

# AFRICAN DEVELOPMENT FUND



**PROJECT : KHOLOMBIDZO HYDRO ELECTRIC POWER  
PLANT FEASIBILITY STUDY**

**COUNTRY : MALAWI**

## **PROJECT APPRAISAL REPORT**

### Appraisal Team

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**ONEC DEPARTMENT**

January 2013

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## Currency Equivalents

*As of September 2012*

UA 1	=	USD 1.52201
UA 1	=	MWK 427.186

## Fiscal Year

01 January – 31 December

<b>LIST OF ABBREVIATIONS</b>	
AfDB	African Development Bank
ADF	African Development Fund
CPIA	Country Policy and Institutional Assessment
CSP	Country Strategy Paper
EAD	Environmental Affairs Department
ESCOM	Electricity Supply Company of Malawi
ESIA	Environment and Social Impact Assessment
ESMP	Environment and Social Management Plan
GoM	Government of Malawi
ICSP	Interim Country Strategy Paper
JAS	Joint Assistance Strategy
MoE	Ministry of Energy
MWK	Malawi Kwacha
PCN	Project Concept Note
PCR	Project Completion Report
PFM	Public Financial Management
PRSP	Poverty Reduction Strategy Paper
QPR	Quarterly Progress Report
RAP	Resettlement Action Plan
RAS	Regional Assistance Strategy
UA	Units of Account
USD	United States Dollar
WB	World Bank

## Grant Information

### Client's information

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**RECIPIENT:** Republic of Malawi

**EXECUTING AGENCY:** Ministry of Energy

### Financing plan

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Source	Amount (UA)	Instrument
ADF	2.00 million	Grant
Government of Malawi	0.15 million	
<b>TOTAL COST</b>	<b>2.15million</b>	

### Timeframe - Main Milestones (expected)

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Concept Note approval	September 2012
Study approval	March 2013
Effectiveness	April 2013
Last Disbursement	June 2015
Completion	December 2014

# Study Summary

## 1. Study Overview

In Malawi, changes in power demand scenarios within the past 10 years, coupled with tremendous environmental degradation has drastically negatively affected the operation and efficiency of the existing power generating plants, which are hydro-based. This, coupled with problems faced in the realization of the power development options outlined in the 1998 Power Development Master Plan study, has forced the Government of Malawi to critically re-examine its power development options in the short and medium term. In order to critically address the prevailing and projected power requirements for the country, while at the same time ensuring that the system's reliability is improved, the Government has formulated a number of interventions, one of which is the undertaking of a feasibility study for the development of the Kholombidzo Hydropower plant.

## 2. Needs Assessment:

Growing demand for power in the central and northern regions, as industrial and mining prospects open up and the expansion of the grid through the Malawi Rural Electrification Programme, has put considerable strain on the limited generation capacity. This has thus discouraged would-be investors in both the industrial and mining sectors from seriously considering investing in the country. The project has been identified in previous studies as a potential least cost option for the expansion of the power generation system and increasing access to electricity by the rural communities. Furthermore the Kholombidzo Hydro Electrical Power Project is a priority in the recently launched Economic Recovery Plan.

## 3. Fund's Added Value:

The study is consistent with the objectives of the Malawi Growth and Development Strategy which emphasises the importance of putting in place a foundation for long-term economic growth through improved infrastructure and investment climate. By supporting the study, the Fund will contribute to facilitating investment in the provision of electricity needed for supporting economic growth and poverty reduction and also presents an opportunity for knowledge sharing from previous experiences in other member countries.

## 4. Knowledge Management:

The study will facilitate knowledge transfer towards the Ministry of Energy and the Electricity Supply Company of Malawi engineers through hands on training by the consultants. The consultant shall also arrange the acquisition and licensing of all software used in the studies for the country's later use after the completion of the assignment, inclusive of relevant expert training of the project staff in the use of such software. The license for all such software shall be of a period of not less than 2 years and shall commence a month prior to the completion of the assignment.

## Result-based Logical Framework

<b>Country and project name: MALAWI - KHOLOMBIDZO HYDRO ELECTRIC POWER PLANT FEASIBILITY STUDY</b>						
<b>Purpose of the project:</b> The intervention will produce a feasibility study for the future development of a power generation project to contribute to the expansion of electricity generating capacity in Malawi, which would ultimately contribute to addressing electricity shortages and enable the delivery of reliable energy and electricity access expansion in Malawi.						
Results chain		Performance indicators			Means of verification	Risks/mitigation measures
		Indicator (including CSI)	Baseline	Target		
Impact	Improved quality of life in Malawi	Electricity access rates	8% (2012)	30% (2020)	Annual reports published by the Ministry of Energy	
Outcome	Increased power generation capacity in Malawi	Additional capacity in MW generated	Nil (2012)	100MW (2020)	Annual reports published by the Ministry of Energy	<p><b>Risk statement</b></p> <p>1.1 Unavailability of resources to implement the project</p> <p>1.2. Governance slippages and withdrawal of support from development partners</p> <p><b>Mitigation measure</b></p> <p>1.1 Creation of an enabling environment for private sector participation.</p> <p>1.2 Commitment of Government of Malawi (GoM)</p>
Outputs	Bankable Feasibility Study Report	Number of reports completed	nil (2012)	One (2014)	Report from the consultant	<p><b>Risk statement</b></p> <p>3.1 Delays in the procurement of consultancy services</p> <p>3.2 Non-adherence to deadlines for the conduct of study and validation of reports</p> <p><b>Mitigation Measure</b></p> <p>3.1 Effective support and oversight from the Bank through the Field Office</p> <p>3.2 Engagement of a reputable consultancy firm</p>
	Audit Reports	Number of audit reports	nil (2012)	Two (2014)	Report from the auditor and Bank supervision reports	
KEY ACTIVITIES	Components				Inputs	
	Feasibility study				Component 1: UA 2.08 million	
Project management				Component 2: UA 0.07 million		

