

Country:	Uganda
Request Identification Number:	2015-022/UGA-01

Title:	Formulation of Geothermal Energy Policy, Legal, and Regulatory Framework in Uganda
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Project summary

Uganda has an estimated potential of approximately 450 MW of untapped geothermal energy resource (McNitt, 1982). Geothermal technology has the potential to provide affordable, reliable, efficient, low-emission, large scale, base load renewable power to Uganda. However, the geothermal market in the country is still in its infancy and faces four major barriers, including: (i) Risks associated with resource exploration and development; (ii) Large up-front cost; (iii) Inadequate skilled manpower; (iv) Limited private investment; and, (v) Lack of a clear and coherent geothermal policy, legal, regulatory and institutional framework.

The main objective of this CTCN assistance is to address the policy and regulatory barriers for geothermal energy development in Uganda with a view to attract geothermal investment in terms of Public Private Partnerships (PPP) and Independent Power Producers (IPP). This response plan focuses on assisting Uganda to develop a geothermal policy, legal and regulatory regime. The response plan identifies the need for experts with knowledge and experience of Uganda's current framework for mining, energy and environmental regulation as well as experts familiar with geothermal regulatory structures in other nations. The result will be a team of experts that can advise on the creation of a geothermal specific policy, legal and regulatory regime for Uganda.

Technical assistance from the CTCN serves primarily to address barriers (iv) and (v) described above and potentially also barriers (i), (ii), and (iii) depending on the policy recommendations determined by expert analysis. The timeframe for this assistance is approximately one year. Major in country partners are (i) Ministry of Energy and Mineral Development (MEMD), (ii) Electricity Regulatory Authority (ERA), (iii) Uganda Electricity Generation Company Limited (UEGCL), Uganda Electricity Transmission Company Limited (UETCL), Uganda Electricity Distribution Company Limited (UEDCL), (iv) National Environment Management Authority (NEMA), Uganda Wildlife Authority (UWA), Rural Electrification Agency (REA) and Directorate of Water Resources Management.

1. Overview of the assistance

1.1 Objectives (outcomes)

The primary objective of this technical assistance to Uganda is to draft a utility-scale geothermal policy, law and to review existing supporting policies and regulations with the intent of attracting private sector investments while maintaining cost effective power supply costs. The policy will also take into account considerations for accessing international development and climate finance funds and financing to support geothermal development.

1.2 Results (outputs)

Final outputs will include:

- A report evaluating existing policies, laws, and regulations that impact geothermal development

- A report recommending the content of the new geothermal policy, law and regulations based on the review of existing policies, laws, and regulations in Uganda as well as a review of countries with mature geothermal markets
- Creation of a stakeholder community, informed by analysis of the private and public sector engagement in geothermal development and the holding of several in-person and virtual stakeholder meetings
- A draft proposed geothermal policy, law and regulation as well as institutional framework
- Recommendations and draft proposed changes to related regulations

1.3 Technology aspects

The CTCN assistance aims to support Uganda in encouraging and deploying technologies that will enable the country to produce geothermal energy. The government is requesting support as the deployment of such technologies constitutes high-risk investments, especially due to the risk associated with a natural resource that cannot readily be observed or characterized without relatively large expenditures for drilling. Many of the risks of geothermal development are essentially the same as in any grid connected power generation project (completion or delay risks, off-take risks, market demand or price risk, operational risk and regulatory risk) but we can observe a lack of investors' willingness to accept the level of risk associated with geothermal resource exploration and hence the availability of project funding. The risks, combined with the lack of large up-front investment, weak institutions and lack of appropriate policy and regulatory regimes, hamper the capacity of the government to deploy geothermal energy technologies. Indeed, experience has shown that the relative success of geothermal development in particular countries is closely linked to their governments' policies, regulations, incentives and initiatives. This is what the CTCN assistance will focus on.

2. Description of the Assistance

2.1 Activities

Activity 1 – Geothermal Energy Policy Formulation

Activity 1 surrounds background analysis of the National Power Development Master Plan, existing policies, laws, and regulations in Uganda that impact geothermal development and developing recommendations for the new geothermal policy and improvements to existing regulations. Activity 1 also includes developing and implementing a stakeholder engagement plan. Involvement of stakeholders will be used to inform the background analysis as well as recommendations for the new geothermal policy law and supporting policies and regulations.

Activity 1.1 – Issue/Challenge Identification

Technical experts will conduct background analysis on the current state of policies, laws, regulations, and power purchase agreements (PPAs) governing geothermal resources and energy in Uganda as well as potential policy options moving forward. This task will be an essential first step to developing a new geothermal-specific energy policy for Uganda.

This activity includes:

- Assessment of the current mining, electricity, and energy policies/laws and associated PPAs in Uganda as well as geothermal policies/laws in other East African nations and developing countries such as the Philippines and Indonesia¹ (for benchmarking).
- Review policies, laws and regulations in place for renewable energy development; mineral development; petroleum development; and environmental protection and water resources. This review shall include ongoing related efforts by the government including but not limited to:
 - Reduction of system technical and commercial losses,

¹ The Philippines and Indonesia are two developing countries with significant geothermal markets.

