.6.1. The Power Planning Associates Economic Evaluation report is a more recent analysis of the expected hydrology and annual energy production. It presents a low hydrology case (687 cm) and a high case (1247 cm), along with a probability of each: low (79%) and high (21%). We calculated a weighted value of 805 cm. With 805 cm of average annual river flow, and a P/Q ratio of 0.185 MW/cm above, the calculated average output is 149 MW. Multiply this by 8760 h/yr (assuming 100% availability), the result is 1305 GWh/yr. This is about 60% overall load factor. b) The issue of how the situation would look without the project in the baseline scenario has been explained in section B.4 and B.5 under step 1, alternatives to the project activity. c) The project will generate zero emission electricity that will be fed into the Ugandan grid which is a mix of renewable and non-renewable power plants. The Project is targeting CO_2 emission according to the methodology. This description has been included in the PDD in section A.2 and B.3. The data used to calculate these emissions are also available in the spreadsheet as referred to in Annex 3.	a) The baseline has been described in more detail in the PDD, including a brief description of the grid composition. An explanation of how the load factor was determined has been provided in section A.4.3 and is in line with the Economic and Financial Evaluation study for the project activity [DR 03, 21]. b) Section A.4.3 includes an explanation of how the same types and levels of services would have been provided – i.e. the continuation of electricity generation in the grid. c) A discussion of the GHG sources has been included in section A.2 and A.4.3 of the PDD. CL closed
CL 2. Please include the proposed lifetime of the project equipment in Section A.4.3 in the PDD.	4.5	The information has been included in the PDD in the requested section.	A discussion on the lifetime of the project equipment was included in Section A.4.3. CL closed.
CL 3. Include a discussion in Section A.4.3 on whether state of the art, environmentally safe and sound technology and know-how is transferred from annex-I-country(ies) to Uganda.	4.7	The information has been included in the PDD in the requested section.	The PDD was updated to include a discussion of the technology advancement of Uganda due to the Bujagali Hydropower Project, and this information is consistent with information gained through interviews conducted by ERM CVS with BEL, the sub-contractors (Salini) and UETCL. CL closed.

CL 4. Please provide a schedule indicating the proposed timeline for the Bujagali Hydropower Project (including timelines for the project design/construction/and implementation).	2.2 / 4.11 / 8.20	A project development timeline has been included in the PDD.	A timeline of project development is provided in section B.5 of the PDD, and this is validated in section 3.6 of the validation report. CL closed.
CL 5 Evidence to prove the final debt funding structure of the project, including all public and non-public debt funding should be provided.	4.12	The evidence has been provided as an attached document along with our response.	ERM CVS has reviewed the signed loan agreement documents between BEL and the project lenders (AFD, Absa, Standard Chartered, FMO, Proparco, IFC, DEG, EIB and AfDB dated 21 Dec 2007) to confirm the financing structure of the project [DR 117]. CL closed.
CL 6 Statements from each of the public funders based in annex 1 countries should be provided to demonstrate that such funding does not result in a diversion of official development assistance.	4.13	Statements have been provided by the lenders	Statements from the lenders involved in the project have been reviewed: Agence Francaise de Developpement, African Development Bank Group, European Investment Bank, Multilateral Investment Guarantee Agency (MIGA), Proparco [Societe de promotion et de participation pour la cooperation economique] (Group Agence Francaise de developpement), The World Bank, Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden n.v (FMO), and Bundesministerium fur wirtschaftliche Zusammenarbeit and Entwicklung (The German Federal Ministry of Economic Cooperation and Development (BMZ)) [DR 126-133]. The statements show that the funders have confirmed that there will not be any diversion of ODA as a result of the project. CL closed
CL 7: Evidence of the expected annual fuel consumption and emissions of the generators should be provided.	6.3	Annual consumption for the emergency diesel generator is only 12,757 litres. This equals to far less than 1% of the total emission reduction of the project and thus is negligible. Evidence has been added in Annex 5 of the PDD.	The estimation of annual diesel consumption was conducted by BEL for the two standby generators, and was included in Annex 5 in the updated PDD. The estimation, assumptions and conclusion were reasonable. The source is much less than 1% of emission reductions. The source is not required to be included for hydro projects under the methodology, and is insignificant. therefore it is reasonable not to include this source in the project. CL closed
CL 8: No reference is cited for the reservoir area (stated as 388ha) in the PDD	6.4	The source has been added.	The reference source was included as 'Bujagali Hydropower Project Social and Environmental Assessment – Main Report, December, 2006' [DR 25]. This was verified by ERM CVS as correct., and the information is also provided in the Power Planning Associates (2007) Bujagali II Economic and Financial Evaluation Study – Main report [DR 21].