### Preliminary Feasibility Study Implementation Program

<b>Activity – Time Period in Months</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>
Consultants Procurement																
Inception Report																
ESIA Baseline Study Report																
Interim Feasibility Study Report & ESIA's																
Draft Feasibility Study Report & Draft ESIA Reports																
Final Feasibility Study Report & ESIA's																
Quarterly report																

0=Consultant procurement six months required

# **REPORT AND RECOMMENDATION OF THE MANAGEMENT TO THE BOARD OF DIRECTORS ON A PROPOSED GRANT TO THE REPUBLIC OF MALAWI FOR THE KHOLOMBIDZO HYDRO ELECTRIC POWER PLANT FEASIBILITY STUDY**

Management submits the following Report and Recommendation on a proposed Grant for UA 2.00 million to finance the Kholombidzo Hydro Power Plant Feasibility Study in Malawi.

## **I – STRATEGIC THRUST AND RATIONALE**

### ***1.1 Study linkages with country strategy and objectives***

1.1.1 The Government of Malawi's Growth and Development Strategy (MGDS II, 2011-2016), which aims to create wealth and reduce poverty through sustainable economic development and infrastructure development, was approved in April 2012. The MGDS II identifies six broad thematic areas including infrastructure development. There are five sub themes under infrastructure development, namely: energy; transport; water development; information and communication; and housing and urban development. The Government notes that infrastructure is a key component for creating an enabling environment for private sector driven growth and provision of timely and quality social services. However, the country faces a number of challenges such as inadequate energy generation and supply. From the infrastructure thematic area, energy, together with transport and water development, has been identified as key priority area. The Government will thus focus on increasing the generation, transmission and distribution of electricity and promote other energy sources, besides hydro, with the aim of improving service delivery and increasing output in the economy.

1.1.2 The Bank Group considers the support of infrastructure development in Malawi, especially in the power sector, as a critical lynchpin for economic development. The Bank Group's Interim Country Strategy Paper (2011-2012) focuses on: (a) improving infrastructure (Pillar I); and (b) accelerating private sector development (Pillar II) as key priorities, both of which are addressed by the study. The proposed study is therefore in conformity with the Interim Country Strategy Paper (ICSP) and with the MGDS. The study is also aligned with the proposed two pillars of the new Country Strategy Paper covering 2013-2017 whose preparation is currently underway. The study will result in a feasibility report for the development of a clean energy project which will contribute to security of supply and increased access to energy for the general population which is pivotal to economic growth. It is thus consistent with the twin objectives of the Bank Group's Long Term Strategy of inclusive and green growth.

### ***1.2 Rationale for Fund's involvement***

1.2.1 Development of the power sector in Malawi has always been guided by master planning for 20 years in advance and specific feasibility studies for the selected power development options. This has helped Malawi to plan ahead in terms of mobilization of the huge financial resources required for such developments and match the demand for electricity with its development plans. In the past 40 years, two major power development master plans and several specific feasibility studies for selected power development options have been produced and used in the development of the electric power network. The 1998 Power System Development and Operation Study laid out the least-cost power development plan for the electric power system for the period 2000-2020. The latest document is the Integrated Resource Plan IRP prepared by ICF-CORE, a consulting firm hired by Millennium Challenge Corporation (MCC), covering the planning period to 2030.



1.2.2 Changes in power demand scenarios within the past 10 years, coupled with tremendous environmental degradation in Malawi has drastically negatively affected the operation and efficiency of the existing power generating plants, which are hydro-based. This, coupled with problems faced in the realization of the power development options outlined in the 1998 study, has forced the Government of Malawi to critically re-examine its power development options in the short and medium term and come up with some quick fixes that are a slight departure from the recommendations of the 1998 Power Development Master Plan. Growing demand for power in the central and northern regions, as industrial and mining prospects open up and the expansion of the grid through the Malawi Rural Electrification Programme (MAREP), has put considerable strain on the limited generation capacity. This has thus discouraged would-be investors in both the industrial and mining sectors from seriously considering investing in the country.

1.2.3 In order to critically address the prevailing and projected power requirements for the country in general, while at the same time ensuring that the system's reliability is improved, the Government has formulated a number of interventions, one of which is the undertaking of a feasibility study for the development of the Kholombidzo Hydropower plant. The project has been identified in previous studies as a potential least cost option for the expansion of the power generation system and increasing access to electricity by the rural communities. Furthermore the Kholombidzo Hydro Electrical Power Project is a priority in the recently launched Economic Recovery Plan (ERP). The study is consistent with the objectives of the MGDS which emphasises the importance of putting in place a foundation for long-term economic growth through improved infrastructure and investment climate. By supporting the study, the Fund will contribute to facilitating investment in the provision of clean energy needed for supporting economic growth and poverty reduction and also presents an opportunity for knowledge sharing from previous experiences in other member countries.

