GRANT NO. NDF C41

GRANT AGREEMENT

Geothermal Capacity Development

under

World Bank's Electricity Expansion Project

between

THE REPUBLIC OF KENYA

and

NORDIC DEVELOPMENT FUND

Dated 25 March 2015

TABLE OF CONTENTS

ARTICLE I

Definitions

1.01 Wherever used in this Agreement, unless the context otherwise requires, the several terms defined in the Preamble to this Agreement have the meanings therein set forth, and the following additional terms have the following meanings:

"Agreement" means this particular grant agreement, including all annexes, schedules and agreements supplemental hereto, as such agreement may be amended from time to time;

"Banking Day" means, in relation to any place where transactions under this Agreement have to be carried out, a day on which commercial banks in such place are neither required nor authorised to be closed;

"Closing Date" means a date after which the right of the Recipient to make drawdowns under this Agreement may be terminated by the Fund;

"Contractor" means a supplier of goods, works and/or services for the Project, selected in accordance with Annex 1 to this Agreement;

"Grant" means the grant provided for in this Agreement or any part thereof, as the context requires;

"Dollar(s)", "USD" and the sign "$" mean the currency of the United States of America;

"EUR" and the sign "€" mean euro, the lawful currency of the member states of the European Union that adopt the single currency in accordance with the Treaty establishing the European Community (signed in Rome on 25th March 1957), as amended by the Treaty on European Union (signed in Maastricht on 7th February 1992);

"Taxes" includes imposts, levies, fees and duties of any nature, whether in effect at the date of this Agreement or imposed thereafter.

GRANT AGREEMENT

between THE REPUBLIC OF KENYA (the "Recipient") and NORDIC DEVELOPMENT FUND (the "Fund").

WHEREAS

a) the Fund was established as a Nordic multilateral development financing institution pursuant to an agreement between the Governments of Denmark, Finland, Iceland, Norway and Sweden for the purpose of promoting economic and social development in developing countries through participation in financing on concessional terms of projects of interest to the Nordic Countries;

b) the Recipient, having satisfied itself of the feasibility and priority of the project described in Annex 1 to this Agreement (the "Project"), has requested the Fund to assist in the financing of the Project;

c) the Recipient has entered into a financing agreement concerning the Electricity Expansion Project P103037, approved on May 27, 2010, with the World Bank (the "Lead Agency") to assist in the financing of the Project;

d) the Project will be carried out by the Geothermal Development Company (GDC) (an "Implementing Agency") under supervision of the Ministry of Energy. The Recipient will make the proceeds of the Grant (as defined in Article 1) available to the Implementing Agency as provided for in this Agreement;

f) the Fund, in accordance with a co-operation agreement dated April 19, 2012, will cooperate with the Lead Agency during implementation of the Project to be financed by the Fund according to the Lead Agency's usual procedures;

g) the Recipient and the Fund have on October 5, 2004 entered into an agreement on the legal status of the Fund in Kenya;

h) the Fund has agreed, on the basis, inter alia, of the foregoing, to extend the Grant to the Recipient upon the terms and conditions set forth in this Agreement;

NOW IT IS AGREED:

ARTICLE II
The Grant
Use of the Grant - Financing of Taxes
Disbursements

2.01 The Fund agrees to grant to the Recipient, on the terms and subject to the conditions set forth or referred to herein, an amount of up to EUR 1.5 million (one million five hundred thousand euros).

2.02 The Recipient shall be entitled to draw down the Grant in accordance with the provisions of this Agreement, for the purpose of paying eligible expenditures incurred in respect of the reasonable cost of goods, works and services required for the Project and to be financed by means of the Grant.

2.03 Unless the Fund shall agree otherwise, no amount of the Grant shall be drawn or be applied, directly or indirectly, on account of expenditures incurred prior to the date of this Agreement.

The use of any of the proceeds of the Grant to pay for Taxes levied by, or in the territory of, the recipient on or in respect of eligible expenditures, or on the importation, manufacture, procurement or supply of goods, works and services for such eligible expenditures, if permitted pursuant to this Agreement, is subject to the Fund's policy of requiring economy and efficiency in the use of the proceeds of its grants. To that end, if the Fund at any time determines that the amount of any such Tax is excessive, or that such Tax is discriminatory or otherwise unreasonable, the Fund may, by notice to the Recipient, adjust the percentage of such expenditures to be financed out of the proceeds of the Grant, as required to ensure consistency with such policy of the Fund.

2.04 Drawdowns shall reflect the implementation of the Project. The proceeds of the Grant shall be paid [in accordance with the Fund's Disbursement Instructions] (i) directly to the Contractor(s), or (ii) to a third party for eligible expenditures under special commitments entered into, in writing, at the Recipient's request and on terms and conditions agreed between the Fund and the Recipient, or (iii) to one or more special accounts opened for the purposes of the Project on terms and conditions acceptable to the Fund.