			CL closed.
CL 9: A diagram illustrating the project boundary should be provided in the PDD.	6.9	Figure 4 has been added to demonstrate a schematic diagram of the project boundary.	A flow diagram illustrating the project boundary has been added to the PDD and ERM CVS can confirm that it includes '*all equipment, systems and flow of mass and energy… and emission sources and gasses included in the project boundary and the monitoring variables'* in line with the Guidelines for completing the PDD. CL closed
CL 10: (a) The start date should be stated consistently throughout the PDD. (b) References should be provided and cited in the PDD for all dates/events in the timeline of project development (section B.5. of the PDD); Evidence of financial closure and full notice to proceed should be provided	7.1	The start date has been consistently stated in the PDD. References have been provided for the events and dates stated in the timeline of project development, including evidence of financial closure and full notice to proceed. See also CAR 4 and CAR 5	(a) The staring date has been stated correctly and consistently throughout the PDD. The starting date is identified as 21st December 2007, the date of full notice to proceed was issued [DR 121] and the date the construction contract with Salini, the equipment procurement and construction contractor, entered into force [DR 120]. ERM CVS has reviewed the provided documentary evidence sources, which are both dated 21 December 2007. (b) The following additional references were provided and reviewed by ERM CVS. ERM CVS can confirm that they support the statements made in table 4 of the PDD: • GoU "Request for Proposals/Prospectus dd. 16 Jan 2004, page 5 under background information, indicates that the GOU and AES Nile Power Ltd first discussed the development of hydropower in Uganda in 1996 [DR 31]. The date has been corrected in the PDD. • 'Request for proposals/prospectus (first revision) in relation to the development of the Bujagali Hydroelectric Project' issued by GoU 23 Feb 2005 [DR 124] • 'Evaluation of Proposals in relation to the development of the Bujagali Hydroelectric Project' issued by GoU 04 April 2005, showing evidence of the other two proposals received for the development of the project [DR 119] • Extract of the 'Engineering, procurement and related services contract' between BEL and Salini dated May 2007 (EPC contract) and extract of 'Construction, procurement and related services contract' between BEL and Salini dated May 2007 (contraction contract)