### ***1.3 Donors coordination***

1.3.1 The last Bank Group intervention in Malawi in the energy sector was approved in 1993 to finance the Kapichira Hydroelectric power plant (64MW). Before then there were four other operations dating as far back as 1969 when the first loan for Tedzani Falls Hydroelectric Project (20MW) was approved. The Bank subsequently financed the construction of the Nkula/Lilongwe Transmission Line in 1975 and Nkula B Hydroelectric Project (60MW) in 1977. In 1980 the Bank also financed a rural electrification project which connected a total of 3,400 rural consumers at the time. The Malawi Field Office will play an active role in the capacity development and monitoring of the study's undertaking

1.3.2 The Public Finance Management Act of 2003 gives the mandate for coordinating both bilateral and multilateral aid to the Ministry of Finance. The Ministry of Economic Planning and Development coordinates aid activities as they relate to the MGDS and the Public Sector Investment Program. In 2006, the Government established sixteen sector working groups under the Development Assistance Strategy which included one on energy. The group is chaired by the Ministry of Energy and has met twice in 2012.

1.3.3 The main donors to the sector in the past five years have been the Millennium Challenge Corporation (MCC) and World Bank. In April 2011 the MCC and GoM signed a USD 350.70 million Compact. The Compact will focus on addressing the rehabilitation of key generation, transmission, and distribution assets throughout the country. The MCC has also financed the development of an Integrated Resource Plan (IRP), completed in August 2011, which comprehensively assessed the status of the sector, defined priority areas of

attention and feasibility studies required for the power sector infrastructure rehabilitation, as well as helped to prioritise sector development options and support the sector reforms.

1.3.4 Following the lifting of the suspension of the Compact Agreement in July 2012 the MCC together with the GoM are in the process of reviewing the program provisions with respect to the scope for various projects, associated costs and implementation arrangements. The suspension was in response to the political and economic distress in the country.

1.3.4 In 2011 the World Bank approved a loan agreement of about USD 84.70 million for the development of the Energy Sector Support Project to increase the reliability and quality of electricity supply in the major load centres. The project has four components: (i) Electricity network strengthening and expansion; (ii) Conducting generation and transmission feasibility studies; (iii) Demand side management and energy efficiency measures; and (iii) Capacity building and technical assistance.

## **II – STUDY DESCRIPTION**

### **2.1 Background**

2.1.1 *Energy sector in Malawi:* Malawi has an installed capacity of about 283.6MW and nearly 95% of electricity supply is provided by hydropower from a cascaded group of interconnected hydroelectric power plants located on the Shire River and a mini hydro on the Wovwe River, which constitute the grid system. Despite good potential for geothermal, solar and wind resources these have not yet been assessed to industry standards. Malawi also has indigenous coal reserves that are currently exploited on only an informal basis, and petroleum imports that carry both a high transportation cost burden and price fluctuation. Some thermal power plants serve as stand-by for the interconnected system: a 15MW gas turbine plant in Blantyre installed in 1975 but decommissioned and boarded off in 2007 due to its uneconomical maintenance and running costs owing to its old age and obsolete spare parts, and a 1.1 MW diesel power plant in Mzuzu.

2.1.2 Current demand is estimated at 350MW while available capacity is about 277 MW. It is projected that demand will be 598MW in 2015, 874MW in 2020, 1,193MW in 2025 and 1,597MW in 2030. The power sector in Malawi is characterised by capacity deficit, poor quality and unreliability of power supply, low access (6-8%), a financially constrained utility, and a weak enabling environment to attract private investment.

2.1.3 The oversight, development and delivery of energy policy in Malawi falls within the remit of the Ministry of Energy (MoE). The Malawi Electricity Regulatory Authority (MERA) regulates the sector but reports directly to MoE. The Electricity Supply Corporation of Malawi (ESCOM) is effectively a government-owned institution and is by far the main generator, distributor and retailer of electricity and it currently owns all the main power plants and the national transmission grid. However no major investments into both generation and transmission have taken place for the past ten years. ESCOM has for several years had challenges in providing satisfactory service to its customers due to financial constraints arising from non-cost recovery tariffs

### **2.2 Study objective**

2.2.1 The intervention will produce a feasibility study for the future development of a power generation project to contribute to the expansion of electricity generating capacity in Malawi, which would ultimately contribute to addressing electricity shortages and enabling the delivery of reliable energy and electricity access expansion in Malawi. The proposed

Kholombidzo HPP Feasibility Study will conduct an update of the previous screening studies undertaken from 1985 to 1998 as well as use the information from the Integrated Water Resources Development Plan for both Lake Malawi and Shire River System to confirm the optimal location and layout for the power plant. The study will then produce a full bankable feasibility study and preliminary designs for the optimal layout that could be used in sourcing financing for project implementation. The study shall cover the following main tasks:

- Compilation and initial review of previous documents and data
- Hydrology - assessment of the hydrological parameters for the project based on available database and verify the quality of available data
- Topography – Preparation of digital maps for the whole project area which should be checked by ground surveys.
- Geology – Conducting the detailed geological investigations
- Power Simulation - Carry out energy production simulation, for different reservoir volumes and for different discharge rates.
- Project Layout – Propose optimum power house and dam lay out with the aim of utilizing the power potential of the site.
- Load Forecast – Review and update the load forecast
- Multipurpose use of the Dam – Verify if the dam can also be used for water supply purposes.
- ESIA and RAP – Conduct detailed ESIA and RAP for the project
- Transmission System – Conduct selection of optimum voltage and optimum connection point with the national grid.
- Prepare project cost estimate

Details of these tasks are captured in the Terms of Reference.