2.05 Subject to the conditions of disbursement specified in Article III having been, and remaining, fulfilled to the Fund's satisfaction, disbursements under the Grant shall be made upon receipt by the Fund of (i) a disbursement request acceptable to the Fund, duly documented, and submitted by or on behalf of the Recipient, or (ii) in case of special commitment, a payment request submitted by the third party to whom the special commitment was provided by the Fund.

2.06 Each disbursement shall be made on a date determined by the Fund. Unless the Recipient has requested disbursement on a specified later date, disbursement will normally be made not later than 30 calendar days after receipt of the disbursement request, provided that all conditions precedent to disbursement set out in Article III hereof have been fulfilled.

2.07 The Closing Date shall be 31 December 2016, or such later date as the Fund shall establish. The Fund shall promptly inform the Recipient of such later date.

ARTICLE III
Conditions of Disbursement

3.01 Unless otherwise agreed, the making of disbursements from the Grant shall be subject to the conditions precedent that

(a) this Agreement is in full force and effect, and no event, which would entitle the Fund to suspend disbursements under this Agreement, shall have occurred and be continuing;

(b) the Recipient has taken or caused to be taken all action necessary or advisable to enable the Recipient to receive the Grant and to perform its obligations hereunder, including obtaining all required exemptions, consents and permits; and

(c) the Fund has received and accepted

(i) a legal opinion showing that this Agreement has been duly authorised or ratified by, and executed and delivered on behalf of, the Recipient and is legally binding upon the Recipient in accordance with its terms;

(ii) if requested by the Fund, further evidence satisfactory to it that the execution and delivery of this Agreement on behalf of the Recipient has been duly authorised by all necessary authorities;

(iii) evidence satisfactory to it of the authority of the person or persons authorised to sign disbursement requests and the authenticated specimen signature of any such person;

(iv) evidence satisfactory to it that other financing contemplated for the Project, including financing from the Recipient, has been obtained, and that conditions precedent to the effectiveness of such financing have been met;

(v) if relevant, certified copies of implementation agreements, acceptable to the Fund, whereby the Recipient makes the Grant available to the Implementing Agencies;

(vi) if relevant, evidence that Special Account(s) have been opened on terms and conditions satisfactory to the Fund; and

(vii) any other documentation the Fund reasonably requests relating to the execution of this Agreement or the implementation of the Project

ARTICLE IV
Currency Provisions

4.01 The proceeds of the Grant shall be disbursed in freely convertible currency with reference to EUR in accordance with section 4.02 hereof.

4.02 Whenever it shall be necessary for the purpose of this Agreement to determine the value of one currency or unit of account with reference to another currency or unit of account as of a given date, such value shall be as reasonably determined by the Fund.

ARTICLE V
Co-operation and Information
Recipient's Undertakings and Representations

5.01 The Recipient and the Fund shall co-operate fully to ensure that the purpose of the Grant will be accomplished. To that end, each of them shall furnish to the other party all such information as it shall reasonably request with regard to the general status of the Project.

5.02 (a) The Recipient and the Fund declare their commitment to counteract Prohibited Practices, as defined in NDF's Anticorruption Policy, in relation to the Grant and the execution of the Project. The Recipient shall promptly inform the Fund of any allegation or finding of Prohibited Practices in connection with the Project or with the use of the Grant.

(b) The Recipient undertakes to take all necessary action to prevent Prohibited Practices within its territory and to pursue, by all appropriate means, any such practices whenever identified and to ensure that the Project is implemented in accordance with the Anticorruption Policy.

5.03 The Recipient shall promptly inform the Fund of (i) any condition which interferes or threatens to interfere with the accomplishment of the purpose of the Grant (including substantial increase in the cost of the Project), and (ii) any event which with the lapse of time or otherwise would entitle the Fund to suspend disbursements under this Agreement.

5.04 The Recipient recognises that the Fund follows policies similar to other multilateral financial institutions as regards project execution.

ARTICLE VI
Execution of the Project

6.01 The Recipient shall take or cause to be taken all action which shall be necessary to execute the Project with due diligence and efficiency and in conformity with appropriate administrative, financial, engineering, social, environmental and climate change mitigation and adaptation practices. These practices also include transparency in project operations and wide and easy access to public information on the project. In particular, the Recipient shall make available to the public (i) project related safeguards assessments and plans related to environment, resettlement, and indigenous peoples; (ii) audited annual financial statements for the project; (iii) procurement plans; and (i results of procurement procedures.

