

German Financial Cooperation with Uganda

**Nalubaale & Kira Hydropower Project
(Owen Falls)**

(Project BMZ No. 201767912)

UEGCL/CONS/2107/30136

Invitation for Expression of Interest

for

Consulting Services for a Feasibility Study (FS)

for the

**Rehabilitation and Optimisation of the Nalubaale and Kiira
Hydropower Plants**

Uganda Electricity Generation Company Limited (UEGCL)

Block-C Victoria Office Park,

Plot 6-9 Ben Kiwanuka Okot Close, Bukoto, Kampala,

Uganda

July 2017

1 Abstract

Client:	Uganda Electricity Generation Company Limited (UEGCL)
Country:	Uganda
Sector:	Energy/Hydropower
Brief description of the project:	<p>Preparation of a feasibility study for the rehabilitation of the Nalubaale and Kiira hydropower stations at the source of the river Nile near Jinja at the Lake Victoria.</p> <p>The aim is to identify, evaluate and select measures for the rehabilitation and energy production enhancement to ensure a successful and economic operation of the Nalubaale HPP for the next 30 years while Kiira HPP shall improve its energy production.</p>
Brief description of the requested consultant services	<p>The preparation of the feasibility study shall be split into 2 phases:</p> <p>Phase I (general, basic studies):</p> <ol style="list-style-type: none"> 1. Review of existing studies 2. Risk assessment 3. Hydrology, energy production assessment 4. Definition of different options to improve the HPP and their assessment with matrix, including recommendation for most feasible and economic options 5. Environmental assessment 6. Cost considerations and time schedules <p>Phase II (bankable proposals for 3 selected options):</p> <ol style="list-style-type: none"> 7. Technical and operational measures 8. Holistic detailed study for up to 3 selected options 9. Cost estimation/calculation and Financial analysis
Requested candidates	Independent, highly qualified, consulting firms and joint ventures of it
Financing source of consultancy services	<p>German Government via KfW Development Bank, Germany (Phases A and B)</p> <p>Republic of Uganda (taxes)</p>
Pre-selection of Consultants	<p>In accordance to the KfW "Guidelines for the Assignments of Consultants in Financial Cooperation with Partner Countries"</p> <p>https://www.kfw-entwicklungsbank.de/Download-Center/PDF-Dokumente-Richtlinien/Consulting-E.pdf</p>
Language	English
Date of announcement	27/July/2017
Deadline for enquiries	28/August/2017
Deadline for receipt	11/September/2017 at 14:00 pm local time (Uganda)

2 INTRODUCTION

2.1 General

Uganda Electricity Generation Company Limited (UEGCL) is the Project Executing Agency for the holistic feasibility study on the Nalubaale and Kiira Hydropower projects. UEGCL is wholly owned by the Republic of Uganda and located on Block-C Victoria Office Park, Plot 6-9 Ben Kiwanuka Okot Close, Kampala, Uganda.

UEGCL is a Public Limited Liability Company, duly incorporated under the Companies Act on the basis of the Public Enterprises Reform and Divestiture Act, Cap 98 and Electricity Act, Cap 145 respectively. UEGCL shall on behalf of the Government of Uganda, foster the renewable energy generation capacity of Uganda, especially in the hydropower sector.

Nalubaale (180MW) and Kiira (200MW) Hydropower plants are both located on the River Nile in Uganda about 3 km from the source of river Nile.

The required Consulting Services comprise of a high quality feasibility study carried out according to international standards to review the existing studies and to identify, evaluate and make a basic engineering and design of the solutions for the rehabilitation and safe operation of the hydropower plants in line with the given optimised conditions for energy production and the Ugandan energy market of the hydropower plant for at least a next time frame of 30 years, even longer.

At the moment the hydropower plants are run and operated by ESKOM on a concessionaire base. At the end of the concession In 2023 ESKOM has to hand over the plants back to UEGCL.

In its capacity as Project Executing Agency (PEA) for the implementation of sustainable hydropower projects to be financed under German Financial Cooperation with the Government of Uganda, UEGCL invites independent qualified consultants for the preparation of the requested holistic feasibility study. The consultancy services shall be financed from a special grant fund provided by the German Federal Ministry for Economic Cooperation and Development.

The contract shall be awarded in compliance with KfW's Guidelines for the Assignment of Consultants in Financial Co-operation with Partner Countries¹ as well as in line with Public Procurement rules of the Government of Uganda. Based on the results for the feasibility study the next steps for the rehabilitation will be agreed on.