## 2.3 Study components

2.3.1 The study components are summarized below:

Table 2.1: Study Components

No.	Component Name	Estimated Cost (UA mil.)	Component Description
1.	Feasibility study	2.08	<ul style="list-style-type: none"><li>• Consultant for Feasibility Study - Production of a report which shall include stakeholder consultations outcomes, review of previous documents related to development of new hydropower sites in Malawi, compilation of all available data on hydrology, geology, seismic activities, etc, relevant for the power plant, conduct initial site visits to the potential dam/diversions sites, power house sites and tunnel and transmission routes to evaluate topographical, geological, hydrological, access, and other conditions, provide a detailed plan for the geotechnical work including procurement of the geotechnical services, a framework for the preparation of Geotechnical Data Report and Geotechnical Baseline Report.</li><li>• The detailed Feasibility Study Environment and Social Impact Assessment and Resettlement Action Plan as described in the attached TORs</li></ul>
2.	Project Management	0.07	<ul style="list-style-type: none"><li>▪ Consultant for Financial Audit - An audit by external independent auditors to express an opinion on the financial statements provided to the Fund and provide reasonable assurance that the funds have been applied for the intended purposes with due attention to economy and efficiency.</li><li>▪ Operating Costs - Project Implementation Team costs related to project monitoring, supervision and other costs comprising fuel, accommodation, per diem, stationery, photocopying etc.</li></ul>

## 2.4 Technical solution retained and other alternatives explored

2.4.1 The proposed study will provide the GoM with a report that can be used to develop the generation potential of the Kholombidzo site.

## 2.5 Study type

The study is a standalone operation that will be financed by a grant from the ADF.

## 2.6 Study cost and financing arrangements

2.6.1 The estimated cost of the study, net of taxes and customs duty is UA 2.15 million or approximately USD 3.27 million. This cost includes a contingency of 5% for price escalation. The contingency is considered adequate because the fee estimates are generous and are based on a similar recently negotiated contract in Malawi.

Table 2.2: Study Cost Estimates by Component [amounts in million UA equivalents]

Components	Foreign Currency Costs	Local Currency Costs	Total Costs	% Foreign
Feasibility study	1.65	0.33	1.98	83
Project Management	0.00	0.07	0.07	0
<b>Total Base Cost</b>	<b>1.65</b>	<b>0.40</b>	<b>2.05</b>	<b>80</b>
Price Contingency	0.08	0.02	0.10	78
<b>Total Study Cost</b>	<b>1.73</b>	<b>0.42</b>	<b>2.15</b>	<b>80</b>

Note: Exchange rates are provided in the introduction of this report (page (i)).

2.6.2 The study will be financed by the ADF resources. ADF financing will not exceed UA 2.00 million. This financing represents 93% of the total cost and will cover the entire foreign currency cost of UA 1.73 million and 66% of the local currency cost of UA 0.42 million including the entire amount of project operating costs borne by the Project Implementation Team. The GoM will contribute 7% of the study cost, related to provision of office space for the consultants and the time related and in-kind costs associated with the participation of the sector working group.

Table 2.3: Sources of financing [amounts in million UA equivalents]

Sources of Financing	Foreign Currency Costs	Local Currency Costs	Total Costs	% Total
ADF Grant	1.73	0.27	2.00	93
GoM	0.00	0.15	0.15	7
<b>Total</b>	<b>1.73</b>	<b>0.42</b>	<b>2.15</b>	<b>100</b>

2.6.3 The study cost by category of expenditure and the expenditure schedule are shown in Table 2.4 and 2.5 below respectively.

Table 2.4: Study cost by category of expenditure [amounts in million UA equivalents]

Categories of expenditure	Foreign Currency Costs	Local Currency Costs	Total Costs	% Foreign
<b>Consulting Services &amp; Training</b>				
i) Consultant for Feasibility Study	1.65	0.33	1.98	83
ii) Consultant for Financial Audit	0.00	0.04	0.04	0
<b>Operating Costs</b>				
i) Monitoring and Supervision	0.00	0.02	0.02	0
ii) Operation and Utilities	0.00	0.01	0.01	0
<b>Total base cost</b>	<b>1.65</b>	<b>0.40</b>	<b>2.05</b>	<b>80</b>
Price Contingency	0.08	0.02	0.10	80
<b>Total study cost</b>	<b>1.73</b>	<b>0.42</b>	<b>2.15</b>	<b>80</b>

Table 2.5: Expenditure schedule by component [amounts in million UA equivalents]

Components	2013	2014	Total
Feasibility Study	1.25	0.83	2.08
Project Management	0.04	0.03	0.07
<b>Total base cost</b>	<b>1.29</b>	<b>0.86</b>	<b>2.15</b>

## **2.7 Study's target area and population**

The study area will be the course of the Shire River and its immediate zone of influence up to its confluence with the Zambezi River. Since the study will deal with a project that will deliver energy into the national grid, the ultimate beneficiary will be the entire country which will experience improved energy supply resulting from the development based on the outcomes of the study.

## **2.8 Participatory process for study identification, design and implementation**

The identification and selection of Kholombidzo was a result of stakeholder consultations. Various institutions have deliberated and have been consulted regarding the many options that exist in Malawi to foster electricity supply. In order to develop a sustainable power supply system in Malawi a range of studies have to be conducted. The studies are imperative to create several options for investment in power generation plants in order to maintain a pipeline of bankable projects. Among key stakeholders consulted are the Blantyre Water Board, which would benefit from the creation of a reservoir at Kholombidzo, Ministry of Energy, Malawi Electricity Regulatory Authority (MERA), Water Resources Department, National Water Development Program, ESCOM, Environmental Affairs Department, Ministry of Agriculture, Transport (Ports), Ministry of Lands, MCC, the Malawi Confederation of Chamber of Commerce and Industry, and the Development Partners.