6.02 (a) The Recipient shall ensure that the proceeds of the Grant shall be used only for the financing of the Project or, as applicable, Project component(s) for which the Grant is extended. Procurement of the goods, works and services required for the Project and to be financed out of the proceeds of the Grant shall be governed by the provisions of Annex 1 to this Agreement as said provisions may be further elaborated in the Procurement Plan.

(b) The Recipient shall prepare a Procurement Plan in accordance with procurement guidelines acceptable to the Fund for a period covering at least 18 initial months of the project execution, and update the Procurement Plan and furnish such update to the Fund for "no objection" not later than 12 months after the date of the preceding Procurement Plan.

(c) The Recipient shall ensure that in respect of procurement of goods, works and services for the Project, invitations to tender as well as procurement contracts shall, respectively, include clauses that gives the Recipient and the buyer the right to (i) demand investigations of the tenderer's/Contractor's books by independent auditors for the purpose of ascertaining whether or not corrupt practices have taken place, (ii) reject any tender and cancel any procurement contract in case any corrupt practices have taken place in connection with the procurement procedure related to the contract or the execution thereof, (iii) claim compensation for the damage or loss arising from any such rejection of tender or cancellation of contract, and (iv) exclude the tenderer/Contractor, either indefinitely or for a certain period of time, from competing for and participating in the execution of contracts in the territory of the Recipient.

6.03 In addition to the proceeds of the Grant the Recipient shall make available or cause to be made available promptly when needed, all other funds that are required for the execution of the Project (including any funds that may be required to meet any increase in cost).

6.04 The Recipient shall insure or cause to be insured, or make adequate provision for the insurance of, the imported goods to be financed out of the proceeds of the Grant against hazards incidental to the acquisition, transportation and delivery thereof to the place of use or installation. Any indemnity for such insurance shall be payable in a freely usable currency to replace or repair such goods.

6.05 The Recipient shall:

(i) maintain records and procedures adequate to record and monitor the progress of the Project (including its cost and the benefits to be derived from it), to identify the goods, works and services financed out of the proceeds of the Grant and to disclose their use in the Project;

(ii) enable the Fund's representatives to visit any facilities and construction sites included in the Project and to examine the goods, works and services financed out of proceeds of the Grant and any plants, installations, sites, works, buildings, property, equipment, records and documents relevant to the performance of the obligations of the Recipient under this Agreement; and

(iii) furnish to the Fund at regular intervals reasonably detailed information concerning the Project, its budgeted and actual cost, the budgeted and actual expenditure of the proceeds of the Grant, and the goods and services financed out of such proceeds. Audited accounts of the use of the Grant for the preceding financial year (July - June) shall be provided not later than six months after the end of financial year each year up to and including Project completion.

6.06 Promptly after completion of the Project, but in any event not later than six months after the Closing Date or such later date as may be agreed for this purpose between the Recipient and the Fund, the Recipient shall prepare and furnish to the Fund a reasonably detailed report on the execution and initial operation of the Project, its cost and the benefits derived and to be derived from it.

ARTICLE VII

Suspension and Cancellation

7.01 If any of the following events of suspension shall have occurred and be continuing, the Fund may, by notice to the Recipient, suspend in whole or in part the right of the Recipient to draw down the Grant:

(a) The Recipient shall have failed to perform any obligation under this Agreement.

(b) The Recipient shall have failed to make payment of principal, charges or any other amount due to the Fund under any credit, grant or guarantee agreement between the Recipient and the Fund.

(c) The Recipient shall have failed to perform any of its obligations (other than payment obligations) under any credit or grant agreement with the Fund which gives the Fund the right to suspend in whole or in part the right of the Recipient to make drawings under such agreement

(d) As a result of events which have occurred after the date of this Agreement, an extraordinary situation shall have arisen which shall make it improbable that the Project can be carried out or that the Recipient will be able to perform its obligations under this Agreement.

(e) An extraordinary situation shall have arisen in which any further disbursement by the Fund would exceed its resources available for disbursement.

(f) A representation made by the Recipient in or pursuant to this Agreement, or any statement furnished in connection therewith, and intended to be relied upon by the Fund in extending the Grant, shall have been incorrect in any material respect.

(g) (i) (A) The right of the Recipient to draw down the proceeds of any grant or loan made to the Recipient (other than by the Fund) for the financing of the Project shall have been suspended, cancelled or terminated in whole or in part, pursuant to the terms of the agreement providing therefor, or

(B) any such grant shall have become repayable or any such loan shall have become due and payable prior to the agreed maturity thereof.

(ii) Subparagraph (i) of this paragraph shall not apply if the Recipient establishes to the satisfaction of the Fund that (A) such suspension, cancellation, termination or prematuring is not caused by the failure of the Recipient to perform any of its obligations under such agreement; and (B) adequate funds for the Project are available to the Recipient from other sources on terms and conditions consistent with the obligations of the Recipient under this Agreement.