			[DR 120] • Evidence of financial closure: loan agreement documents between BEL and the project lenders (AFD, Absa, Standard Chartered, FMO, Proparco, IFC, DEG, EIB and AfDB dated 21 Dec 2007 [DR 118] • Notice to proceed signed between BEL and Salini dated 21 Dec 2007 (starting date of the project activity) [DR 121] • Letter from Paul Mubiru, permanent secretary, Ministry of Energy and Mineral Development, to Mr Lutaf Kassam, Group Managing Director, IPS (Kenya) Ltd confirming that GoU selected the consortium led by IPS, dated 20 April 2005 [DR 123] CL closed
CL 11: The guarantee coverage provided by MIGA is not adequately described in the section concerning 'barrier due to the financial position of the government of Uganda'.	7.38	Extra explanation added.	The Guarantee coverage provided by MIGA has been adequately and correctly described in the PDD. ERM CVS has confirmed this information against the information provided by MIGA concerning the project [DR 39] and the detailed description provided in the World Bank Appraisal Document [DR 48]. CL closed
CL 12: Information should be provided on how the identified barriers have actually prevented the implementation of similar projects.	7.43	The identified barriers prevented the previous attempt to develop the Bujagali project, since AESNP has stated it pulled out for economic reasons, and therefore investment was not available to develop the project. Relevant references to support the barriers analysis have been added in the PDD. The identified barriers have also prevented another project, Karuma, downstream of Bujagali. The GOU has not been able to find private investors for the Karuma project. Analysts attribute this to the difficult investment climate in Uganda. Relevant references have been added.	A section describing the power sector in Uganda has been added to the PDD, including a description of the previous large scale investments in the power sector. Nalubaale (Owen Falls) and Kiira (Owen Falls Extension), existing hydro projects in Uganda, are described in more detail the common practice analysis section of the validation report. Nalubaale is not comparable to the proposed project because it was developed in 1954, prior to Uganda's independence [DR 7, DR 34]. Kiira benefited from favourable financing terms as it was publicly funded using international grants and multi-lateral loans [DR 99]. The revised PDD describes how two previous projects have actually been prevented by similar barriers to those faced by the proposed CDM project, namely the previous attempt to develop the Bujagali project by AESNP and the failed development of the Karuma project by Norpak Power Ltd. AESNP withdrew from the Bujagali project in 2003 citing economic reasons [DR 111]. Based on research conducted by ERM CVS into the power sector in Uganda, the exact reasons why the previous attempt to develop the Bujagali project failed are unclear, since there were concerns around environmental impacts and bribery allegations in addition to economic

			difficulties [DR 110, 111]. However it is apparent that exchange rate fluctuations and concerns over the financial position of the GoU were contributing factors. The withdrawal of AESNP let to a lack of investment financing available, which directly led to the project being shelved, illustrating the impact of the investment barrier. The proposed Karuma project, which is planned to have an installed capacity up to 650 MW, was originally awarded to be developed by the Norwegian company Norpak Power Ltd. Norpak withdrew from the project in 2008, illustrating the risky nature of energy sector investments in Uganda, and of large scale hydropower projects in particular [DR 112, 113]. Following the withdrawal of Norpak, the GoU has failed to find other interested private sectors for the project, indicating that the Karuma project faces similar investment barriers related to the poor investment climate, and the structure and character of power sector investments, making it impossible, to date, to secure investors in the project [DR 112, 113]. The GoU has now announced that it intends to develop the project itself, although it is unclear how the project will be financed [DR 114]. In summary, it has been demonstrated that the types of barriers faced by the proposed CDM project were faced by previously planned similar projects in the country in similar circumstances (in the hydroelectric industry), in companies of similar size and ownership structure (both AESNP and Norpak are international corporations with good access to technology and capital and experience of developing hydroelectric projects around the world and can therefore be considered similar to the BEL consortium), and that these barriers were a major factor in preventing the previous projects from being developed. CL closed
CL 13: Further evidence of CDM consideration in debt and equity financing should be provided, if available.	7.45	The importance of the CERs to improve the equity-IRR is evidenced in a memo to the AKFED Executive Committee and in minutes of the board of directors of IPS. Evidence has been elaborated in section B.5, step 3a, in the last paragraphs. Supporting evidence has been provided to ERM CVS. As made clear in the PDD, CDM has been a key criterion for making the equity investment. CDM was important for lenders to the extent that it secured the commitment of the equity investors, without whom no	ERM CVS has reviewed an extract of a memorandum from the AKFED Executive Committee dated 22 March 2005 [DR 49] indicating that the rate of return on equity (without CDM revenues) was not sufficient for Sithe Global to participate in the bid. ERM CVS has also reviewed an extract from the minutes of the IPS Board of Directors meeting of 1st July 2005 [DR 57] where the board clearly states that the rate of return of the project without CDM was unacceptably low for Sithe Global, and which states that "*The project was expected to generate an additional revenue stream from the carbon credits that will flow once the project has been successfully*