¹ For current version, see

<https://www.kfw-entwicklungsbank.de/Download-Center/PDF-Dokumente-Richtlinien/Consulting-E.pdf>

2.2 Technical Main data

Nalubaale HPP

Constructed 1951- 1954

Commissioned stage-by-stage between 1954 – 1968

Type of Turbine	Double regulated Kaplan
Number of units	10 (18MW each)
Arrangement	Vertical
Installed Capacity	180 MW

Kiira HPP

Construction finished 2000

Commissioned stage-by-stage between 2000 – 2004

Type of Turbine	Propeller
Number of units	5 (40 MW each)
Arrangement	Vertical
Installed Capacity	200 MW

3 OBJECTIVES OF THE EMPLOYMENT OF THE CONSULTANT

The objective of the study, which is split in two phases, is to develop a bankable project proposal, which shall serve as the basis for appraisal by KfW and potentially other financiers.

There are several combinations and aspects for the optimised rehabilitation and operation of the Nalubaale and Kiira hydropower scheme. This will lead to several combinations and solutions in regard to the rehabilitation, upgrade, partial retirement and operation of both hydropower plants, which are using the same water discharge of the source of the Nile.

Special focus will be on the civil structures of the Nalubaale HPP. This plant faces serious problems due to a very serious deterioration of the powerhouse structure caused by the Alkali Silicate Reaction (ASR). In 1964 first hairline cracking occurred in the generator floor level. First it was assumed that these cracks were a result of stress loads caused by a high water level (high water of Lake Victoria). But independent of the water level the cracking has progressively continued, resulting in serious degradation of the generator floor, upper gallery and structural frame of the powerhouse. Based on a study undertaken in 1990 alkali-aggregate reaction (AAR) in the mass concrete elements was identified to be the root cause of the deterioration.

Up to now there is no promising solution to stop ASR. A number of remedial measures such as e.g. the installation of post-tensioned anchors were installed in the powerhouse in order to reduce the rate of concrete expansion, and implementation of associated crack monitoring equipment were undertaken. The remedial measures were aimed at limiting or retarding the impact of the cracked concrete and increase the lifetime of the plant. The measures reduced the movement significantly but the latest study projected a remaining lifetime of only 10 years (up to 2025).

In order to be efficient and yet detailed in preparing a bankable holistic feasibility study, the work will be split into 2 phases:

- Phase I: General study (on all possible options)
- Phase II: Detailed study (for up to 3 options)

3.1 Main Objectives of the Holistic Feasibility Study

1. To assess the feasibility of rehabilitating and modernising Nalubaale power plant with particular attention to minimising or eliminating the ASR effects and the possibility of increasing the life of the Powerhouse civil structure from the current 10 years to at least 30 years (up to 2055) and beyond.
2. To assess the adequacy of dam safety and monitoring system
3. To assess the current status of all the equipment for both stations with a view of identifying those which can be restored or completely replaced, so as to ensure safe and reliable plant operation for the next 30 years and beyond.
4. To assess the feasibility of optimisation of the installed generation capacity and more importantly increasing the annual generation of both, Nalubaale and Kiira power plants.
5. To provide a cost estimate/calculation for the various options for the power plant rehabilitation and dam safety enhancements.
6. To perform a cost-benefit analysis and evaluate the economic and financial feasibility of the proposed options.

7. To ensure that the entire project meets the requirements of Government of Uganda and the lenders.
8. To Increase Efficiency and optimise energy production
9. To ensure that the plant availability of 97 % and above is guaranteed for each of the both plants

3.2 Phase I: Review and basic studies

In the first phase of the study all possible and reasonable solutions and/or options shall be described to match the above mentioned objectives.

It is foreseen to undertake several workshops to guide the consultant, brainstorm and discuss the findings.

The results of phase I will be presented as well in a workshop and finally summarised in an individual report that will include an assessment of hydrology, cost-benefit analysis, treating ASR effects, time schedule, energy production, impact on operation, legal issues with regard to the concessionaire Eskom, environmental impacts and firm recommendation on possible layout amendments of the hydropower plants.

Based on the main findings and the discussion and decisions with UEGCL and KfW up to 3 options will be identified for further detailed assessment in phase II.

3.3 Phase II: Detailed studies and optimisation

Phase II comprises the detailed bankable project proposal for each of the chosen solutions. All relevant aspects for a lender's due diligence must be examined.

Rehabilitation and implementation schedules (financial and time) will be prepared for each of the variations. The risks associated with the construction and operation of the variations will be identified and mitigations will be proposed.