(h) The Fund shall have determined, with respect to any contract to be financed in full or in part out of the proceeds of the Grant, that corrupt, fraudulent, collusive, coercive or obstructive practices, as determined by the Fund, were engaged in by representatives of the Recipient or any beneficiary of the Grant during the procurement of goods and services, consultants' selection or the execution of a contract, without the Recipient having taken timely and appropriate action satisfactory to the Fund to remedy the situation; or the Fund shall have determined that the procurement of any goods or services to be financed out of the proceeds of the Grant is inconsistent with the relevant procedure agreed on between the Recipient and the Fund.

(i) The Recipient has failed to pay any of its external debt to a multilateral financial institution.

(j) Payments to the Recipient are prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations.

The right of the Recipient to draw down the Grant shall continue to be suspended in whole or in part, as the case may be, until the event or events which gave rise to such suspension shall have ceased to exist, unless the Fund shall have notified the Recipient that the right to draw down has been restored in whole or in part, as the case may be.

7.02 If (a) the conditions precedent to the first disbursement have not been fulfilled 180 calendar days after the date of this Agreement, or (b) the right of the Recipient to draw down the Grant shall have been suspended for a continuous period of thirty days, or (c) at any time, the Fund determines, after consultation with the Recipient, that an amount of the Grant will not be required to finance the Project's costs to be financed out of the proceeds of the Grant, or (d) at any time the Fund determines, with respect to any contract to be financed in full or in part out of the proceeds of the Grant, that corrupt, fraudulent, collusive, coercive or obstructive practices, as determined by the Fund, were engaged in by representatives of the Recipient or any beneficiary of the Grant during the procurement of goods and services, consultants' selection or the execution of a contract, without the Recipient having taken timely and appropriate action satisfactory to the Fund to remedy the situation; (e) after the Closing Date, an amount of the Grant shall remain undrawn, the Fund may, by notice to the Recipient, terminate the right of the Recipient to draw down the Grant or, as applicable, the relevant amount of the Grant. Upon the giving of such notice, the Grant or the relevant amount of the Grant, shall be cancelled.

7.03 Notwithstanding any suspension or cancellation, all the provisions of this Agreement shall continue in full force and effect except as specifically provided in this Article.

ARTICLE VIII
Repayment

8.01 The Recipient shall upon the Fund's demand promptly repay to the Fund (or, if applicable and agreed by the Fund, to the Special Account) any amount of the Grant used in a manner inconsistent with the provisions of this Agreement.

8.02 The Recipient shall upon the Fund's demand promptly repay to the Fund any amount of the Grant standing to the credit of a Special Account if the Fund determines, after consultation with the Recipient, that such amount will not be required to finance the Project's costs to be financed out of the proceeds of the Grant.

ARTICLE IX
Enforceability and Arbitration
Failure to Exercise Rights
Waiver of Immunity

9.01 The rights and obligations of the Recipient and the Fund under this Agreement shall be valid and enforceable in accordance with the terms hereof notwithstanding the law of any state or political subdivision thereof to the contrary. Neither the Recipient nor the Fund shall be entitled in any proceeding under this Article to assert any claim that any provision of this Agreement is invalid or unenforceable because of any provision of the Articles of Agreement or the Statutes of the Fund.

9.02 Any dispute, controversy or claim arising out of or relating to the interpretation, application or performance of this Agreement, including its existence, validity or termination, which has not been settled by agreement of the parties within 90 calendar days, shall be settled by final and binding arbitration under the Permanent Court of Arbitration Optional Rules for Arbitration Involving International Organizations and States, as in effect on the date of this Agreement.

The place of arbitration shall be London, England and the language of the arbitral proceedings shall be English.

9.03 Service of any notice of process in connection with any proceeding under this Article may be made in the manner provided for in section 10.02 hereof. The parties hereto waive any and all other requirements for the service of any such notice of process.

9.04 No delay in exercising or omission to exercise any right, power or remedy accruing to any party under this Agreement upon default or otherwise shall impair any such right, power or remedy or be construed to be a waiver thereof, nor shall any action of such party in respect of any default affect or impair any right, power or remedy of such party in respect of any other or subsequent default.

9.05 The parties hereby expressly waive any right of immunity they might have on the grounds of sovereignty or otherwise in connection with any arbitral proceeding pursuant to section 9.02 hereof or with the enforcement of any award pursuant thereto.

ARTICLE X
Miscellaneous Provisions

10.01 The Minister of the Recipient at the time responsible for finance is designated as representative of the Recipient for the purposes of signing and executing on behalf of the Recipient any documents used in connection with this Agreement. This notwithstanding, an Implementing Agency and the Fund may agree in writing upon any change to, or further specification of, Annex 1, Project Description, including the attached Procurement Schedule, provided that the amount of the Grant will not be increased, and any such change or further specification shall be deemed an integral part of this Agreement.