- Development of other large hydropower sites, use of indigenous fossil fuel for thermal generation, interconnection of the regional grid system, renewable energy development (including geothermal) and energy efficiency
- Identify challenges and regulatory hurdles for geothermal energy development in Uganda based on desktop research and initial conversations with stakeholders as well as the stakeholder kick-off meeting
- Review how more mature geothermal energy markets (i.e., developing nations and developed nations with implemented geothermal policy/laws) have addressed similar challenges and regulatory hurdles.
- Identify competitive markets (i.e., other renewable energy technologies, such as hydropower). This should include analysis on the price of electricity per kWh for these technologies.

Based on this background research, experts will assess potential policy options for Uganda. Policies explored could include (but should not be limited to) the following:

- Utility mandates and standards for renewables
- Direct cash incentives
- Tax incentives, including property tax and sales tax, as well as other tax credits
- Direct loans and loan guarantees
- Outreach training, or technology by developing programs to train workers or provide technical research and assistance.

The findings of this analysis will be presented in a summary draft report for review by the CTCN and the Uganda NDE, with a final report developed to reflect recommendations.

Activity 1.2 – Stakeholder Analysis and Engagement

Stakeholders will be engaged to seek input on the analysis and draft laws and regulations in an effort to ensure the quality and efficacy of these draft laws in attracting private sector investment in geothermal projects in Uganda.

Subtask 1.2.1 – Stakeholder Analysis and Development of Stakeholder Engagement Plan

Technical experts will conduct initial phone discussions with a core group of stakeholders (e.g., 5 to 10) to identify initial stakeholder concerns from investors, developers, and civil society organizations (Non-governmental organizations and Universities) as it relates to private sector engagement for geothermal development in Uganda. Based on these initial discussions, the experts will develop a stakeholder engagement plan that clearly identifies key stakeholders, their expected role/input, types of documents and presentations needed to facilitate these stakeholder meetings, and the intended outcomes for the meetings.

Subtask 1.2.2 – Stakeholder Engagement In-Person Meetings and Virtual Consultations

Technical experts will need to conduct various forms of stakeholder engagement, including but not limited to: focus group workshops, stakeholder consultations, and calls for inputs and/or peer reviews. The technical experts will need to verify the different types of stakeholders (i.e., investors, developers, civilian organizations, government agencies, universities, researchers and local governments) and hold joint and/or separate meetings within these groups accordingly (See Appendix 1 for a preliminary list of identified stakeholders and related outreach objectives). Engagement with civil society organizations will be of particular importance to gain broad support and ensure strong external advocates to sustain policy development. Stakeholder engagement will include an initial meeting with all of the various stakeholders that can assist in guiding additional meetings/workshops, additional in-person meetings limited to specific stakeholder groups, a virtual mid-point status meeting, additional ad hoc meetings/phone calls as required to develop final documents, and a final meeting with all of the stakeholders to identify potential ongoing ways in which Uganda can maintain stakeholder engagement activities. A list of suggested workshops limited to specific stakeholder groups include:

- Community Issues: To solicit input regarding community and environmental concerns of the geothermal industry.

- **Private Sector and Government Finance:** To solicit input regarding private sector and government (including development aid) financing structures to support the geothermal sector while leveraging private sector investment.
- **Legislative and Regulatory Framework:** To solicit input regarding the legislative and regulatory framework and power market requirements for the geothermal sector.
- **Training and Skills Development:** To solicit input regarding the research, training and skills development infrastructure required for the geothermal sector, including project development, proposal development, and operations and maintenance.

In addition, as part of this effort, technical experts will create material to inform stakeholders such as fact sheets, presentations, pre-read materials, and possibly a file-share website or basic online means of providing updates and sharing materials.

Activity 1.3 – Draft geothermal policy

Based on inputs from stakeholders and reports developed under activity 1.1, the experts will draft the geothermal policy that will include the approach for developing geothermal at national level and provide a framework/basis for developing the draft law. The draft policy will include a monitoring and evaluation plan/component for assessing the effectiveness of the new law and regulations, including to track new projects, megawatts installed, generation and curtailments levels, financier and investor engagement, government expenditures and leveraging of private sector investment, etc.

Activity

Activity 1 Deliverables	Delivery date (after contract start date)
Stakeholder Analysis and Engagement Plan - Draft (8 to 10 pages) (May be revised based on input sought during Kick-Off Meeting) and informational material such as fact sheets, presentation, pre-read materials, and website or basic online means of providing updates and sharing material.	Week 6
Policy and Regulation Analysis White Paper - Draft	Week 8
Kick-off Meeting: Identify Relevant Policies, Key Barriers, and Policy Recommendations	Week 12
Policy and Regulation Analysis - Final Report (30 to 40 pages)	Week 18
Stakeholder Analysis and Engagement Plan – Final Report (8 to 10 pages)	Week 18
Status Update Meeting Conducted via Webinar	Week 20
In-Person Workshop on Community Issues and Proceeding Report	Week 24
In-Person Workshop on Private Sector and Government Finance and Proceeding Report	Week 24
In-Person Workshop on Legislative and Regulatory Framework and Proceeding Report	Week 24
In-Person Workshop on Training and Skills Development and Proceeding Report	Week 24
Final Meeting with All Stakeholders	Week 30
Draft policy for geothermal energy	Week 32

Activity 2 – Draft Proposed Geothermal Energy Law

Technical experts will begin by developing an outline of the geothermal law, highlighting key components informed by the policy white paper developed under activity 1 and the stakeholder kick-off meeting and additional stakeholder engagements. Based on feedback from the CTCN and NDE, the outline will be revised.