## **2.9 Bank Group experience, lessons reflected in study design**

2.9.1 The last Bank Group intervention in Malawi in the energy sector was approved in 1993 to finance the Kapichira Hydroelectric power plant (64MW). Before then there were four other operations dating as far back as 1969 when the first loan for Tedzani Falls Hydroelectric Project (20MW) was approved. The Bank subsequently financed the construction of the Nkula/Lilongwe Transmission Line in 1975 and Nkula B Hydroelectric Project (60MW) in 1977. In 1980 the Bank also financed a rural electrification project which connected a total of 3,400 rural consumers at the time.

2.9.2 Lessons incorporated in the design of the study have been drawn from other studies and on-going projects. Relevant lessons from Bank Group operations include (i) project design should be preceded by detailed feasibility studies; (ii) design of future projects need to be focused on cost effectiveness and visible impacts; (iii) Bank Group to continue to provide fiduciary clinics/trainings to address GoM's limited capacity to implement projects which oftentimes leads to poor portfolio performance results; (iv) need to establish an effective project management team assisted by coordinating teams in the beneficiary institution and the full involvement of the beneficiary institutions for effective project implementation; (v) involvement of the Malawi Field Office in monitoring to facilitate timely implementation; and (vi) Government should allocate adequate and qualified personnel for the implementation of the project before first disbursement and ensure continued availability of the personnel for the duration of the project.

## **2.10 Key performance indicators**

The key performance indicators and expected outcomes upon study completion are indicated in the results-based logical framework. The main study indicators are the submission and approval of the Inception, Interim and Final Study Reports. The realisation and approval of the reports will facilitate the mobilisation of potential lenders or developers using the study

which will ultimately result in construction of the project and realisation of the sector indicator of improved access rates in Malawi.

### **III – STUDY FEASIBILITY**

#### ***3.1 Economic and financial performance***

Not applicable

#### ***3.2 Environmental and Social impacts***

##### **Environment**

3.2.1 The study is not expected to generate environmental or social impacts; hence the Bank Group’s Environmental and Social Assessment Procedures (ESAP) do not apply. However, the study will identify environmental aspects related to the implementation of the power plant once found feasible where the full ESA requirements shall apply. The Bank Group’s environment policies and guidelines shall be applied together with the Malawi’s Environment Management Act, Chapter 60:02 which stipulates that a sponsor shall, before implementation of any project for which an environmental and social impact assessment is required, submit to the Director of Environmental Affairs a project brief stating the project description; activities to be undertaken; likely impacts of those activities; employment to be created during implementation; and segments of the environment likely to be affected.

##### **Climate change**

3.2.2 The environmental and social impact assessment will identify climate change impacts of developing the project and how such impacts can be mitigated. The study being on potential hydropower plant is expected to yield benefits through production of clean energy during operation. The study will further analyse various occurrences including possible variations in water supply for operating the plant. Hence in addition to mitigation measures, there are approaches being developed as part of the adaptation resilience strategies at sector and national level in Malawi.

##### **Gender / Social / Involuntary resettlement**

3.2.3 Cross cutting issues of gender mainstreaming, social impacts and resettlement will apply directly to the conduct of the feasibility. Gender analysis will have to be carried out in order to determine gender imbalances during project implementation and operation. The economic importance justifying the investment will have to be socially sound and desirable both during implementation and operation. The potential for resettlement will have to be identified during the ESIA exercise and an appropriate resettlement action plan developed together with a social development plan for the affected persons.

### **IV – IMPLEMENTATION**

#### ***4.1 Implementation arrangements***

##### **Study implementation**

4.1.1 The Republic of Malawi will be the Recipient and the Ministry of Energy (MoE) will be the Executing Agent. For routine day to day management and monitoring of study activities the MoE will appoint a study coordinator who will head a Project Implementation Team (PIT). The PIT will also consist of a project accountant, procurement specialist and an engineer with qualifications and experience acceptable to the Fund. The PIT will ensure the

technical, administrative, accounting, financial and organizational management of the study. A project working group consisting of Ministry of Energy, Ministry of Environment and Climate Change, Ministry of Lands, Ministry of Water, Ministry of Finance and ESCOM will be established to review and provide guidance on the study outputs; Inception Report, Interim Report and the Final Report. The establishment of the PIT and project working group shall be a condition precedent for the first disbursement of the grant.

## Procurement

4.1.2 The procurement of consulting services will be in accordance with Bank Group *Rules and Procedures for the Use of Consultants*, using the relevant Standard Bank Bidding Documents. The procurement details are summarised below.

*Table 2.7 Summary of Procurement Plan*

Description of Contract	Lot Nr	Selection Method	Lump sum or Time Based	Estimated amount in UA million	Prior or Post Review	EOI Publication	Contract Start Date
Feasibility Study	1	QCBS	Lump Sum	2,08	Prior	15/03/2013	01/06/2013
Financial Audit	2	LCS	Lump Sum	0,04	Prior	17/06/2013	20/09/2013

QCBS - Quality and Cost Based Selection, LCS - Least Cost Selection,

## Financial Management

4.1.3 The study's financial management transactions will be managed within the MoE that will have responsibility for planning and budgeting, record keeping, accounting and reporting, audit etc. An assessment of MoE's financial management capacity for the implementation of the project indicates that they are satisfactory to Bank Group requirements to ensure that the funds made available for the financing of the project are used economically and efficiently and for the purpose intended. The MoE is currently implementing other donor financed projects, the Mining Growth and Governance and the Energy Sector Support Project, Mpatamanga and Chimgonda Hydro power feasibility studies (financed by the World Bank) and similar procedures will be applied for this project. To ensure proper financial management, the MoE shall designate at least one qualified and experienced accountant throughout the duration of the project as a member of the project implementation team to maintain project accounts using a proper accounting system for the activities financed under the grant in accordance with acceptable accounting practices. Internal and external audit requirements are further measures towards efficient and effective use of funds.