10.02 Any document, notice or request required or permitted to be given or made under this Agreement shall be made in writing in the English language and may be delivered (i) by airmail or internationally recognised courier service, (ii) by telefax, or (iii) by other electronic means to the party to which it is required or permitted to be given or made, at such party's address specified below or at such other address as such party shall have designated by notice to the other party. Any document, notice or request expressly required under this Agreement shall, if given by telefax or by other electronic means, promptly be confirmed by letter, and the Fund shall not be under any obligation to take any action until receipt of such letter.

For the Fund:

Nordic Development Fund
P.O.Box 185
FIN-00171 Helsinki
Finland

tel: +358 10 618002 telefax: +358 9 622 1491
e-mail: info.ndf@ndf.fi

For the Recipient:

The National Treasury
P.O.Box 30007
Nairobi 00100
Kenya

tel: +254 20 2252299 telefax: +254 20 2316415
e-mail:

For the Implementing Agency:

Geothermal Development Company Limited
9th Floor, Taj Tower, Upper Hill
P.O.Box 100746
00101 Nairobi
Kenya

tel: +254 20 242 7516/0719 036000

e-mail: info@gdc.co.ke

10.03 The Fund may disclose this Grant Agreement and any information related to this Grant Agreement in accordance with its policy on access to information, in effect at the time of such disclosure.

10.04 This Agreement is made in two copies each of which shall be an original.

10.05 The following annex forms part of this Agreement:

Annex 1 Project Description

IN WITNESS WHEREOF the parties hereto, acting through their duly authorised representatives, have caused this Agreement to be signed with their respective names as of 25 March 2015.

THE REPUBLIC OF KENYA

By: ______________________

The Cabinet Secretary for the National Treasury

NORDIC DEVELOPMENT FUND

By: ______________________
Pasi Hellman
Managing Director

____
Leena Klossner
Deputy Director

ANNEX 1: PROJECT DESCRIPTION

NDF C41: Kenya - Training in Geothermal Drilling

1. INTRODUCTION AND PROJECT BACKGROUND

Geothermal energy is an indigenous, environmentally attractive and abundant energy source in Kenya. Geothermal activities in Kenya are concentrated in the East African Rift. More than fourteen geothermal prospective sites have been identified. Studies carried out in these prospects indicate that a potential of between 7,000 MW and 10,000 MW exists. Being immune to adverse climatic effects, geothermal energy is a good source for base-load power. Kenya's Least Cost Power Development Plan has ranked geothermal power as a cost-effective source for continued electricity development.

Geothermal Development Company (GDC) has been mandated by the Kenyan Government to accelerate the development of its large indigenous geothermal resources. In order to execute its mandate of accelerating geothermal development in the country and meet its objective of 5,000 MW by 2030, GDC needs to mobilize adequate financial, material and human resources within the shortest time possible. This requires the deployment of at least 12 drilling rigs with qualified drilling personnel. Exploration drilling activities have already started but inadequate access to trained labour in operation and maintenance of drilling rigs slows down the exploration activities.

GDC has requested NDF to help to overcome the capacity constraint in order to enhance the geothermal development in the country and the region as a whole.

2. RELEVANCE AND RATIONALE

2.1 Project relevance

Due to unstable electricity generation of hydropower plants Kenya is experiencing frequent power shortages and has to rely on expensive emergency generation using fossil fuels. The Electricity Expansion Project supports *Vision 2030*, Kenya's long-term development strategy by expanding electricity infrastructure and promoting equitable access to quality energy services. In recognition of the importance and reliability of geothermal power the government has embarked on an ambitious generation expansion plan to increase the installed capacity through enhanced geothermal development.

There is great need for GDC to be assisted in capacity building if Kenya is to realize its vast potential of geothermal energy at a pace consistent with the Government's commitment to provide secure, adequate but affordable electricity services. The need to reduce electricity cost dictates that the development process for geothermal is in itself cost-effective. This can only be achieved if GDC builds up its internal capacity to undertake exploration and commercialisation activities using own resources including operation and maintenance of drilling rigs.

The Menengai prospect with a potential of about 1,600 MW will be the first to be developed by GDC. The Menengai development is a *Vision 2030* flagship project expected to be a catalyst for economic growth. In addition, it has been selected as a key project under the Climate Investment Funds (CIF) *Scaling-up Renewable Energy Program* (SREP) administered by the World Bank and African Development Bank.

The National Climate Change Response Strategy (2009) identifies strategic programmes to be implemented in the context of climate change and investments in renewable energy projects are main priority for the mitigation programme.

