

## ENVIRONMENTAL SERVICES FOR THE PROPOSED MODULAR PLANTS AT MENENGAI GEOTHERMAL FIELD



**TECHNICAL REVIEW OF GDC ESIA  
REPORT**

**DECEMBER 2013**



# 1 INTRODUCTION

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## 1.1 Background

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The Geothermal Development Company (GDC) proposed installation of three 30MW Modular Power Stations at the Menengai Geothermal Field to generate a total of up to 100MW of electricity to the national grid.

GDC had contracted the University of Eldoret to undertake an Environmental and Social Impact Assessment (ESIA) and prepare an ESIA study report for submission to the National Environment Management Authority (NEMA) in accordance with the Environmental Management and Co-ordination Act (EMCA) 1999. GDC then submitted the Reports to the National Environment Management Authority for approval. An Environmental Impact Assessment (EIA) License (License No. 0014205) was issued to GDC 28 November 2012.

GDC has since procured three Independent Power Producers (IPPs) to install equipment and generate electricity under a Public Private Partnership (PPP) system. Quantum Power East Africa is one of the three IPPs that will operate at Menengai Geothermal Field.

The investors of the three IPPs would like to apply for funding from international lenders to finance the development of the proposed power plant. One of the expected pre-requisites to funding is compliance with the specific lender's environmental and social safeguards.

In order to fulfil the requirements of the international lenders, the three IPPs through Quantum Power East Africa had requested GIBB Africa Ltd to undertake the following tasks:

**Task 1:** Review of existing documentation;

**Task 2:** Identify gaps that can hinder the international lenders approval of the reports in Task (1) above;

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## 1.2 Our Understanding of the Client's Requirements

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We understand that the IPPs intend to apply for funding from Multilateral Development Banks (MDBs) and International Finance Institutions (IFIs) towards the development of the proposed power stations. Therefore the ESIA study reports are expected to comply with the related policies and guidelines which are expected to include:

1. African Development Bank's environmental and social policies and guidelines;
2. World Bank's Operational Policies;
3. International Finance Corporation's Performance Standards;
4. Equator Principles.

We have therefore undertaken tasks based on our knowledge and understanding of the MDBs and IFIs procedures and requirements.

The table below provides summary of Environmental elements, Multilateral Development Banks (MDBs) and International Finance Institutions (IFIs) requirements on environmental and social safeguards, and GIBB Africa Ltd analysis of the GDC Reports.

Element	MDB'S and IFI'S REQUIREMENTS ON ENVIRONMENT AND SOCIAL STUDY REPORTS	GDC ESIA Report			GIBB Africa Ltd
General	<p>AfDB policy proposes generic content for an ESIA Report.</p> <p>From the impacts described in the reports, this project falls under Category 1 Project.</p>	.	Detailed studies were conducted in areas of relevance to the project		The report does not follow the format prescribed by most MDB'S and IFI'S. There is a need to re-organise the report to align it with the requirements.
Executive summary	<p>The Executive Summary will be extracted for disclosure on the AfDB website.</p>	The executive summary outlines highlights of the chapters.	The ESIA contains a summary presenting the conclusions of the ESIA.	-	To ensure comprehensiveness, improvement of content presented here is necessary considering that AfDB discloses the executive summary and not the entire report.
Introduction	AfDB requires the ESIA to have introduction which includes: Project Background; Justification; Methodology; ESIA Study Team	-	Detailed introduction of the project and its context. Has been presented that is detailed.	-	This chapter has exhaustively been covered.

Element	MDB'S and IFI'S REQUIREMENTS ON ENVIRONMENT AND SOCIAL STUDY REPORTS	GDC ESIA Report	GIBB Africa Ltd
Policy, Legal and Administrative framework	Statement outlining that where MDBs and IFI policies were more stringent than Kenyan guidelines, the latter applied.	The chapter mentions the policy, legal and regulatory framework within which the project is to operate. It further mentions World Bank, AfDB, JBIC and IFC environmental and social safeguards.	<p>Direct relevance of these policies to how they affect the project during construction, operation and decommissioning phases is not covered.</p> <p>For example under World Bank OP 4.04, there would be need to categorise the project as it is located in a gazetted forest reserve. There is also need to determine and discuss the expected level of degradation of the habitat.</p>
Project description and justification	<p>Project Description:</p> <p>Determine the following elements for the construction, operation and decommissioning phases of the project:</p> <ul style="list-style-type: none"> <li>• Technology to be used;</li> <li>• Work procedures to be employed;</li> <li>• Activities related to the project;</li> </ul> <p>Processes related to the project activities.</p> <p>Description of project activities during construction, operation and decommissioning</p> <p>Confirmation of Geothermal Power Plant System to be used and resulting update of this section may be required.</p>	<p>Page 10 to 15 of 218</p> <p>Project location outlined in detail including maps and presentation of the location in context of existing land uses.</p> <p>Outlines a schematic of the power production system as well as construction activities to be undertaken for installation of the modular power plants.</p> <p>The chapter also outlines the steam gathering and re-injection system.</p>	<p>This chapter has been exhaustively covered; however the chapter should be aligned to reflect the type of plant that will be installed. The following also needs further scrutiny:</p> <ul style="list-style-type: none"> <li>• Sustainability of water resources (Demand versus sustainable abstraction from the supply);</li> <li>• Energy needs of the proposed power plants internal usage.</li> </ul>
Project description and justification	Project Justification	No stand alone heading or sub-heading on project justification but page 1 on introduction outlines the general importance of geothermal power production to GDC, Kenya and to the Country's Vision 2030.	There is a need to re-organise the report to align it with the MDB's and the IFI's requirements.