Three drafts of the law will be developed for review and input by the CTCN, NDE, and stakeholders, as defined in the full Timeline in Section 2.5.

Activity 2 Deliverables	Delivery date
1 st Draft geothermal law	30 weeks
2 nd Draft geothermal law	36 weeks
Final proposed geothermal law	42 weeks

Activity 3 – Draft Proposed Supporting Laws and Regulations

Concurrent with development of the Geothermal Energy Law (Activity 2), technical experts will also develop recommended changes to other relevant policies, laws, and regulations that may be necessary to support full efficacy of the Geothermal Energy Law. This includes drafting of specific sub-sector provisions (e.g., health and safety, environmental law, fiscal regime, and direct uses).

Similar to Activity 2, the experts will first develop an outline of the key supporting laws, policies, and regulations and their proposed changes. And, three drafts of the proposed changes will be developed and reviewed by the CTCN, NDE, and stakeholders as defined in the full Timeline in Section 2.5.

Activity 3 Deliverables	Delivery date
Draft Revisions to Existing Geothermal Regulations	30 weeks
2 nd Draft of Proposed Changes to Existing Geothermal Regulations	36 weeks
Final Proposed Changes to Existing Geothermal Regulations	42 weeks

2.2 Expertise/Meetings Required

The following expertise and meetings are required to carry out the aforementioned activities.

Expertise:

- a) Uganda partner experts (assigned by country partner – in-kind contribution):
 - Attorney from the Ministry of Energy and Mineral Development
 - Geothermal experts from the Geothermal Resource Department in the Directorate of Geological Surveys and Mines.
- b) Expertise required for assessment of local geothermal industry
 - Local Expert – (medium level) (estimated 100 hours) – Assessment of local geothermal and mining industry; Identify additional stakeholders (investors, developers, universities, civil society organizations); Identify stakeholder concerns
- c) Expertise required for assessment of geothermal policy, laws and regulations in Uganda
 - Energy economist who is conversant with various energy resource markets (estimated 80 hours)
 - Attorney/Regulatory/Policy Consultants (High level, external) – Consideration of new policy options

- Using separate individuals for:
 - Policy incentives (mandates, cash, tax) (estimated 80 hours),
 - Electricity generation regulations (estimated 80 hours), and
 - Geothermal leasing, exploration and well field development regulations (100 hours)
 - Attorney/Regulatory Consultant (High/medium level, external) – Research and analysis on challenges/regulatory barriers and mature geothermal markets (estimated 80 hours)
 - Attorney/Regulatory Consultant (medium/low level, external or internal) – Research on existing legal framework in Uganda, including but not limited to, the Water Act (1997), Electricity Act (1999), Energy Policy (2002), Mining law (2003), Renewable Energy Policy (2007), National Oil and Gas Policy (2008), Petroleum Exploration, Development, and Production Act (2013) (estimated 120 hours)
- d) Expertise required for drafting geothermal law and implementation plan
- Attorney/Regulatory Consultants (High/medium level, external) (estimated 100 hours each per topic – policy; electrical generation; geothermal leasing, exploration and well field development)
 - Attorney/Regulatory Consultant, (medium/low level, external or internal) (estimated 100 hours)

The success of the activities will also rely on strong cooperation with experts of the field at national level, including the MEMD and the first parliamentary Counsel of the Ministry of Justice and Constitutional Affairs.

Meetings Required:

Note the following meeting requirements are also included within the Stakeholder Engagement activity.

- Broad stakeholder meeting that includes government officials, investors, prospective geothermal developers, researchers/universities and civil society, organizations (initial “kick off” meeting).
- Workshop on Community Issues: To solicit input regarding community and environmental concerns of the geothermal industry.
- Private Sector and Government Finance: To solicit input regarding private sector and government (including development aid) financing structures to support the geothermal sector while leveraging private sector investment.
- Legislative and Regulatory Framework: To solicit input regarding the legislative and regulatory framework and power market requirements for the geothermal sector.
- Training and Skills Development: To solicit input regarding the research, training and skills development infrastructure required for the geothermal sector, including project development, proposal development, and operations and maintenance.
- Status update meeting (this could be via webinar or teleconference)
- Final meeting with all stakeholders

Others:

- Travel and per diem for experts
- In addition, resources are needed for communication (phone) as well as printing and dissemination of material produced (presentations, reports, briefs, etc.).