Feasibility level cost estimates/calculations will be prepared, followed by financial/ economic evaluation in line with the standard of international financing institutes.

The impact of the total project costs to the energy market and tariff shall be thoroughly analysed.

The second stage will also include the creation of of environmental and social safeguard documents according to Ugandan standards, KfW's Sustainability Guidelines of the and World Bank/IFC Environmental and Social Safeguards.

The results, studies and analysis performed in both phases will be presented in a full feasibility study report giving a firm and holistic recommendation on the layout, technical viability and financial viability for the project and the impact to the energy market. The report shall among other topics contain basic engineering and design, drawings at a feasibility study level, and an executive summary and conclusions and recommendations.

The results will also presented at a final technical workshop meeting to UEGCL and KfW.

4 INSTRUCTIONS TO APPLICANTS

4.1 General

Upon request, UEGCL will provide all previous studies and other available information and data relevant for each of the hydropower plants.

The consultants shall submit their prequalification documents to the PEA and the Tender Agent not later than the submission date indicated below. The prequalification process is governed by KfW's Guidelines for the Assignment of Consultants in Financial Co-operation with Partner Countries.

It has been ensured that this Notice for Prequalification is in line with KfW's guidelines, however, in case of contradiction between KfW's guidelines and this Notice for Prequalification, KfW guidelines shall prevail.

At any time, UEGCL in consultation with KfW either at its own initiative, or in response to clarifications requested by an interested consultant, may clarify this invitation. Such information shall be shared in writing by e-mail to all consultants who have informed UEGCL about their participation.

All documentation shall strictly be prepared in the English language only.

The preparation and the submission of the prequalification documents is the responsibility of the applicant and no relief or consideration can be given for errors and omissions.

All costs for a site visit, obtaining information/ data and preparation/ submission of the prequalification document, meetings, negotiations, etc. in relation with the prequalification or the subsequent proposal shall be borne by the consultants.

4.2 Submission Date and Addresses for Submission and Further Information

The final submission date is **11 September 2017 up to 14.00 Hours (Ugandan Time)**.

Two printed set of the prequalification documents and one digital copy on USB-stick/CD/DVD in a closed envelope shall be marked "Original", and "Copy". The documents should be signed by the authorised representatives of the applicants, and shall be directly forwarded not later than the submission date to:

Address:

Procurement Manager,
Uganda Electricity Generation Company Limited (UEGCL)
Block-C Victoria Office Park,
Plot 6-9 Ben Kiwanuka Okot Close, Bukoto,
P. O. Box 75831
Kampala, Uganda

One printed set of the prequalification documents (signed by the authorised representatives of the applicants) and one digital copy on CD/DVD in a closed envelope shall be marked "Copy 1", and shall be directly forwarded not later than the submission date (15:00 h local time) to the Tender Agent:

Mr. Helmut Ferrari
HF consulting engineers
Luise-Ullrich-Str. 20
D-80636 Munich - Germany

For timely delivery only the submission at UEGCL is relevant.

The envelope of the pre-qualification document has to be clearly marked with:

*Nabulaale & Kiira Hydropower Projects
Feasibility Study
UEGCL/SRVCS/xxx
Prequalification Documents
- DO NOT OPEN -*

4.3 Enquiries

Latest date for enquires is 2 weeks before submission deadline. For any enquiries please use the email address below:

pdu@[uegcl.co.ug](mailto:pdu@uegcl.co.ug)

5 Scope and Content of Prequalification Documents

The prequalification documents shall contain (for the lead consultant and all associated partners):

- Covering Letter signed by a person with the powers of attorney, comprising the firm's name, address, contact person, telephone, fax and email
- Corporate profile and status (maximum 10 pages), including clear statements of type, property and key task of the association;
- Evidence of financial resources of the lead consultant and all associated partners. Other evidence required are audited balance sheets and profit and loss accounts for the last three years [Annex 3];
- Legally binding signed **declaration of undertaking** from the lead consultant and all associated partners (including Sub-consultants) [Annex 1] as declaration to observe the highest standard of ethics during execution of the contract (applicants should be aware that any fraudulent or corrupt activities disqualify them immediately from participation in the selection process and will be subject to further legal investigation);
- Relevant references with brief description of the tasks from the last ten years to prove technical qualifications, experience abroad and in Uganda as well as in the region, strictly related to the envisaged services (maximum **35 references** for the entire application - any reference project required under clause 7.c can be used for several items in this clause) in the EU-Format [Annex 4];
- Number, technical background and years within company of experts in the company (for on-site activities as well as monitoring and back-up services from the home office) [Annex 2];
- Statement of the companies personnel structure(s) with information about education, professional experience, regional experience, years with firm, specific project-related experience and experience in similar posts (this list shall allow a profound judgement on the consultant's general ability to provide the required personnel having the specific experience for the project in case of an offer). The expert lists shall be given for (a) consulting activities as well as (b) monitoring and back-up services from the home office [Annex 2];
- *Declaration of intent* (of submitting a proposal in case of being short-listed) and *type of association* with other consultant companies (intended contractual arrangement, name of lead company, letters of intent of participating firms, rough intended work shares between the associated consultants), *statement on affiliations* of any kind with other firms which may present a conflict of interest in providing the envisaged services.
- All the pages of documents submitted should be signed by the person with the powers of attorney