Element	MDB'S and IFI'S REQUIREMENTS ON ENVIRONMENT AND SOCIAL STUDY REPORTS	GDC ESIA Report	GIBB Africa Ltd
Description of the Bio-physical environment and Baseline socio-economic data	Detailed description of the project physical, Biological and Socio economic environment. This should include baseline primary data for air, soil, water etc.	The Chapter has been presented in chapter 4 and 5.	The chapter has discussed bio-physical environment, however the following will need to be included to the chapter to make it comprehensive: <ul style="list-style-type: none"> <li>• Modelling of cumulative impacts;</li> <li>• Description of seismic situation in the project area;</li> <li>• The presence of natural structures like fault lines, fissures and joints.</li> </ul>
	<p>Update of the existing baseline socio-economic indicators to cover these aspects of the local population that is likely to feel the direct socio-economic impacts of the proposed project.</p> <p>The Guidelines propose monitoring indicators that can assist in evaluating the real impacts associated with the project and the extent to which the mitigation measures respond to the observed impacts. These do not represent all potential monitoring indicators, but rather those that can measure impacts on the most sensitive environmental or social components, and provide valuable information to adjust the project mitigation measures accordingly.</p>	<p>Detailed socio-economic baseline given for Nakuru County.</p> <p>Baseline socio-economic data presented in the report includes: population, economic activities, health, education, transport and communication, food security, sports and recreation and culture.</p> <p>With reference to the report, socio-economic data on the local community is presented in chapter 6 on public participation.</p>	<p>The baseline socio-economic survey presented lacks identification of socio-economic impact zones and direct impact to the project area. Therefore it does not give baseline for future monitoring of the project.</p> <p>IESIA Guidelines consider under population the following key issues: demographic trends, migration and resettlement, changes in natural resources and land management and quality of life.</p> <p>Benchmarking of baseline socio-economic data for land users in the immediate vicinity of the proposed power plant. To provide a baseline of these issues for future monitoring</p> <p>To determine project impacts on these parameters and propose mitigation measures.</p>
Cross cutting issues	The AfDB has identified a series of cross cutting theme that are critical to achieve sustainable development and should be discussed in ESIA:	-	The cross cutting issues are not covered.

Element	MDB'S and IFI'S REQUIREMENTS ON ENVIRONMENT AND SOCIAL STUDY REPORTS	GDC ESIA Report	GIBB Africa Ltd
	<ul style="list-style-type: none"> <li>• Poverty</li> <li>• Environment</li> <li>• Population</li> <li>• Gender</li> </ul>		
Project alternatives	The MDB's require comprehensive discussion of project alternatives and how it was used to make a choice on location and methodology.	<p>Discussions on alternatives clearly outlined including the "no-action" alternative and alternative technologies.</p> <p>However, discussions on alternative power sources (fossil fuels on the negative side) and alternative renewables not presented</p>	This chapter has comprehensively been covered.
<p>Potential impacts and mitigation / enhancement measures</p> <p>Environmental hazard management</p> <p>Environmental and social monitoring program</p>	General	<p>Identified impacts have proposed mitigation measures.</p> <p>The ESMP provides detailed measures for implementation, monitoring and evaluation.</p>	Updates may arise due to discussed limitations in previous and subsequent sections of this matrix.