2.3 Main partners

The table below developed by the Geothermal Resources Unit, Directorate of Geological Survey and Mines, Ministry of Energy and Mineral Development (request applicant/proponent) provides a list of the main partners and stakeholders to be engaged in this exercise and their indicative role. In addition, Appendix 1 provides a more refined List of Key Stakeholders and Objective of Outreach. Activity 1.2

will permit to further refine this stakeholder list and specify the engagement and exact roles/tasks of the different stakeholders.

Stakeholder	Role to support the implementation of the assistance
Ministry of Energy and Mineral Development (lead Agency)	Take lead in the process of developing the policy, law and regulation Mobilizing stakeholders Participating in workshops Working with the CTCN expert team Provide backup to the expert team (psmemd@energy.go.ug) Ensure approval of the policy Presentation of bill to parliament (www.energyandminerals.go.ug)
Ministry of Justice and Constitutional Affairs (First parliamentary counsel)	Take lead in drafting the bill Take lead in drafting the regulation
National Environment Management Authority	Provide input that will address environmental issues, Identify environment issues, propose policy objectives and strategy (www.nemaug.org)
Directorate of Water Resources Management	Identify water issues, propose policy objectives and strategy Managing water resources (www.mwe.go.ug)
Uganda Investment Authority	Identify investment issues, propose policy objectives and strategy Drive national economic growth (www.ugandainvest.go.ug)
Uganda Wildlife Authority	Identify conservation issues, propose policy objectives and strategy
National Forest Authority	Identify forest issues, propose policy objectives and strategy
Uganda Revenue Authority	Identify fiscal issues, public finance issues, subsidies, guarantees, tax write offs, incentives, propose policy objectives and strategy.
Private Sector /	Identify market and economic barriers, capital risk insurance, up-front exploration costs, higher initial drilling costs, feed in tariffs, geothermal pricing, Work with government in the development of sound legislation and regulation
Regulators (Electricity Regulatory Authority)	Identify key regulatory issues and challenges, propose policy objectives and actions (www.era.or.ug) info@era.or.ug
Electricity Disputes Tribunal	Identify key issues and challenges affecting the sector, propose policy objectives and strategic actions (Chairman, Electricity Disputes Tribunal, 4 th Floor Amber House)
Rural Electrification Agency	Identify key issues and challenges affecting rural electrification, propose policy interventions and strategic actions (www.rea.or.ug) rea@rea.or.ug
Uganda Electricity Transmission Company Limited	Identify key issues and challenges affecting electricity transmission in Uganda, propose policy interventions and strategic plans System Operator and owns transmission lines above 33kv (www.uetc.com)
Uganda electricity distribution company limited	Identify key issues and challenges affecting electricity distribution in Uganda, propose policy interventions and strategic actions. Owner of the electricity distribution network (www.uedcl.co.ug)

Uganda Electricity generation company limited	Identify key issues and challenges affecting electricity generation in Uganda, propose policy objectives and actions Owns Kira and Nalubale HEP www.uegcl.com
Uganda National Bureau of Standards	Identify key issues and challenges affecting standards in Uganda; propose policy objectives and strategic actions. Formulate and promote national standards(www.unbs.ug)
Civil Society /NGOs	Identify key issues and challenges concerning information and awareness, propose policy objectives and strategic action; Training, awareness and education Link between community and government Information dissemination Working directly with community Institution building
Geothermal Energy Developers	Identify key issues and challenges in the geothermal industry, propose policy objectives and strategic actions; Principal participants in Strategy Recommend policy issues
Universities Educational institutions (Makerere University, Kyambogo University.....)	Academia, identify training issues and challenges, propose policy objectives and strategic actions
Civil Society (Environmental Advocacy Groups....) National Association of Professional Environmentalists' (NAPE)	Identify key issues and challenges concerning information and awareness, propose policy objectives and strategic action; Training and education Link between community and government Information dissemination Working directly with community Institution building Sustainable management of resources taking into consideration environment issues.
Well drilling Companies	Identify drilling issues, propose policy objectives and strategies. Service providers
District Local Government	Identify key issues and challenges concerning information and awareness, propose policy objectives and strategic action; Training and education Link between community and government Information dissemination Working directly with community

2.4 Synergies

The Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent) will ensure that no duplication of efforts occurs and ensure collaboration and synergies with potential complementary activities and support for geothermal energy development in Uganda. The following initiatives are particularly relevant:

African Rift Geothermal Development Facility (ARGeo)

The ARGeo Project is a GEF funded project being implemented by United Nations Environment Programme (UNEP). The project aims to encourage both Private and Public developers to accelerate

development of geothermal resource in the East Africa Region. The project has two major components: (i) Regional Networking, Information Systems, Capacity Building, Policy Advice and awareness creation, and (ii) Technical Assistance for Surface Exploration Studies. Uganda is one of the UNEP-GEF ARGeo member countries and is in the process of receiving support for surface exploration studies at Kibiro geothermal prospect to locate target sites for deep exploratory drillings. The results of this work are expected to be submitted to the AUC-KfW Geothermal Risk Mitigation Facility (GRMF) for securing partial grant for exploratory drilling at Kibiro. ARGeo thus created an operational linkage with GRMF where projects that yielding encouraging results during the surface surveys, would seamlessly progress to the exploration drilling stage, by acquiring partial grants for exploration drilling.