Interested consultants are requested to submit concise and clear, but substantial documents and to adhere to the above structure. Non-compliance with this invitation or faulty information might lead to non-qualification.

6 Entitlement of Consultants and Organisation of the Services

The contract for the consultancy services in relation with this prequalification will be awarded to an internationally experienced consulting firm/joint venture.

The Consultant is encouraged to collaborate with domestic consulting firms and/or individual consultants as well as specialised consultants/experts if deemed necessary to reinforce the needed local, institutional and technical competence and expertise. The internationally experienced high quality consultant shall render the majority of the consultancy services and has the full responsibility for the results of a possible consortium.

7 Evaluation of Prequalification Documents

The evaluation of the prequalification documents encompasses a review of the administrative requirements and qualifications and includes the check on the completeness of the following documentation and criteria:

- a) Completeness of the documents as required under Item 5.
Failure to submit the following documents might lead to the non-qualification of the consultant(s):
 - a-1) Declaration of Intent
 - a-2) Type of intended association (including name of lead company)
 - a-3) Statement on affiliations
 - a-4) Declaration of Undertaking [Annex 1]
 - a-5) Financial statements for the last three years and filled [Annex 3]
 - a-6) References for the last 10 (20 years for ASR/AAR) related to the envisaged services [Annex 4]
 - a-7) Lists of companies personnel structure(s) with information about education, professional experience, regional experience, years with firm, specific project-related experience and experience in similar posts [Annex 2]
- b) Insufficient financial resources will lead to the non-qualification of the consultant(s). The following minimum criteria will apply for the lead consultant:
 - b-1) Annual revenue of the lead consultant of more than **3 Million Euros** for any of the last three years,
 - b-2) Positive operating profit, accumulated over the last three years,
 - b-3) Current ratio (current assets divided by current liabilities) should be > 1.2 for the each of the last three years.
- c) Insufficient experience of the consultant might lead to the non-qualification of the consultant(s). The following minimum requirements will apply for the consultant (any reference project can be used several times for the relevant proofs as requested below, but a maximum of **35 single reference** projects shall be kept). The specific roles of the companies/experts played in the various projects must be highlighted:

- c-1) At least five (a maximum of 10 will be evaluated) Feasibility studies for hydropower projects with an installed capacity between 20 - 200 MW during the last ten years
- c-2) At least two (a maximum of four will be evaluated) rehabilitation projects of hydropower projects during the last ten years > 20 MW.
- c-3) At least two (a maximum of three will be evaluated) projects dealing with ASR for hydropower or similar projects during the last **twenty** years. Authentic reference letters proving handling ASR works from the power plant operators/owners must be included.
- c-4) At least two (a maximum of three will be evaluated) ESIA studies for hydropower projects during the last ten years
- c-5) At least five (a maximum of ten will be evaluated) full Feasibility studies for a hydropower project in a developing country (outside of Africa) during the last ten years; one out of the five studies must be financed by an International Finance Institution (IFI).
- c-6) At least three (a maximum of five will be evaluated) Feasibility studies for a hydropower project in Sub-Saharan Africa during the last ten years; one out of the three studies must be financed by an International Finance Institution (IFI).

