A New Initiative - Geothermal Power Development in East Africa: The AUC/KfW Geothermal Risk Mitigation Facility (GRMF)

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ABSTRACT

The East African Rift is believed to possess a tremendous potential for geothermal development. However, despite the potential and the need for substantial growth in electrical generation capacity throughout the region, development activities have been slow to materialize. A new initiative – Geothermal Risk Mitigation Facility (GRMF) – is now in place to accelerate development by providing costs share grants for exploration and reservoir confirmation drilling.

1. INTRODUCTION

The East Africa Rift system is one of the most promising geothermal resource areas in the World and yet has, to date, seen little actual development outside of Kenya and to a much lesser extent in Ethiopia. It is also home to one of the world's fastest growing populations (CIA (2012), Wikipedia (2012)) and an area where less than 10% of the region's population now has access to electricity, as shown in Figure 13.

Hopefully that is all about to change radically for the better. Kenya is already well on the way to becoming a world leader in geothermal power development and new regional, multilateral and bilateral initiatives are now focusing on removing the many obstacles to geothermal power development in the region. The Geothermal Risk Mitigation Facility (GRMF) is the latest and possibly the most ambitious of those initiatives.

2. GRMF

The African Union Commission (AUC)/KfW Development Bank (KfW) GRMF program was initiated by the German KfW in the second quarter of 2010 when a consulting firm was retained by KfW with the explicit goal of defining and making recommendations relative to the establishment of a multi-million dollar fund designed to share some of the upfront geological risk of exploration and the drilling of reservoir confirmation wells.

The Consultant was tasked with selecting a host for the fund/facility and designing a grant program that would best meet the needs of both public and private sector geothermal power developers in the targeted countries of Ethiopia, Kenya, Rwanda, Tanzania and Uganda. The Consultant conducted interviews with both public and private sector stakeholders throughout the five countries to determine how best to structure the facility, and also to obtain a sense of the adequacy of the legal, institutional and regulatory framework in the five eligible countries that would be critical to the overall program success.

Towards the end of the second quarter of 2010 a decision had been made and the AUC was selected as the most appropriate host for the facility. This was based on the AUC's relations with the 5 target countries as well as their relations with other East African countries that could be made eligible for grant assistance if and when additional funds were secured. The AUC under the leadership of the Commissioner for Infrastructure and Energy had also received from the energy ministers, a mandate to facilitate geothermal developments in East Africa and to work toward harmonization of the legal, institutional and regulatory frameworks within all of the East African Rift countries.

Once negotiations between KfW and the AUC began, it rapidly became clear that the AUC was indeed extremely interested in becoming the host and that it could and would make the commitment to KfW to do so.

Upon completion of negotiations between KfW and the AUC and the signing of the financing agreement, the next important step was the selection of a Technical Consultant to assist the AUC with the operation of the GRMF. The primary functions to be handled by the Technical Consultant included tendering for projects, providing monitoring and oversight of both surface exploration studies and reservoir confirmation drilling and advising the GRMF Oversight Committee.

The selection process resulted in the consulting team being selected in early 2012 and the signing of a four-year contract between Pöyry of Germany and the AUC in March of 2012. The structure of the program is shown in Figure 14.

The GRMF, now funded at 50 million Euro (20 million Euro from the German Government and 30 million Euro from the EU-Africa Infrastructure Trust Fund via KfW) is a grant program designed to cost share exploration work leading to the siting of one or more reservoir confirmation wells as well as grants for the actual drilling of up to two reservoir confirmation wells in a single prospect. The facility is anticipated to be in place for a period of four years but could be extended if presently available funds are not expended during that period or if additional funds are made available to the facility.

The GRMF is not designed to nor will it provide funding for regional geothermal exploration or for activities such as

strengthening the legal, institutional and regulatory frameworks within recipient countries.
The GRMF has two primary elements, the first being grants for surface studies that lead to the siting of wells for geoscientific surveys and the interpretation of data from such surveys. It is anticipated that such grants will be given over the life of the facility.