		lending would have taken place.	*developed and registered under the CDM process of the Kyoto Protocol. It was understood that reliance on such revenues would play a key role in Sithe's preparedness to accept a lower return than they would ordinarily expect from such a project*". Furthermore, ERM CVS has reviewed an extract from the IPS Board of Directors meeting of 20th June 2007 [DR 58] stating that the projected revenue stream from the sale of carbon credits had been estimated and would be included in the BEL financial model, and that the CER revenues played an important role in augmenting the bid return and hence were also relied on heavily by Sithe to secure their own internal approval to finance the project. The evidence reviewed therefore indicates that the equity financers explicitly took the CDM into account and that they would not have invested in the project in the absence of CDM revenues due to the fact that the rate of return was considered unacceptably low. CL closed.
CL 14: Please define the scale of other hydropower projects considered to be similar in scale to the project activity in the common practice analysis section of the PDD.	7.54	Comparable projects are defined as privately financed hydropower plants with a capacity of 200 MW or larger, developed after the reform of the Ugandan power sector. Definition was added to the PDD.	The revised PDD defines comparable projects, for the purposes of the common practice analysis, defined as privately financed hydropower plants with a capacity of 200 MW or larger, developed after the reform of the Ugandan power sector (1999) [DR 32]. Given that there have been no hydropower projects developed in Uganda since independence larger than 10.5 MW (Mobuku III project [DRs 07, 34]) with the exception of the Kiira plant (200 MW), the 200MW threshold is considered reasonable as it does not have any impact on the results of the analysis (even if smaller plants were included, no hydro plants larger than 10.5 MW have been developed since the power sector reform). The exclusion of projects developed before the 1999 reform of the electricity sector is considered reasonable given that this reform led to the part privatisation and wide-ranging reorganisation of the power sector in the country, including establishment of the electricity generation company UMEME, the electricity distribution company UETCL, and the electricity regulatory authority (ERA). Prior to this reform, large scale private investments in the power sector were not made [DR 32, 33, 45, 53]. It should be noted that even if projects below 200 MW and before 1999 were included in the common practice analysis, this would not affect the results since the only other large scale (larger than 15 MW) hydroelectric projects to be developed in the country were the Nalubaale (Owen Falls)

			project in 1954 [DR 07, 34], which was before Uganda became independent and therefore cannot be considered to have been developed in a comparable economic or political framework or a comparable investment climate, and the Kiira (Owen Falls extension) project which was developed entirely with public financing [DR 140]. CL closed.
CL 15: Evidence should be cited in the PDD to support the statements made in the common practice analysis.	7.56	Evidence has been added.	Reference is made to the National Development Plan [DR 86], as well as the website of the World Bank concerning the Bujagali project [DR 139] and an article from This Is Africa [DR 138]. The provided evidence demonstrates that there are no comparable large scale hydropower projects in the country. The common practice analysis is assessed in more detail in section 3.6 of the validation report. CL closed
CL 16. Please ensure consistency between the information provided on the map (Figure 6) and in Table 7 in the PDD	8.5	The information has been corrected. The mini hydro power plants that are not included in calculations are either not connected to the grid or there is no formal credible information on their power generation statistics. The inconsistencies have been corrected.	The information in Table 7 and Figure 7 (in PDD version 1.1) was updated and was verified during the on site interviews with UETCL [IV 05], and against the data in the EF calculation worksheet. The information is consistent. CL Closed
CL 17 Please provide evidence/real demonstration to justify why the definition for "off-grid power plant" can be applied and prove that off-grid power generators are not connected to the grid and or that the generators are keep in stand-by mode and only supply power when the grid fails.	8.5	Off-grid diesel generators were excluded entirely from the calculations.	The "Tool to calculate the emission factor for an electricity system" provides the option to choose whether to include off-grid power plants in the project electricity system. The PDD version 1.1 was updated to select Option 1 under Step 2 (i.e. to include only grid power plants). This option results in a more conservative calculation of the grid emission factor. CL closed.
CL 18 Please provide a comprehensive list of all off-grid power plants in Annex 3 in the PDD, indicate their locations on a map, and provide the source of this information.	8.5	Off-grid diesel generators were excluded entirely from the calculations.	The "Tool to calculate the emission factor for an electricity system" provides the option to choose whether to include off-grid power plants in the project electricity system. The PDD version 1.1 was updated to select Option 1 under Step 2 (i.e. to include only grid power plants). This option results in a more conservative calculation of the grid emission factor. CL closed.
CL 19. Please provide a clear explanation in the PDD of why all off-grid power generators are diesel based and no other fossil or non-fossil fuels are used.	8.5	Off-grid diesel generators were excluded entirely from the calculations.	The "Tool to calculate the emission factor for an electricity system" provides the option to choose whether to include off-grid power plants in the project electricity system. The PDD version 1.1 was updated to select