The technical assistance team will benefit from the ARGeo's (a) results of surface studies through mitigation of risks and identification of resources to attract private investments; (b) its regional network and hubs as well as contacts in Uganda and information contained in ARGeo's Geothermal inventory database (AGID) and (c) ARGeo's Regional Study on geothermal legislation and related institutions and policies (2013) which was developed in collaboration with AUC regional geothermal programme. The establishment of the Geothermal energy policy and regulations will facilitate follow-up actions for the potential private development (in terms of PPP/IPP) of a geothermal power plant at Kibiro as well as other prospects identified in the country and in which other partners (ICEIDA, JICA, BGR...) have initiated surface assessments and shown interest.

Geothermal Risk Mitigation Facility (GRMF)

The GRMF was setup at the African Union Commission (AUC) as a risk mitigation facility for geothermal resource exploration in the EARS region. A USD 65 Million financing was provided by the German Federal Ministry for Economic Cooperation and Development (BMZ) and the EU-Africa Infrastructure Trust Fund through KfW Entwicklungsbank (KfW). Further, DFID later provided about USD 70 Million to the GRMF in 2014. The GRMF holds periodic rounds where applications are received for consideration for co-financing surface studies and exploration drilling projects. The partial funding of projects as a percentage of total cost is -80 % percent for surface studies and -40 % percent for exploration drilling.

Others

Icelandic International Development Agency (ICEIDA) and Nordic Development Fund (NDF) also have a regional geothermal program to assist in surface exploration studies and capacity building in geothermal science and technology in Eastern Africa countries. The programme is active in Uganda.

Rules, Regulations and standards for drilling are being developed by BGR and AUC (Regional Geothermal Development Programme) for the East African rift countries based on the New Zealand drilling code and standards. The document is expected to be available to stakeholders in September 2015 and will be shared with the technical assistance team by the Ministry of Energy and Mineral Development to inform their work. The technical assistance team will take into this account for the formulation of Uganda's Geothermal Energy policy legal and regulatory framework.

The drafting of Geothermal Industry Development Framework for Uganda is ongoing. The Ministry of Energy and Mineral Development will share the draft document with the technical assistance team to inform the work of the experts. The technical assistance team will take into this account for the formulation of Uganda's Geothermal Energy policy legal and regulatory framework.

The technical assistance team will also engage and link to Uganda's Sustainable Energy for All Action Agenda and mechanisms to facilitate its implementation such as the EU's Electricity Financing Initiative (ElectriFi) which intends to catalyze private sector investments for electrification projects, in order to increase sustainability of actions and leverage private funds.

The Geothermal Resources Unit, Ministry of Energy and Mineral Development and the technical assistance team will also explore potential for collaboration (or support for follow-up actions to CTCN's technical assistance) with the East African Geothermal Energy Facility (EAGEF). EAGEF is an independent advisory facility established in 2015 and funded by the UK Department for International Development (DFID) to catalyze private and public investment in clean and reliable geothermal power in East Africa. It will offer world-leading, on-demand advice to help create the strategy, policy and regulatory conditions which remove barriers to investment in geothermal power generation. This advice will be delivered by a consortium of firms led by Adam Smith International. The countries that will be supported by this facility include: Djibouti, Kenya, Ethiopia, Rwanda, Tanzania and Uganda.

In addition, the technical assistance team will take into account the following information:

- "Recommendation for Uganda Geothermal Resources Development" (2011) developed by USAID's African Infrastructure Programme
- Scoping Mission Report on EUEI PDF Scoping Mission for Geothermal Initiative (2012) developed by the EU Energy Initiative Partnership Dialogue Facility Energy for Development (EUEI PDF)
- East Africa Guidelines for Instituting Harmonized Geothermal Policy, Legislative, Regulatory and Institutional Mechanisms developed by AUC, Regional Geothermal Programme (AUC-RGP) (2011)

2.6 Indicative budget

The budget for this assistance is estimated at: up to 220kUS\$.

2.7 Gender considerations

The assistance will make sure to take into considerations gender aspects in the implementation of the activities and its outputs, in particular for activities related to stakeholder's engagement and the development of the white paper and recommendations that will serve as a basis for the draft law. Multiple co-benefits are expected from this assistance concerning gender, in particular the increased access to energy and electricity of urban and rural communities of the country and the potential creation of new jobs including in the geothermal sector.

2.8 Risk identification and risk mitigation

Risks	Consequence	Probability	Mitigation
Draft law not going through adoption process	Law not enacted	Low	Geothermal energy champions and stakeholders involved in enactment and approval process are engaged from the beginning of the assistance
Draft law not adapted to national context and needs	Law not enacted or not applied at national level	Low	Deep analysis of national context and needs integrated in work to draft law Draft law informed, peer-reviewed and approved by national stakeholders
No interest/investments from public and private sector	No further development of geothermal energy production and use	Low	Current interested investors and donors as well as others involved from the first stages of law drafting and developments and their inputs/views taken into consideration.