Element	MDB'S and IFI'S REQUIREMENTS ON ENVIRONMENT AND SOCIAL STUDY REPORTS	GDC ESIA Report	GIBB Africa Ltd
Land take and resettlements	<p>AfDB's Involuntary resettlement policy; World Bank OP 4.12 on Involuntary Resettlement; IFC Performance Standard 5 on Land Acquisition and Involuntary Resettlement</p> <p>Need for preparation of a Resettlement Action Plan (RAP)</p>	Not covered in the GDC reports.	<p>The Land acquisition and Resettlement has not been covered in the GDC Reports despite the following.</p> <ul style="list-style-type: none"> <li>• Section (g) on page 109 and 110 identifies need for resettlement for the transmission line</li> <li>• Condition 2.5 of the ESIA License requires involvement of affected persons in preparation of a RAP.</li> <li>• Structures observed next to the proposed lay-down area not mentioned in the report.</li> <li>• Page 83 para 2 outlines that hydrogen sulphide emissions beyond the modular power plant boundary will be between 0.0042ppm and 0.0035ppm which is within the WHO limit for the residential areas and other land uses outside the power plants (0.10ppm). This statement does not take care of community health and safety.</li> </ul>
Community health and safety impacts necessitating resettlement	IFC Performance standards; World Bank and AfDB.	<ul style="list-style-type: none"> <li>• Not covered in detail</li> </ul>	Confirmation that there is no need for resettlement under predicted impacts on community and occupational health and safety.

Element	MDB'S and IFI'S REQUIREMENTS ON ENVIRONMENT AND SOCIAL STUDY REPORTS	GDC ESIA Report	GIBB Africa Ltd
	I	<p>Presentation of baseline noise data dated 2012-2013 presented in the report, however noise modelling has not been done.</p> <p>□</p>	<ul style="list-style-type: none"> <li>• Confirmation that there is no need for resettlement under predicted impacts on community and occupational health and safety.</li> <li>• Modeling of noise levels to determine whether the noise levels at the settlements will be above Environmental Management and Co-ordination Act (Noise and excessive Vibration)5(Control) Regulations for residential areas and work places.</li> </ul>
Environmental hazard management	IFC performance standards' AfDB and World Bank	<ul style="list-style-type: none"> <li>• Not presented in the report</li> </ul>	Detailed discussion on the risks and hazard management that may arise at the project site during construction and operational phases must be presented in the report. Risks such as: seismology and risk of subsidence; Faulting etc not presented.
Impacts on biodiversity	The MDB's requires the impacts on biodiversity and its management plan prepared especially where a forest has to be degazetted for a project.	The report mentions that GDC has an MoU with the Kenya Forest Service.	The Report does not present biodiversity management plan. Considering the status of the project site, further discussions on mitigation of impacts on biodiversity would have been necessary with all the stakeholders.
HIV /AIDS management	AfDB has recently adopted health priorities that are transversal issues by nature: HIV/AIDS and Malaria control.	Section 8.2 outlines possible health impacts should be mitigated through OHS management and awareness raising on HIV/AIDS.	Review of mitigation measures for HIV/AIDS management especially during the construction phase would be necessary as it is not covered in the ESMP for the construction phase.



Element	MDB'S and IFI'S REQUIREMENTS ON ENVIRONMENT AND SOCIAL STUDY REPORTS	GDC ESIA Report	GIBB Africa Ltd
Disclosure of study findings.	<p>Procedures for public Participation are included in the Handbook on stakeholder consultations and participation in AfDB operations.</p> <p>AfDB Environmental Policy, 6.20 on Public consultation and information disclosure.</p> <p>And</p> <p>AfDB Group Policy on Disclosure of Information, Section 4.25.</p> <p><i>Before the Bank Group proceeds to an appraisal mission for Category 1 projects, available ESIA studies shall be released in <b>the borrowing country project area at some public place accessible to potential beneficiaries, affected group and local CSOs.</b> Once the ESIA is released in the borrowing country and submitted officially to the Bank Group, it will be made available to the public through the PIC, website and the field offices where such offices are in place.</i></p> <p>AfDB Group Policy on Disclosure of Information, Section 4.27.</p> <p><i>Environmental information will be released according to the Bank Group's existing applicable timetables for such releases; i.e. one hundred and twenty (120) days prior to presentation to the Boards.</i></p>	<p>Appendix 7.1, 7.2, 7.3, 7.4 2</p> <p>Public Barazas were held:</p> <p>Land Mawe on 18 September 2013 with 40 persons in attendance.</p> <p>Kabarak GDC Plot on 19 September 2013 with 26 persons in attendance</p> <p>No reference in the report to disclosure procedures for the study findings and the final reports.</p>	<p>No reference was made on disclosure of study findings. The mentioned public meeting are in adequate as a minimum of three (3) public meetings are required by the Banks.</p> <p>No proposal on mechanisms for future public participation was also mentioned.</p>

Element	MDB'S and IFI'S REQUIREMENTS ON ENVIRONMENT AND SOCIAL STUDY REPORTS	GDC ESIA Report	GIBB Africa Ltd
Environmental and Social Management and Monitoring Plan	Stand alone ESMMP is required for category 1 projects.	The ESMMP has been prepared.	Updates may arise due to discussed limitations in previous sections.