## Disbursement

4.1.4 The disbursement of the ADF grant will mainly be on the basis of the direct payment method which entails payment directly to the consultants/audit firm based on satisfactory performance in accordance with the terms of the contract. Disbursements under the grant will be made in accordance with the Bank Group's rules and procedures as laid out in the Disbursement Handbook. A Special Account will be opened with an acceptable Bank in Malawi for the purposes of funding the operating expenses of the PIT. The Special Account will be pre funded on a semi-annual basis based on approved work plans. The account shall be managed in accordance with Bank rules. In addition, the Fund will issue a Disbursement Letter of which the content will be discussed and agreed during negotiations.



## **Audit**

4.1.5 In accordance with Bank group reporting and audit requirements, MoE will prepare periodic Quarterly Progress Reports (within 30 days after the end of each quarter) showing grant receipts and expenditures by main expenditure classifications together with Progress Reports linking financial information with physical progress and highlighting issues that require attention. Project financial statements will be prepared on an annual basis related to the grant adequately reflecting all funds received and how they have been applied (by component). These Financial Statements will be subjected to an external audit to be done with the involvement of the Malawi National Audit Office, which will be conducted in accordance with a Fund approved audit Terms of Reference. The Financial Statements will be submitted to the Fund not later than six months after the end of the financial year together with a management letter indicating any weakness in internal control together with the responses from management. (A draft audit TOR that can be used as a guide has been given to MoE).

## **4.2 Monitoring**

The Fund will supervise the study at least twice a year. The Government will submit quarterly progress reports on the implementation of the study. The reports will review progress made in the light of the Study's Results-Based Logical Framework. The Malawi Field Office will play an active role in the capacity development and monitoring of the study's undertaking.

## **4.3 Governance**

4.3.1 Not Applicable.

## **4.4 Sustainability**

4.4.1 A working group will be tasked with reviewing the outputs of the consultants and it is comprised of participants from the key Ministries to ensure that there is endorsement of the outputs of the study which will result in the eventual implementation of the project. Additionally the Bank Group will also assist the GoM in securing the financing for the development of the project by organising a financiers/developers conference.

4.4.2 *Private Sector Participation:* In order to mobilise significant financial resources to increase investments in the sector and attract private sector participation the Government has been making efforts through MERA to create a conducive environment by way of sector reforms that enable the participation of independent power producers (IPPs) and promotion of public private sector partnerships (PPPs). To that effect MERA has been working on such enabling instruments as Grid Code, Feed-in-Tariffs and Standard Power Purchase agreement; documents which have been presented for public consultations and now await ministerial approval. Furthermore under the MCC Compact the Government will receive assistance to study and design (i) a single buyer model for the power sector; and (ii) the building blocks of a bilateral power trade market. The Government is also expected to clarify the Rural Electrification Act (the "REA") so that entities that pursue rural electrification activities without receiving funding from the Rural Electrification Fund are not subject to the REA's internal rate of return and megawatt size restrictions. The Government will also revise its National Energy Policy to allow charging of differential tariffs for off-grid electrification.

4.4.3 The energy sector department of the Bank will review the outputs of the Consultants during the course of the study to ensure that critical issues for eventual project implementation are addressed.

#### **4.5 Risk management**

- Institutional arrangement – An inter-ministerial working group will be set up to review the work of the consultants and provide guidance. Its effectiveness depends on the commitment of its member to consistently providing comments and participating in the working group meetings. The MoE has previous experience from other studies in coordinating sector working groups.
- Cost overrun – The study costs may turn out to be more than the project budget. In mitigation, the project costs estimation has been generous in all instances including the remuneration rates and a 5% contingency has also been applied.

#### **4.6 Knowledge building**

During this study the MoE will provide a core team which will be responsible for the day to day running of the study and they will work very closely with the consultants. Furthermore the study will also benefit from the experience the MoE is acquiring from other studies which it is already supervising. Moreover, there will be a knowledge transfer towards MoE & ESCOM engineers through hands on training by the contractors and consultants. The study reviews are going to be done by a working group composed of the critical Ministries such as Water Development, Environment and Climate Change Management, Lands, Energy and Mining as well as ESCOM. This diversity of skills will ensure that all areas of possible concerns are addressed. The consultant shall arrange the acquisition and licensing of all software used in the studies for later use after the completion of the services, inclusive of relevant expert training of the project staff in the use of such software. The license for all such software shall be of a period of not less than 2 years and shall commence a month prior to the completion of the services.

## **V – LEGAL INSTRUMENTS AND AUTHORITY**

### **5.1. Legal instrument**

The legal framework instrument to finance for the study will be a Grant Protocol of Agreement between the Republic of Malawi and African Development Fund.

### **5.2. Conditions associated with Fund's intervention**

#### Conditions Precedent to Effectiveness

5.2.1 The effectiveness of the Grant will be subject to the signing of the Protocol of Agreement between the Republic of Malawi and the African Development Fund.

#### Conditions Precedent to First Disbursement of the Grant

5.2.2 The obligation of the Fund to make the first disbursement of the Grant shall be conditional upon the entry into force of Grant Agreement and the fulfillment of the following conditions:

- Submission of evidence acceptable to the Fund of the establishment of a project working group with terms of reference acceptable to the Fund consisting of Ministry of

Energy, Ministry of Environment and Climate Change, Ministry of Lands, Ministry of Water, Ministry of Finance and ESCOM.