2.9 Monitoring and Reporting

The progress of the activities and deliverables will be monitored both by the NDE of Uganda and the CTCN. This document defines all the elements that are essential to effectively monitor project progress and achievements, including: project activities, objectives and expected impacts, the work plan and expected milestones (see also the logframe in Annex 1), and a preliminary post-assistance plan for monitoring the expected impacts of the technical assistance provided.

The NDE and the CTCN will monitor the progress of the technical assistance activities by:

- Maintaining regular communication with response implementer and the Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent) (e.g. Quarterly progress updates and status update meetings or teleconferences)
- Verify project progress against timeline and associated milestones (see annex 2)

The Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent) will coordinate activities between the response implementer and stakeholders involved in the technical assistance activities. When and if required, the Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent) may suggest to the response implementer any adjustments and planning modification needed. Any proposed adjustments and planning modification must be agreed to by the NDE and CTCN to be effective.

M&E plan

Type of M&E activity	Responsible Parties	Time Frame
Inception Report (1-2 pages) to CTC and NDE with updated workplan/milestones for the assistance	Response implementer (Coordinator of the expert team)	Week 6
Status update meeting with NDE and CTCN	Response implementer (Coordinator of the expert team) and Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent),	Week 20
Quarterly progress updates (1-2 pages) to CTC and NDE	Response implementer (Coordinator of the expert team) and Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent)	Week 12 Week 24 Week 36
Country Feedback Report to CTCN on assistance received	NDE and Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent)	Week 45
Final Activity Report focussing on achievements, challenges, lessons learnt and post-assistance plans	Response implementer (Coordinator of the expert team)	Week 45

Note: The Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent) and the response implementer can request the NDE and/or CTCN for additional coordination meetings or teleconferences whenever needed.

3. Long-term impacts of the assistance

3.1 Expected climate benefits

Once approved and operationalized, the geothermal law will reduce barriers to investments in renewable energy (geothermal) in Uganda, foster the deployment of renewable clean energy technologies (geothermal power plants) in the country and enable the country mitigating future GHG emissions from new power generation in the country, thereby support low carbon development.

3.2 Co-benefits

Because geothermal energy is an inherently clean form of energy (with no combustion), it is an attractive alternative to some other forms of energy. All energy development and production impacts the environment to some degree. But the use of geothermal energy can greatly minimize these

impacts, resulting in environmental benefits for the country and its population which have growing energy needs.

Development and use of a domestic energy resource such as geothermal energy brings a multitude of economic and employment benefits. Since geothermal sites are generally located in rural areas, many of the jobs created will occur in rural areas where economic development initiatives are frequently overlooked. Growth in the energy production will occur, which will have significant economic and employment repercussions for the country.

More directly, the CTCN assistance will help Uganda move towards its geothermal power generation goals, create an enabling environment for investments in geothermal power generation, support the country's low carbon development objectives, and strengthen the Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent).

The table below shows how and to what sustainable development goals the request contributes to.

No.	Sustainable Development Goal	Contribution from CTCN assistance
1	End poverty in all its forms everywhere	Geothermal energy deployment will improve energy access and create direct and indirect employment
7	Ensure access to affordable, reliable, sustainable, and modern energy for all	Geothermal energy deployment will improve energy access
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Geothermal energy deployment will create direct and indirect employment
13	Take urgent action to combat climate change and its impacts	Geothermal energy deployment will support low carbon development

3.3. Post-assistance plans and actions

The table below will serve as a basis for the CTCN, the NDE, the Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent) and the assistance implementer to measure success of CTCN assistance in achieving its expected results and impacts. The geothermal policy will include a monitoring and evaluation plan/component for assessing the effectiveness of the new law and regulations, including to track new projects, megawatts installed, generation and curtailments levels, financier and investor engagement, etc. and this will enable the NDE to assess the exact outcomes triggered by the assistance (number of USD invested, number of stations created, policies developed, etc.) will be measured after the implementation of the assistance.

Performance indicators				
Main outputs that will be used by the Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent) and beneficiary (<i>final products that will remain after CTCN assistance</i>)	How these results will be used by Geothermal Resources Unit, Ministry of Energy and Mineral Development (request applicant/proponent) and other stakeholders (<i>how the outputs will be used to ensure creation of outcomes</i>)	Expected outcome in the short term, in effect of the use of the results by the proponents and stakeholders	Expected impacts in the medium term	Expected impacts in the long term, related to climate change goals
Draft geothermal law	Draft reviewed by Permanent Secretary,	Geothermal law approved by	Funds invested on geothermal energy	Share of renewable energy

	and submitted to Cabinet for approval	Cabinet on 30 June 2016	by private companies	(geothermal) in national energy supply/production increased
	MEMD and Attorney General take the draft law approved by the Cabinet forward to Parliament	Geothermal law debated and approved by Parliament, and enacted by end of 2016.	Funds invested by multilateral donors and developments banks	CO2 emissions from energy use and production avoided or reduced
Draft changes proposed to existing regulations	Draft of proposed amendments to existing regulations reviewed by Permanent Secretary, and submitted to Cabinet for approval	Proposed amendments to existing regulations approved by Cabinet on 30 June 2016	Funds invested by government of Uganda	
	MEMD and Attorney General to take proposed amendments to existing regulations forward to Parliament	Existing laws and regulations amended by end of 2016	New geothermal power stations created New exploration areas for geothermal energy created	
Creation of a stakeholder community on geothermal energy	Ministry of Energy will engage this community to understand and assess the effects of the new policy and revised regulations	Geothermal opportunities and priorities are mainstreamed into new initiatives and plans at national level	Increase in domestic energy megawatts installed	