			Option 1 under Step 2 (i.e. to include only grid power plants). This option results in a more conservative calculation of the grid emission factor. CL closed.
CL 20. Please provide justification for the parameters $GRID_p$ and $SWITCH_p$ for each power unit, and include the parameters $OMC_{p,y}$ and $TEL_{p,y}$ for each generator.	8.5	Off-grid diesel generators were excluded entirely from the calculations.	The "Tool to calculate the emission factor for an electricity system" provides the option to choose whether to include off-grid power plants in the project electricity system. The PDD version 1.1 was updated to select Option 1 under Step 2 (i.e. to include only grid power plants). This option results in a more conservative calculation of the grid emission factor. CL closed.
CL 21.Please provide a clear and unambiguous description for the "business" sector classification (according to Step 1.3 Annex 2 of the Tool).	8.5	Off-grid diesel generators were excluded entirely from the calculations.	The "Tool to calculate the emission factor for an electricity system" provides the option to choose whether to include off-grid power plants in the project electricity system. The PDD version 1.1 was updated to select Option 1 under Step 2 (i.e. to include only grid power plants). This option results in a more conservative calculation of the grid emission factor. CL closed.
CL 22. Please demonstrate through calculations and supporting evidence that $OMC_{p,y} > TEL_{p,y}$ and provide the required data/parameters for each power generator (see CL8.5(5)), and include a motivation/explanation for the exclusion of some off-grid plants.	8.5	Off-grid diesel generators were excluded entirely from the calculations.	The "Tool to calculate the emission factor for an electricity system" provides the option to choose whether to include off-grid power plants in the project electricity system. The PDD version 1.1 was updated to select Option 1 under Step 2 (i.e. to include only grid power plants). This option results in a more conservative calculation of the grid emission factor. CL closed.
CL 23. Provide evidence of the daily load shedding applied, in Annex 3 of the PDD, and ensure a full data set is available for 2005 – 2009.	8.5	The most recent datasets has been added to the data sheet. The formally required data is 2007-2008-2009 according to the tool to calculate the emission factor of an electricity system: "*the most recent three historical years for which data is available*". Off-grid diesel generators were excluded entirely from the calculations.	The data sets for 2007, 2008 and 2009 were complete, and indicated hourly load shedding for the 22kV and 33kV lines separately. Off-grid power plants have been excluded from the calculation of the project electricity system. CL closed.
CL 24. Please provide the source information for the hourly electricity generation data used to calculate the Lambda curves for 2005 – 2008 and provide the hourly data for the 2009 Lambda curve calculation.	8.5	The data source is UETCL and 2009 data has been updated. The evidence has been provided to ERM CVS.	The complete data set was included in Annex 3 [DR 101] of the updated PDD [DR 99] and a letter certifying the data as 'true system data' was provided from UETCL [DR 108]. ERM CVS re-performed the Lambda calculations and the data and calculations were found to be correct.