2.2 Relevance to NDF's mandate

Geothermal energy can play an important role in reducing the use of fossil fuels and increasing the share of renewable energy. The CO_2 emissions from geothermal energy are small compared to fossil fuels and they can be further reduced with new technologies.

The proposed activity is designed to provide support for an investment program in geothermal energy, which itself can be expected to satisfy the NDF project screening criteria.

NDF has funded two credit projects in Kenya, one for the transportation sector and another for the energy sector. Both projects have been implemented without major problems. On 5 September 2011 the Board approved financing for an off-grid electrification project which will be implemented under the same World Bank project. The Nordic Climate Facility is currently supporting 5 small-scale projects in Kenya by Nordic companies and NGOs in collaboration with Kenyan partners.

The proposed project is in line with NDF's country strategy with Kenya.

3. THE PROPOSED PROJECT

3.1 Project Description

The proposed geothermal drilling training will be provided under the World Bank Electricity Expansion Project. Under Component D of the project, GDC has been mentioned as one of the beneficiaries to receive capacity building. Training in drilling operations is, however, not part of the capacity building programme. Because of the urgent need to develop GDC's skills in this area, NDF was requested to support this activity.

GDC is fully owned by the Government of Kenya and is mandated to accelerate the development of geothermal energy in the country through prospecting for, exploring, assessing, developing and marketing geothermal energy and to support the Government initiative to raise the requisite development funds. The main strategy for GDC is to take up the upfront resource development risks and open up the sector for private sector participation as a way to attract additional funds.

Detailed surface studies estimate the Menengai field potential to be about 1,600 MW. GDC's long term plan is to fully develop this field in phases. The plan for Phase I is to realize 400 MW scheduled for commissioning in 2015/16 financial year. The 400 MW Menengai Phase I Project entails drilling of 120 wells, development of associated infrastructure, and construction of the steam gathering network.

The steam is to be sold to investors who will put up four power plants each of 100 MW size. Investors will finance, construct and operate the power plants.

The exploration and appraisal drilling program is underway. To date, four wells have been successfully drilled from which well completion tests for 2 wells indicate that about 15 MW (120 tons/hr steam) of steam equivalent is available.

In order to execute its mandate of accelerating geothermal development in the country and meet its objective of 5,000MW by 2030, GDC needs to mobilize adequate financial, material and human resources within the shortest time possible.

3.2 Objective

The subject training project aims to:

- Support the Government of Kenya in achieving the Vision 2030 targets;
- Assist GDC to fulfil its mandate to develop the geothermal sector and increase investments in geothermal power;
- Develop local capacities in operation and management of exploration activities to benefit the country and the region as a whole;
- Bring the expensive drilling equipment into efficient use;
- Increase the effectiveness and reduce the risks related to drilling operations;
- Improve the labour conditions and safety of the operations.

3.3 Project Activities/Outputs

The two drilling rigs already in operation employ a total of 150 staff in the drilling department. It is estimated by GDC that one rig requires a staff of 80. The target is to benefit a staff of at least 480 to take care of the six drilling rigs deployed to the 400MW Menengai Phase I project.

The target group to be trained will include:

- Drilling engineers

- Drilling technicians
- Drillers
- Derrick men
- Floor men
- Project officers.

The training courses will among others include following topics:

- Introduction to drilling
- Climate considerations
- Upstream systems
- Midstream systems
- Downstream systems
- Mathematics
- Electronics
- Mechanics
- Hydraulics/Pneumatics
- Chemistry
- Drilling
- Well design
- Well control
- Equipment
- Technical challenges.

The duration of the courses will approximately be 8 weeks. Simulator training can be included in drilling and/or well control.

Training is expected to take place both in Kenya (on the job training) and abroad (instructor led training) depending on the course and target group.

On the job training is especially vital for GDC as it is able to train the majority of the staff. GDC will provide the training venue and transport facilities for this exercise.

Instructor led training will be given in a specific training institution to allow the use of simulators. GDC will prepare training plans for the drilling staff and request for tailor-made courses so as to exploit the full potential benefit for its staff. GDC will cover the travel costs of its staff.

At the end of the training, the trainer is expected to provide;

- Course materials including manuals/handouts;
- Competency-based assessment tools;
- Certification; Trainer is expected to issue certificates to the trainees;
- Training evaluation tools, including feedback forms and processes.

3.4 NDF Components

NDF will be the sole external financier of this Project's drilling training. NDF will only finance the foreign cost component of the training including course fees of the training institution and trainers' fees under field training. GDC will cover local costs including travel costs related to training abroad.

3.5 Cost Estimates and Financing Plan

The training needs are dictated by the time of acquisition of the drilling rigs and equipment as indicated in table below.