4. Formal agreement and signatures

Signatures of the requesting country

For the NDE

Name: MAXWELL OTIM ONAPA

Title: DEPUTY EXECUTIVE SECRETARY

Date: 03.09.2015

Signature:



For the Request Applicant

Name: VINCENT KATO

Title: ASSISTANT COMMISSIONER

Date: 3-9-2015

Signature:



Signatures of the CTCN

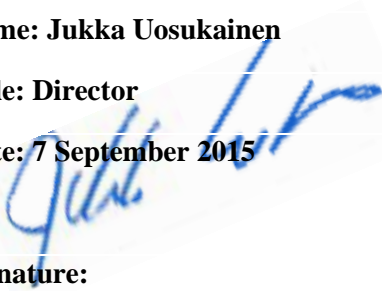
For the CTCN Director

Name: Jukka Uosukainen

Title: Director

Date: 7 September 2015

Signature:



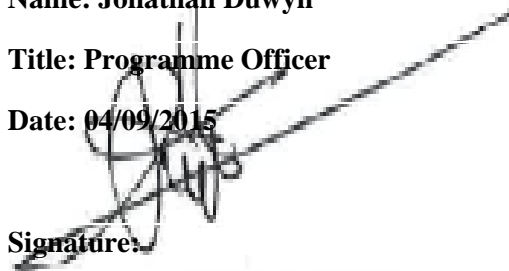
For the Climate Technology Manager

Name: Jonathan Duwyn

Title: Programme Officer

Date: 04/09/2015

Signature:



Annex 1: Logframe

Activity	Description of sub-activities conducted by the CTCN	Output and deliverables	Main national partners involved	Objectively Verifiable Indicator	Responsible person/organization
Activity 1 – Geothermal Energy Policy Formulation	Activity 1.1 – Issue/Challenge Identification	Policy and Regulation Analysis White Paper	MEMD (Geothermal Dept)	Policy and Regulation Analysis White Paper approved by MEMD	Response implementer and Geothermal Resources Dept (MEMD)
	<ul style="list-style-type: none"> Review policies, laws and regulations in place Identify challenges and regulatory hurdles for geothermal energy development in Uganda Assess geothermal policies/laws in other countries Assess potential policy options for Uganda 				
	Activity 1.2 – Stakeholder Analysis and Engagement	Stakeholder Analysis And Engagement Plan	MEMD (Geothermal Dept)	Stakeholder Analysis And Engagement Plan	Response implementer and Geothermal Resources Dept (MEMD)
	<ul style="list-style-type: none"> Stakeholder Analysis And Development of Stakeholder Engagement Plan Stakeholder Engagement In-Person Meetings and Virtual Consultations 	Kick-off meeting with stakeholders Limited stakeholder workshops (4) Final stakeholders meeting		Report approved by MEMD Meeting summary or proceedings reports (6)	
	Activity 1.3 – Formulation of policy of geothermal energy	Draft policy of geothermal	MEMD (Geothermal Dept)	Policy approved by MEMD	Response implementer and Geothermal Resources Dept (MEMD)

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Activity 2 - Draft Proposed Geothermal Energy Law	Develop proposed draft Geothermal Energy Law and a monitoring and evaluation plan/component for assessing the effectiveness of the new law and regulations	proposed Geothermal Law	MEMD (Geothermal Dept)	Proposed Geothermal Law approved by MEMD	Response implementer and Geothermal Resources Dept (MEMD)
Activity 3 - Draft Proposed Supporting Laws and Regulations (amendments to existing laws/regulations)	Develop recommended changes to additional policies, laws, and regulations that may be necessary to support full efficacy of the proposed draft Geothermal Energy Law	Proposed Revisions to Existing Regulations	MEMD (Geothermal Dept)	Report on Proposed Revisions to Existing Regulations approved by MEMD	Response implementer and Geothermal Resources Dept (MEMD)