			CL closed.
CL 25 Please justify, with supporting evidence, why the IPCC default values have been applied for $NCV_{i,y}$, $EF_{CO2,l,y}$.	8.12	**NCV:** For HFO and diesel - local data has been used as certified evidence was available. **EF:** No local data was available. Hence, appropriate IPCC values have been used. The PDD was updated accordingly.	Justification was provided for the default values adopted. Local data has been used for the NCV of HFO and diesel. ERM CVS has confirmed the value against the source; official documents from Jacobsen [DR 146] and Aggreko [DR157] power plants certified by UETCL. ERM CVS was not able to identify local data for $EF_{CO2,l,y}$ therefore the use of IPCC values [DR145] are justified. The values are consistent with the reference. CL closed
CL 26 Please provide clarity on the measurement method applied to determine the area of the new reservoir.	8.12	The PDD has been updated to clarify reservoir area measurement in section B.7.1.	The measurement methods to be applied to determine the area of the new reservoir were included in the updated PDD, and will enable accurate measurement. CL closed.
CL 27 Please provide details of meter calibration	9.2	Section B.7.2 of the PDD has been updated to provide details of meter calibration.	The QA/QC procedures and reference to standard to be applied (i.e. IEC standard) were included, and are considered appropriate to ensure that emission reductions can be monitored ex-post. CL closed.
CL 28 Please provide further details of metering equipment for electricity delivered to the grid and electricity consumed from the grid	9.2	Section B.7.1 parameters $EG_{facility}$ and EG_x and section B.7.2 of the PDD are updated to satisfy the raised issue.	Details of the metering equipment to be installed (i.e. the ION 7550) were included in the PDD, and the brochure of the supplier (Schneider Electric) was reviewed by ERM CVS [DR 151]. CL closed.
CL 29 (a) Please provide further detail on the meters to be installed and their locations. (b) Please provide sufficient details of how import and export of electricity will be monitored, and the plans for back-up metering in case of emergency. (c) Please provide further information on which regulatory or national standards will be used for ensuring accuracy and calibration purposes. (d) Please clarify how electricity invoices will be used to cross check the electricity generation amount.	9.4	(a) Section B.7.2 of the PDD has been updated to provide further detail on the meters to be installed and their locations. (b) Further details of how import and export of electricity will be monitored, and back-up plans, have been provided in the revised PDD. (c) Further clarification of applied standards was included in the revised PDD. (d) The means of cross check have been clarified in the revised PDD.	(a) Metering information has been provided in the PDD. It is considered sufficient to fulfil the requirements of the methodology and ensure emission reductions can be accurately monitored ex-post. (b) Relevant details have been added to the PDD. The meters will be capable of measuring both import and export of electricity. 2 meters will be installed at each generator bay so that one may serve as a back up in the event of meter failure. (c) The revised PDD indicates that manufacturer's standards will be followed and that the calibration procedure will follow IEC Class 0.2S accuracy standard. In addition, the PDD describes that the project developer will establish a quality assurance/quality control program in accordance with ISO 9001 which will encompass among other provisions, monitoring, data management,

			and reporting. These provisions are considered sufficient to satisfy the requirements of the methodology and ensure that emission reductions can be accurately monitored ex-post. (d) The PDD indicates that the electricity generation amount will be cross checked using invoices and sales documents. CL closed
CL 30 Please clearly describe the operational and management structure for monitoring in the PDD	9.5	Section B.7.2 of the PDD has been updated to clearly describe the operational and management structure for monitoring.	The revised PDD includes a description of the management provisions to be undertaken to ensure the quality of monitoring results. The roles of 'operator' and 'owner' are described in the PDD. The operational and management structure is considered sufficient to ensure that emission reductions can be monitored ex-post. CL closed
CL 31 Please further specify data management and QA/QC procedures in the PDD. The requirements of the PDD guidelines for data to be kept until 2 years after the end of the crediting period or the last issuance of CERs, whichever occurs later, should be addressed.	9.9	Section B.7.2 of the PDD is updated to specify QA/QC and data storage procedures.	The revised PDD includes more detailed specifications for data management and QA/QC, including details of meter accuracy and calibration, details of the management structure to be implemented for project monitoring, and details of record keeping including that records will be kept for 2 years after the end of the crediting period or the last issuance of CERs, whichever occurs later. In addition the PDD specifies that the detailed provision of the PPA with regard to monitoring [DR 115] should be followed. ERM CVS has reviewed appendix C to the PPA which provides details of the control centre, meter accuracy, which should be 0.5%, testing repair and replacement or recalibration. In addition, Annex 4 indicates the specific reporting requirements from exhibit 6 of the O&M agreement. ERM CVS has reviewed the document [DR 116] and can confirm that the details provided in the PDD are consistent with the document. The data management and QA/QC procedures are considered sufficient to provide for accurate monitoring of emission reductions ex-post. CL closed.
CL 32 Please provide evidence for the following events cited in the GSP PDD: 11 – 15 August 2008 Fact finding mission for PDD preparation; 27 February 2009 First draft of PDD presented to project sponsors; January 2010 Further request for validation proposals	7.4	Evidence has been provided to ERM CVS.	11 – 15 August 2008 Fact finding mission for PDD preparation: ERM CVS has reviewed evidence that the consultants visited Uganda at this time [DR 77]. 27 February 2009 First draft of PDD presented to project sponsors: ERM CVS has reviewed a copy of email correspondence (subject: 'Draft PDD') showing completion of the draft PDD [DR 41];