- Submission of evidence acceptable to the Fund of the establishment of a Project Implementation Team with terms of reference acceptable to the Fund comprising a study coordinator, a project accountant, procurement specialist, and an engineer with qualifications and experience acceptable to the Fund.
- Submission of evidence acceptable to the Fund of the opening of a Special Account with a Bank in Malawi acceptable to the Fund.

### ***5.3. Compliance with Bank Group Policies***

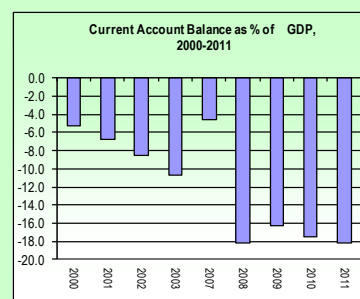
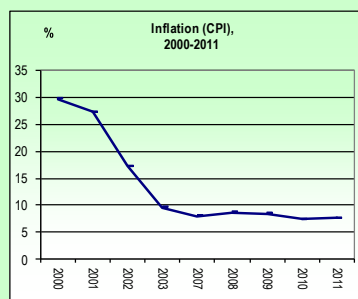
This study complies with all applicable Bank policies.

## **VI – RECOMMENDATION**

The proposed study is an important contribution to the energy sector development in Malawi as it will result in the production of a feasibility study document for implementation by either the public or private sector to meet the current energy shortfalls and allow for the expansion of electricity access.

# Appendix I. Malawi - Country's comparative socio-economic indicators

Indicators	Unit	2000	2006	2007	2008	2009	2010	2011 (e)
<b>National Accounts</b>								
GNI at Current Prices	Million US \$	1,797	3,035	3,397	3,921	4,477	4,917	...
GNI per Capita	US\$	160	230	250	280	310	330	...
GDP at Current Prices	Million US \$	1,744	3,117	3,648	4,088	4,728	5,132	5,890
GDP at 2000 Constant prices	Million US \$	1,744	2,093	2,208	2,398	2,580	2,753	2,913
Real GDP Growth Rate	%	0.8	7.7	5.5	8.6	7.6	6.7	5.8
Real per Capita GDP Growth Rate	%	-1.9	4.7	2.5	5.4	4.4	3.5	2.5
Gross Domestic Investment	% GDP	13.6	25.7	20.5	26.5	26.2	25.7	27.9
Public Investment	% GDP	10.0	7.8	10.0	9.0	14.0	11.8	12.7
Private Investment	% GDP	3.5	17.9	10.5	17.5	12.1	13.9	15.2
Gross National Savings	% GDP	8.3	13.2	27.4	16.0	20.1	24.8	13.2
<b>Prices and Money</b>								
Inflation (CPI)	%	29.6	13.9	8.0	8.7	8.4	7.4	7.6
Exchange Rate (Annual Average)	local currency/US\$	59.5	136.0	140.0	140.5	141.2	150.5	155.8
Monetary Growth (M2)	%	45.5	16.4	36.6	62.6	24.6	17.2	32.3
Money and Quasi Money as % of GDP	%	17.8	14.8	16.8	24.3	26.1	26.4	29.4
<b>Government Finance</b>								
Total Revenue and Grants	% GDP	24.1	31.2	31.7	30.1	32.7	34.1	33.5
Total Expenditure and Net Lending	% GDP	29.7	31.2	33.0	32.8	38.0	35.0	35.5
Overall Deficit (-) / Surplus (+)	% GDP	-5.6	0.0	-1.3	-2.7	-5.3	-0.8	-2.0
<b>External Sector</b>								
Exports Volume Growth (Goods)	%	-6.6	11.1	43.7	7.5	-29.1	39.5	0.2
Imports Volume Growth (Goods)	%	-21.3	6.7	-10.0	34.8	-18.5	42.3	-16.1
Terms of Trade Growth	%	-9.5	1.5	-2.8	-19.4	22.4	18.2	-17.4
Current Account Balance	Million US \$	-92	-471	-170	-745	-769	-898	-1,069
Current Account Balance	% GDP	-5.3	-15.1	-4.7	-18.2	-16.3	-17.5	-18.1
External Reserves	months of imports	3.3	0.7	1.1	0.9	0.6	0.8	...
<b>Debt and Financial Flows</b>								
Debt Service	% exports	19.9	334.0	46.3	1.3	1.3	1.4	1.6
External Debt	% GDP	153.4	16.9	15.8	17.3	16.9	16.9	15.4
Net Total Financial Flows	Million US \$	431	706	724	933	799	...	...
Net Official Development Assistance	Million US \$	446	723	744	924	771	1,023	...
Net Foreign Direct Investment	Million US \$	40	72	92	9	60	140	...



Source : AfDB Statistics Department; IMF: World Economic Outlook, April 2012 and International Financial Statistics, April 2012; AfDB Statistics Department: Development Data Portal Database, May 2012. United Nations: OECD, Reporting System Division.