Annex 2: Key milestones

Milestone	Scheduled Date
<i>Tendering process</i>	
Initiate tender (CTCN/UNIDO)	September 1 st , 2015
Selection and contracting of the response implementer (CTCN/UNIDO)	October 31 st , 2015
<i>Start and end dates</i>	
Technical assistance start date (week 1)	November 1 st , 2015
Completion of technical assistance (week 42)	June 30 th , 2015
<i>Meetings and workshops</i>	
Kick-off meeting with stakeholders (week 12)	Week 18-22 January, 2016
Kick-off meeting summary report (week 18)	February 5 th , 2016
Status update meeting with NDE and CTCN (week 20)	Week of 15-19 February, 2016
Limited stakeholder workshops (4) (week 24)	Week 14-18 March, 2016
Proceedings report from limited stakeholder workshops (4) (week 25)	March 25 th , 2016
Final stakeholder meeting (week 30)	Week of 18-22 April, 2016
Final stakeholder meeting report (week 31)	April 29 th , 2016

Reports	
Draft Stakeholder Analysis and Engagement Plan (week 6)	December 11th, 2015
Final Stakeholder Analysis and Engagement Plan (week 18)	February 5 th , 2016
Outline of Policy and Regulation Analysis White Paper (week 4)	November 27 th , 2015
Draft Policy and Regulation Analysis White Paper (week 8)	December 24th, 2015
Final Policy and Regulation Analysis White Paper (week 18)	February 5 th , 2016
Final policy of geothermal (week 32)	February 20 th , 2016
Outline Components of Geothermal Law (week 9)	December 31 st , 2015
Revised Outline of Components of Geothermal Law (week 11)	January 15 th , 2016
First Draft Geothermal Law (week 33)	May 13 th , 2016
Second Draft Geothermal Law (week 36)	June 3 rd , 2016
Final proposed Geothermal Law (week 42)	June 30 th , 2016
Outline Revisions to Existing Regulations (week 9)	December 31 st , 2015
Revised Outline of Revisions to Existing Regulations (week 11)	January 15 th , 2016
First Draft Revisions to Existing Regulations (week 33)	May 13 th , 2016
Second Draft Revisions to Existing Regulations (week 36)	June 3 rd , 2016

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Final proposed Revisions to Existing Regulations (week 42)	June 30 th , 2016
<i>Monitoring and evaluation reports</i>	
Inception Report (week 6)	December 11 th , 2015
Quarterly progress update 1 (week 12)	January 22 nd , 2016
Quarterly progress update 2 (week 24)	March 18 th , 2016
Quarterly progress update 3 (week 36)	June 3 rd , 2016
Country Feedback Report (week 45)	July 22 nd , 2016
Final Activity Report (week 45)	July 22 nd , 2016

Appendix 1: List of Key Stakeholders

Item No.	Stakeholder
1	Mr. Fred Kabagambe-Kaliisa, Permanent Secretary, Ministry of Energy and Mineral Development (I)
2	Mr. Godfrey Bahati, Commissioner, Geothermal Resources Unit (I)
3	Mr. Edwards Katto, Commissioner / Director, Department of Geological Survey and Mines (I)
4	Mr. Chris Rudgizah, Commissioner Department of Mines (I)
5	Electricity Regulatory Authority (I)
6	Electricity Disputes Tribunal (I)
7	Rural Electrification Agency (I)
8	Uganda Electricity Transmission Company Limited (I)
9	Uganda Electricity Generation Company Limited (I)
10	Uganda Electricity Distribution Company Limited (I)
11	Umeme (I)
12	Uganda National Bureau of Standards (E)
13	Dr. Okurutu, Executive Director, National Environmental Management Authority (E)
14	Directorate of Water Resources Management (E)
15	Uganda Investment Authority (E)
16	National Forest Authority (E)
17	Uganda Revenue Authority (E)
18	National Environment Protection Agency (E)
19	Uganda Wildlife Authority (E)
20	National Planning Authority (E)
21	Makerere University (E)
22	Ministry of Tourism, Wildlife and Antiquities & Uganda Tourism Board (E)
23	Ministry of Education (E)
24	World Wide Fund for Nature (E)
25	Environment Alert (E)
26	Chief Administrative Officer Hoima District (E)

27	Chief Administrative Officer Bundibugyo District (E)
28	Chief Administrative Officer Ntoroko District (E)
29	Chief Administrative Officer Kasese District (E)
30	Chief Administrative Officer Nebbi District (E)
31	Uganda Wildlife Society (E)
32	Uganda Chamber of Mines and Petroleum (E)
33	Mr. Alpha Charles Karamagi, Pawakom International, Private Sector (E)
34	Advocates Coalition for Development & Environment (ACODE) (E)
35	New Vision (E)
36	Daily Monitor (E)
37	Red pepper (E)
38	JICA (E)
39	ICEIDA (E)
40	GIZ (E)
41	USAID
42	WB (E)
43	AfDB (E)
44	KfW (E)
45	Ministry of Lands, Housing and Urban Development & Uganda Land Commission (E)
46	Ministry of Gender, Labor and Social development(E)
47	Ministry of Water and Environment (E)
48	Drilling Companies (E)
49	Ministry of Works and Transport & UNRA
50	Energy for Rural Transformation
51	Directorate of Energy Resources (Renewable Energy Department, Energy Efficiency and conservation Department, Electric Power Department)
52	Ministry of Finance, Planning and Economic Development
53	Eng. Murengezi Energy Advisor to Ministry of Energy