			January 2010 Further request for validation proposals: ERM CVS has reviewed a project information sheet provided by Climate Focus [DR 88] CL closed
CL 33 Please further justify and elaborate how the registration of the project as a CDM project would help to overcome all the aspects of the barriers listed in the PDD.	7.49	The PDD has been revised to further justify and elaborate how the registration of the project as a CDM project would help to overcome the barriers. Please see also CAR 5.	The revised PDD has described in more detail how the CDM helps overcome the barriers listed. For the project developer, BEL, who receives 40% of the revenues from CERs [DR 64], the revenues from CER sales are estimated to contribute substantially to the financial rate of return of the project, enabling BEL to obtain equity financing from its investors, namely Blackstone. ERM CVS has reviewed an Extract of an investment memorandum submitted by Sithe Global, one of the BEL partners, to the investment committee of Blackstone Group which includes a statement that the project qualifies for the generation of carbon credits, and describing the agreement to allocate 40% of the carbon revenues to the project sponsors [DR 74]. In addition, ERM CVS has reviewed an extract of the Presentation to the same Committee, which sets out the economic attractiveness of the project as an investment including assessment of the Carbon Credit value [DR 75]. The documents provide sufficient evidence to demonstrate that equity approval was linked to the ability of the project to gain carbon credit value, and therefore that CDM helps overcome the investment barrier faced by the project. Bilateral loans from banks were only released once equity financing was guaranteed, and therefore the project would not have gained either debt or equity financing without the approval of Blackstone, which seriously considered the CER revenue benefits. The PDD also describes the indirect benefits of CER revenues, specifically the fact that CER revenues ameliorate the risk of default by the GoU on its commitments to purchase electricity. Proceeds of CER commercialisation are controlled by BEL, and can be used to offset unmet payments by GoU [DR 50]. In addition, the carbon credit revenues were a key factor in the GoU's continued support of the project, as evidenced by the fact that the GoU undertook extensive negotiations with multiple revisions to the implementation agreement to secure CER revenues [DRs 50, 62-63, 64]. Revenues in US dollars or Euros from CER sales will be important to the GoU to offset the foreign currency exchange

			risks associated with meeting the electricity payments (in US dollars) [DR 117] that it faces. CL closed
CL 34. Please provide an explanation and evidence for the consumption of grid electricity by the project activity (presented as monitoring parameter EG_x).		This parameter is not required to be monitored and recorded by the methodology, thus removed from the PDD.	This parameter (EG_x) is not required by the methodology and has been removed from the PDD. The quantity of net electricity generation supplied by the project plant to the grid is monitored. CL closed.

Minor Issues	**Reference to checklist question**	**Summary of project participants' response**	**Final conclusion**
Minor issue 1: please correct the date of the early draft of the PPA mentioned in the GSP PDD as 31 July 2005, and the date of the first offer of validation services from a DOE mentioned in the GSP PDD as 02 July 2009.	**7.4**	The dates are mentioned as requested.	The dates have been corrected in the revised PDD. Minor issue 1 was closed.
Minor Issue 2: The geographical scope of the common practice analysis should be stated explicitly in the PDD.	**7.53**	The geographical scope has been stated clearly in the revised PDD	The geographical scope is clear in the revised PDD. Minor issue 2 was closed

Forward Action Requests	**Reference to checklist question**	**Final conclusion**
No FARs were raised		