Year	No. of Rigs (Cumulative)	Staff (Cumulative)
2012	4	320
2013	6	480
2014	12	960

The number of trainees to be sent abroad is estimated, at this point, at 10. The 8 trainers are expected to train 380 persons in Kenya during six months. The cost of training week abroad is estimated at EUR 1,500 per person. The estimated budget to undertake this training is reflected below:

Cost Category	Unit Cost (Euro)	Number	GDC (Euro)	NDF (Euro)	Total Cost (Euro)
Training needs assessment	50,000	1		50,000	50,000
Course-related Fees (8 week courses)	12,000	10		120,000	120,000
Air ticket for trainees	2,000	10	20,000		20,000
Per diem for trainees	395	600	273,000		273,000
Trainers' Fees (person month)	20,000	8	1000	959,000	960,000
Trainers' travel	2,500	8		20,000	20,000
Trainers Per Diem	150	100		216,000	216,000
Contingencies			100,000	135,000	235,000
Total (Euros)			**394,000**	**1,500,000**	**1,894,000**

The number of trainees, number of staff to be trained abroad, number and type of trainers at site, etc. will be defined in more detail during the training needs assessment and agreed in detail with the selected training institute. Terms of Reference for the training institute will be prepared by the consultant in collaboration with GDC.

It has been agreed that GDC will cater for:

- airfare and per diems for its staff,
- training facilities in Kenya,
- local running costs of training,

whereas NDF will cover:

- consultancy related to the training needs assessment,
- remunerations and travel for the facilitator/trainers,
- tuition fees of GDC staff charged by the training institute.

3.6 NDF's Value Added

NDF can bring an important element to the geothermal development programme which otherwise would be missing. Without specialised training the programme would face serious inefficiencies and delays and the success of the whole geothermal development would be at risk. Developing the country's own human resources will be cost effective and benefit in the long run the whole East African region.

4. IMPLEMENTATION ARRANGEMENTS

4.1 Project Organization

The project is to be implemented under the World Bank Energy Expansion Project with the World Bank as lead agency. The Bank's reporting, monitoring and evaluation practices will be followed.

GDC will act as the executing agency. The training will be executed under the Menengai Phase I Project. As there will be donor support from several sources for other project components, the training activities will be coordinated with those.

4.2 Procurement and Contract Structure

The number of contracts is expected to be at least two: one for training needs assessment and another (others) for the actual training. In selection of the needs assessment the consultant and the training provider(s), NDF procurement guidelines will be followed. The procurement method for the training needs assessment consultancy shall be Selection Based on the Consultants' Qualifications (CQS) while Quality-Based Selection (QBS) may be used for the training provider in order to ensure relevance and high quality of the training services.

4.3 Disbursements

The training needs assessment consultant should be hired as soon as possible. The assessment with recommendations and Terms of Reference for the training is expected to take 1.5 months. Tendering process to select the training service provider will take about three months.

Disbursements will depend on the size and timing of the training courses but are expected to be rather even over the project period.

4.4 Monitoring and Evaluation

The World Bank's practices in place for the monitoring and evaluation will be followed. There are different levels to the Project's performance monitoring including monitoring of intermediate outcomes, financial performance and development impacts. The training related monitoring and evaluation indicators include number of trainees, achieved training results, certifications, positions occupied, etc.

5. APPRAISAL SUMMARY

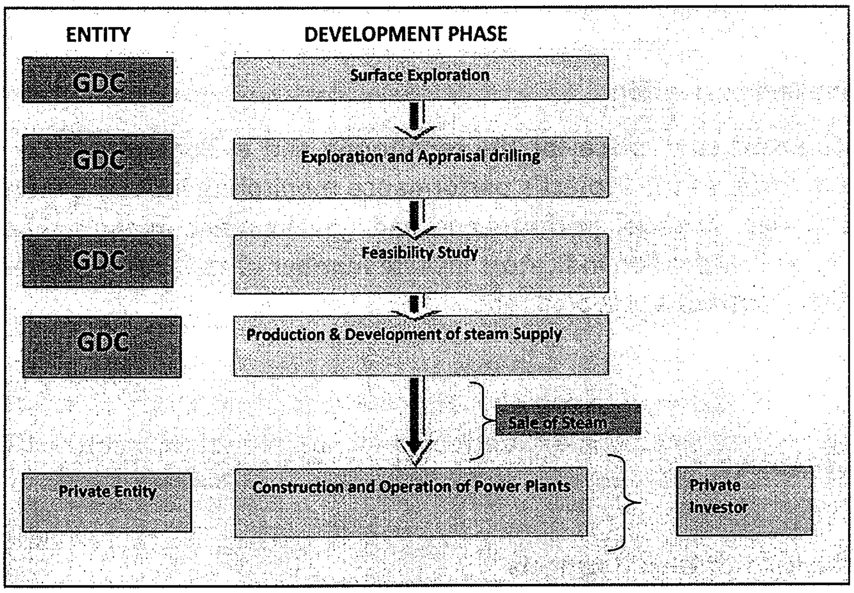
5.1 Technical and Institutional Aspects

The geothermal potential in Kenya is estimated at 7,000-10,000 MW. The current generation capacity located in Olkaria accounts for 202 MW or 14% of the total installed capacity in Kenya. 150 MW of this is owned by KenGen (State Power Company) and 52 MW by Independent Power Producers (IPPs).