Notes: ... Data Not Available (e) Estimations

Last Update: May 2012

## Appendix II. Table of ADB's portfolio in the country

	Sectors/Operations	Approval Date	Closing Date	Funding Type	Approved Amount (UA m)	Disbursement (UA m)	Disbursement Rate	Age	Implementation Progress (IP)	Development Objectives (DO)
<b>AGRICULTURE SECTOR</b>										
1	Smallholder Crop Production & Marketing ADF	26/07/06	30/06/14	Grant	15.0	13.03	86.9%	6.3		
2	Agriculture Infrastructure Support ADF	09/09/09	30/06/15	Loan	15.0	1.89	12.6%	3.2		
<b>SOCIAL SECTOR</b>										
3	Support to the Health Sector Programme ADF	24/11/05	31/12/12	Grant	15.0	12.77	85.1%	7.0		
4	Support to Secondary Education V ADF	07/06/06	31/12/12	Grant	15.0	13.64	91.0%	6.4		
5	Support to Higher Education Science & Technology (HEST) * ** ADF	08/02/12	31/12/17	Loan	9.05	1.84	20.3%	0.7		
	ADF			Grant	10.95	0.00	0.0%			
	NTF			Loan	6.50	0.00	0.0%			
6	Support to Local Economic Development ADF	24/09/08	31/12/14	Loan	14.0	1.81	13.0%	4.1		
	Supplementary Loan Local Economic Development ADF	09/12/10	31/12/14	Loan	3.2	0.51	16.3%	1.9		
7	Competitiveness and Job Creation Project in Private Sector ADF	16/12/11	31/12/17	Loan	10	0.50	5.0%	0.9		
<b>WATER &amp; SANITATION SECTOR</b>										
8	National Water Development Program ADF	02/07/08	31/12/13	Loan	15.2	6.06	39.9%	4.3		
	ADF			Grant	10.7	6.58	61.3%			
	RWSS Trust Fund			Grant	3.4	1.76	52.0%			
<b>TRANSPORT SECTOR</b>										
9	Trunk Road Rehabilitation Blantyre-Zomba (Loan) Ntcheu-Tsangano-Mwanza Feasibility Study	22/05/09	31/12/14	Loan	23.0	4.95	21.5%	3.5		
			31/12/13	Grant	1.1	0.04	3.3%			
10	Multinational: Nacala Road Corridor ADF	24/06/09	31/12/13	Loan	14.3	0.11	0.8%	3.4		
<b>MULTI SECTOR</b>										
11	Restoration of Fiscal Stability and Social Protection ** ADF	11/07/12	31/10/13	Grant	26.0	26.00	100.0%	0.3		
<b>TOTAL</b>					<b>207.4</b>	<b>91.5</b>	<b>44.1%</b>	<b>3.6</b>		
Total Loan					<b>110.2</b>	<b>17.7</b>	<b>16.0%</b>			
Total Grant					<b>97.2</b>	<b>73.8</b>	<b>76.0%</b>			
<b>Projects under Bank Group Initiatives***</b>										
1	Climate Adaptation for Rural Livelihoods and Agr Project ** Global Environment Facility	10/11/11	30/06/15	Grant	1.89	0.39	20.6%	1.0		
2	Access to Water & Sanitation for Urban Poor	28/12/09	30/09/14	AWF	0.6	0.40	70.0%	2.9		
3	Strengthening Water Sector M&E in Malawi	28/01/10	31/12/13	AWF	1.7	1.26	72.4%	2.8		
4	Songwe River Basin Development Study	25/05/10	31/05/14	AWF	3.12	0.16	5.2%	2.4		
5	Shire Zambezi Water Development Feasibility Study	31/05/11	30/09/14	AWF	1.53	0.00	0.0%	1.4		
	Enhancing Good Governance in District Public Service			NEPAD-IPPF	0.987	0.00	0.0%			
6	Delivery (Governance Trust Fund)	17/04/11	15/12/12	Grant	0.1	0.13	100.0%	1.5		
<b>TOTAL</b>					<b>10.0</b>	<b>2.3</b>	<b>23.5%</b>			

\* The disbursement for HEST Project took place on 2nd November 20 \*\* 1st Supervision mission planned in the 4th Quarter of 2012.

\*\*\* These initiatives include trust funds from African Water Facility, Governance, and NEPAD-IPPF.

Highly Satisfactory

Satisfactory

Unsatisfactory

Not yet rated (1st Supervision Mission is planned in the 4th Quarter of 2012)

## **Appendix III: Key related projects financed by Bank Group and other development partners in the country**

- 1. *Tedzani Falls Hydroelectric Project*** – The Bank approved a loan of UA3.11 million in 1969 towards the construction of the 20MW power plant.
- 2. *Nkula/Lilongwe Transmission Line***- A facility to finance the line of UA5.00 million was approved in 1975.
- 3. *Nkula B Hydroelectric Project (60MW)*** – the Bank approved a UA5.00 million facility in 1977 towards the project costs.
- 4. *Rural Electrification*** - In 1980 the Bank financed a rural electrification project to the tune of UA6.10 million which connected a total of 3,400 rural consumers at the time.
- 5. *Kapichira Hydroelectric power plant*** - An intervention amounting to UA35.60 million was approved in 1993 for the energy sector to finance the Kapichira Hydroelectric power plant (64MW).
- 6. *Energy Sector Support Project: World Bank***  
In 2011 the World Bank approved a loan agreement of about USD 84.7 million for the development of the Energy Sector Support Project for Malawi to increase the reliability and quality of electricity supply in the major load centres. The project has four components: (i) Electricity network strengthening and expansion; (ii) Conducting generation and transmission feasibility studies; (iii) Demand side management and energy efficiency measures; and (iii) Capacity building and technical assistance.
- 7. *Millenium Challenge Corporation***  
In April 2011 the MCC and GoM signed a USD 350.70 million Compact. Compact will focus on addressing the rehabilitation of key generation, transmission, and distribution assets throughout the country. The MCC has also financed the development of an Integrated Resource Plan (IRP), completed in August 2011.
- 8. *Malawi Rural Electrification Programme (MAREP)***  
This is a long standing initiative that extends the grid to more isolated administrative and trading centres. MAREP is managed by the Ministry of Energy, was predominantly supported by JICA (the Japanese government's development agency), but is now wholly supported by the Malawian government.

# Appendix IV: Map of the Study Area