Specific evaluation criteria and their individual weight are presented in the following table:

Criteria	Maximum Score
1. Evidence of relevant experience gained by consultants during the past ten/twenty years (<i>experience of the firm</i>)	45
1.1 Experience in handling similar projects (Preparation of feasibility studies for Hydropower projects and their rehabilitation)	23
1.2 Experience with ASR/AAR works in Hydropower Plants. (Must be based on a well detailed experience and evidence for both Civil works and Equipment)	12
1.3 Experience under various working-conditions in developing countries.	5
1.4 Experience with working-conditions in Sub-Saharan Africa.	5
2. Suitability for this specific project (<i>Experience of the available experts</i>)	55
2.1 Assessment of available technical expertise specific to this project	30
2.2 Assessment of the personnel structure in regard to the tasks expected	10
2.3 Assessment of personnel in permanent employment and always available to monitor the team and provide back-up services from the home office.	10
2.4 Form of the application documents: Are they complete, concise and related to the project?	5
Total	100

After having completed the evaluation of the prequalification documents, a short-list consisting of the five highest ranked consultants, or less, scoring a minimum of 70 points will be established. Short-listed firms will be invited to submit a technical and financial proposal. Firms not prequalified will be informed accordingly.

The PEA is not bound to select any consultant due to whatever reasons.

After opening the prequalification documents until preparation of the short-list of the qualified consultants, no communication of any type shall be entertained unless called for by PEA/ KfW.

It is assumed that the Consultancy Services will be rendered starting in the beginning of 2018.

Annex 2

PERSONNEL STRUCTURE(S)

Please complete the table below.

NOTE: CVs are not required here and shall not be submitted at this tender stage.

Lists of the company personnel structure(s) with specific experience in hydropower projects, hydropower expert knowledge and interdisciplinary skills to perform a challenging rehabilitation and uprate in this sector.

Technical expertise specific to this project*

Type of work	Years of experience (firm)	No. of projects executed (firm)	No. of experts with relevant experience (presently employed)
Hydrological analysis			
Feasibility Studies for hydropower projects			
Feasibility studies for hydropower projects with installed capacity > 20 MW			
Economic analysis, determine of economic key factors and levelised cost of energy			
ESIA for hydropower projects > 20 MW			
Complex rehabilitation, upgrade, partial repair and exchange works in hydropower plants			
Profound experience with ASR			
Optimisation of hydropower plants			
Qualified residual service life analyses to assess whether the important and costly key parts of a hydropower plant can be reused or repaired or refurbished or must be renewed			
Legal and contractual assessments for hydropower assets			

Annex 2

Personnel structure in regard to the tasks*

Type of expertise	No. of personnel	No. with >10 years of experience
Hydrology, sediment transport and mobilisation as well as engineering morphology		
Geology/geotechnics for hydropower projects		
Civil engineering for hydropower projects		
Mechanical engineering for hydropower projects		
Electrical engineering for hydropower projects		
SCADA engineering for hydropower projects		
ASR assessments in hydropower and similar applications		
Environmental and social studies for hydropower projects		
Economist, energy market analysis for hydropower projects		

Key personnel in permanent employment and continuously available to ensure quality, to monitor the team and to provide holistic high quality back-up services*

Name / Degree	Expertise	Years of professional experience	Years within firm
	Project management		
	Hydropower Engineering		
	Electro-Mechanical Engineering		
	EISA-Services		
	Etc.		

**List shall be duplicated and information provided for each of the associated companies*

Annex 3

FINANCIAL CAPABILITY

Please complete the table below.

REMARK: Aside from completing the table, full certified financial statement documents must be given!

	2013	2014	2015	Average
b1) Annual revenue				
b2) Positive operating profit				
b3) Current ratio				

- b-1) Annual revenue of the lead consultant of more than **3 Million Euros** for any of the last three years,
- b-2) Positive operating profit, accumulated over the last three years,
- b-3) Current ratio (current assets divided by current liabilities) should be > 1.2 for the last three years on average.

Company Experience - References

Please provide information contained in the table below summarizing the **major relevant projects related to this Hydropower Project** carried out in the course of the past **10** years (20 years for ASR only) by the legal entity or entities making this application. The number of references to be provided shall not exceed **35** for the entire application.

Ref (maximum 10)	Project title		...					
Name of legal entity	Country	Overall project value (EUR)	Proportion carried out by legal entity (%)	No. of key personnel provided for the project	Name of client and contact person with e-mail	Origin of funding	Dates (start/end) and number of MM	Name of partners if any
...
Description of project in relevance to Nalubaale & Kiira HPP					Type of services provided			
<ul style="list-style-type: none"> - Technical features, type of HPP, layout - Size of project (Installed capacity in MW) - Detailed and clear Scope of work - Rehabilitation or new construction project - ASR /AAR 					<ul style="list-style-type: none"> - Provided services (engineering, design, residual service time assessment, tendering, feasibility study, OE, site supervision, commissioning, EISA, etc.) in detail - Role of experts 			