The GDC strategy is to develop steam which will be sold to suitable power developers. The power developers will be selected on the basis of an international competitive tendering subject to offering a competitive power tariff.GDC will conduct exploration drilling at its own expense. After successful initial exploration in selected fields, GDC will demarcate the fields into several development blocks, each with an estimated geothermal reserve equivalent to 100 MW. GDC with the financing from its own sources and from the selected investors will proceed to carry out all the production drilling for each of the blocks. The private partner's upfront investment in steam development will be recouped from steam sales.

In the first 10 years, GDC will prove steam equivalent to 2,200 MW and invest in 12 rigs which will be used to carry out the drilling work. The need for skilled persons to operate the rigs will be about 1000.

Development Phases and Roles of Parties



5.2 Economic and Financial Aspects

Drilling of geothermal wells is a highly risky business. The probability to hit the right spot can be as low as 50% depending on the site. The investment cost of one drilling rig is more than EUR 50 million and the operation and maintenance costs are high. The availability of skilled, permanent staff is a key to cost-effective drilling operations. To that end, GDC has chosen to build internal capacity to undertake drilling using own resources including drilling rigs and staff. GDC is currently using mainly foreign drilling services which are costly. Building own capacities in exploration drilling reduces the exploration and production costs. Use of own resources makes long term development feasible and affordable. The rigs and staff will have sufficient work during the economic life of a rig estimated at 15 years. In the short run, GDC will accrue sufficient revenues from its projects to keep the rigs in operation without requiring budget support from external sources.

5.3 Cross-cutting Issues

The training needs assessment shall look at cross-cutting issues including labour conditions, safety aspects, and gender issues. Especially the safety aspects should be stressed during the training.

Environmental issues such as harmful substances in the steam, noise, use of water etc., and mitigation of their impacts, shall be discussed as part of the training.

5.4 Risk Analysis

In addition to special knowledge and experience in drilling operations, good training skills are required. There may not be many consultants and institutions in the market fulfilling these requirements. Selection of a qualified institution or consortium is crucial for the success of the training. The risk can be mitigated by emphasising the quality aspects in the selection process.

GDC is a newly established company. Therefore, experiences of its performance are limited. As drilling will be the cornerstone of GDC's operation, sufficient attention and interest for the training will be guaranteed. There will be demand for drilling personnel as the exploration activities expand to other geothermal fields in Kenya and other countries in the Rift Valley.

The following table summarises the identified risks, their mitigation measures and risk ratings.

Risk	Mitigation factors and measures	Risk rating
Need and right timing of training	The operations are already lagging behind because of lack of trained personnel. Drilling operations to continue in Kenya and the whole East African region.	low
Right type of trainers selected	Training needs assessment will address this issue. Quality-based selection will guarantee high standards.	moderate
Right type of personnel selected/found for training	Training needs assessment will address this issue.	moderate
NDF's role and impact small as Kenya/geothermal sector receives lot of donor funding	Focus on specific skills which clearly are needed to develop sufficient local resource base	low
Kenyan ownership and own funding	GDC has shown keen interest and ownership to the training. Own financing will be secured before the project can start.	low
Institutional set-up. GDC's capability to implement the project.	Training is crucial for the successful achievement of company's targets and responsibilities.	low
WB support towards a small parallel component	WB will provide a framework for project implementation including project management, monitoring and reporting which the implementing agency shall follow. WB's role not critical.	low

6. CONCLUSION

There is great need for GDC to be assisted in capacity building if Kenya is to realize its vast potential of geothermal energy at a pace consistent with the Government's commitment to provide secure, adequate but affordable electricity services in the spirit of Vision 2030.

By supporting GDC in this venture, NDF will make a valuable contribution to the realization of electricity from a renewable source which is also cost effective and non-polluting. Increase in generation capacity from geothermal is bound to increase electricity supply in Kenya, contributing to the economic development of the country.

By providing capacity building in geothermal drilling operations NDF can provide well targeted support which in this case can have a crucial role in timely and cost efficient development of Kenya's geothermal development programme. It should be noted that Menengai project has a very good visibility representing an interesting public-private approach in commercialising the country's geothermal resources, and being a key project under the Climate Investment Funds (CIF) Scaling-up Renewable Energy Program (SREP).