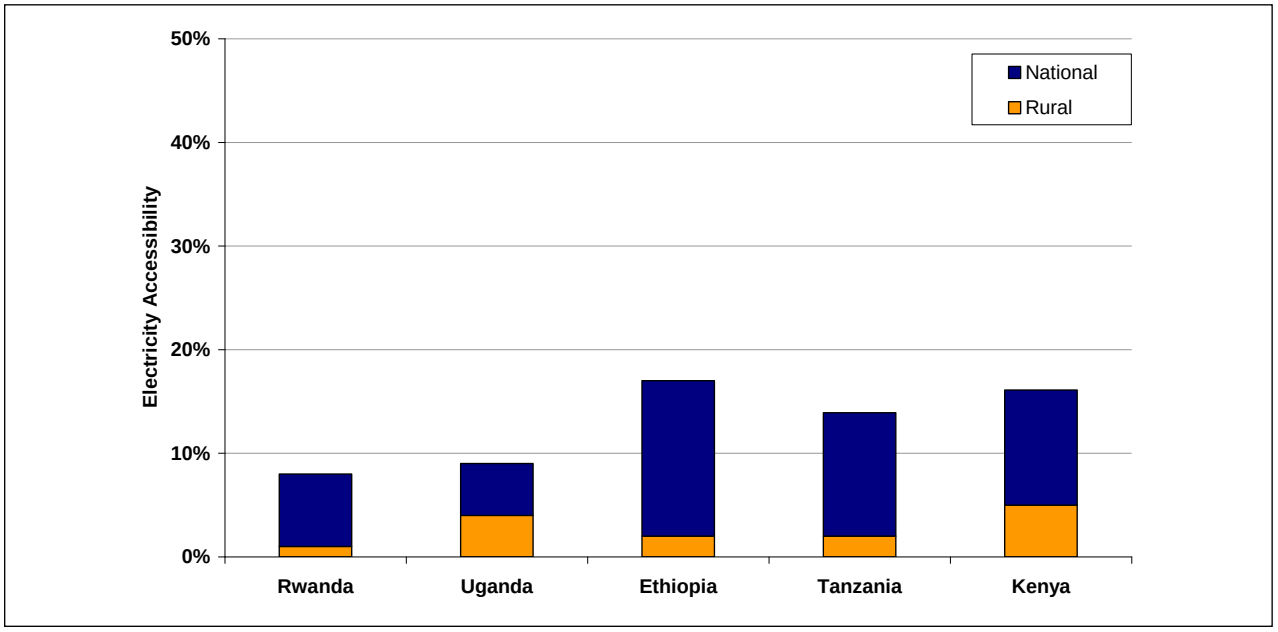

Figure 13: Electricity accessibility in selected East African countries, Source: USAID (2012)

The second major element of the facility is grants for reservoir confirmation drilling. Grants will be awarded to cover up to 40% of eligible expenses related to the drilling of up to two reservoir confirmation wells. If upon completion of such drilling, the grant recipient commits to taking the project forward, a "continuation premium" of 30% of the eligible expenses incurred during drilling operations will be made available to the developer.

Eligible activities that would trigger the receipt of the "continuation premium" could include, but would not be limited to, the drilling of an additional production or injection well, reservoir engineering studies, completion of detailed feasibility studies, development of a project financing package, engineering studies required for generation facility design, etc.

In addition to the above, grant applicants can request for grant assistance related to the establishment of infrastructure required in order to carry out exploration activities or drilling. Grants of up to 20% of required infrastructure improvements may be applied for in conjunction with the application for either surface exploration grants or drilling grants. Eligible infrastructure improvements may include improvement of roads to provide adequate access to the area, establishment of adequate water supply to support drilling operations etc.

reservoir confirmation drilling. This element will provide grants of up to 80% of eligible expenses. Eligible expenses include, but would not necessarily limited to various

3. APPLICATION TO GRMF

One application round for grants related to surface exploration studies and reservoir confirmation drilling will be held each year. Figure 15 provides a schematic of the application and award process.

Potential applicants will be invited to an information workshop; however attendance is strictly voluntary. Following the workshop, a call for expressions of interest will be released and applicants must at that time make a decision as to whether they will apply for a grant leading to well siting or whether such studies have already been completed and they wish to apply for a grant for reservoir confirmation drilling.

The expressions of interest will be evaluated by members of the consulting team and those deemed eligible to submit full proposals will be invited to a bidders' workshop at which attendance will be mandatory. Proposals submitted by those who have not attended the bidders' workshop will automatically be rejected.

Bidders meeting minimum requirements will be invited to enter into negotiations. Contracts between successful bidders and the AUC will be subject to final approval by the GRMF Oversight Committee.

Recipients of grant awards for surface exploration studies will have 6 months from signing of a contract to mobilize and an additional 9 months to carry out the agreed scope of work.

Recipients of grant awards for confirmation drilling will have 12 months from the signing of the contract to mobilize and an additional 12 months to complete drilling and testing of the well(s).

4. BASIC ELIGIBILTY FOR SUCCESSFUL APPLICANTS

Applicants must have a valid concession from the government where the proposed project is located, an exploration license that is convertible into a production license if a discovery is made and a letter from the agency granting the concession that all milestones and work commitments have been duly met. Any concession must be valid for the time period of the proposed activity, i.e. 15 months from the receipt of a grant for surface exploration studies and 24 months from the receipt of a grant award for reservoir confirmation drilling.

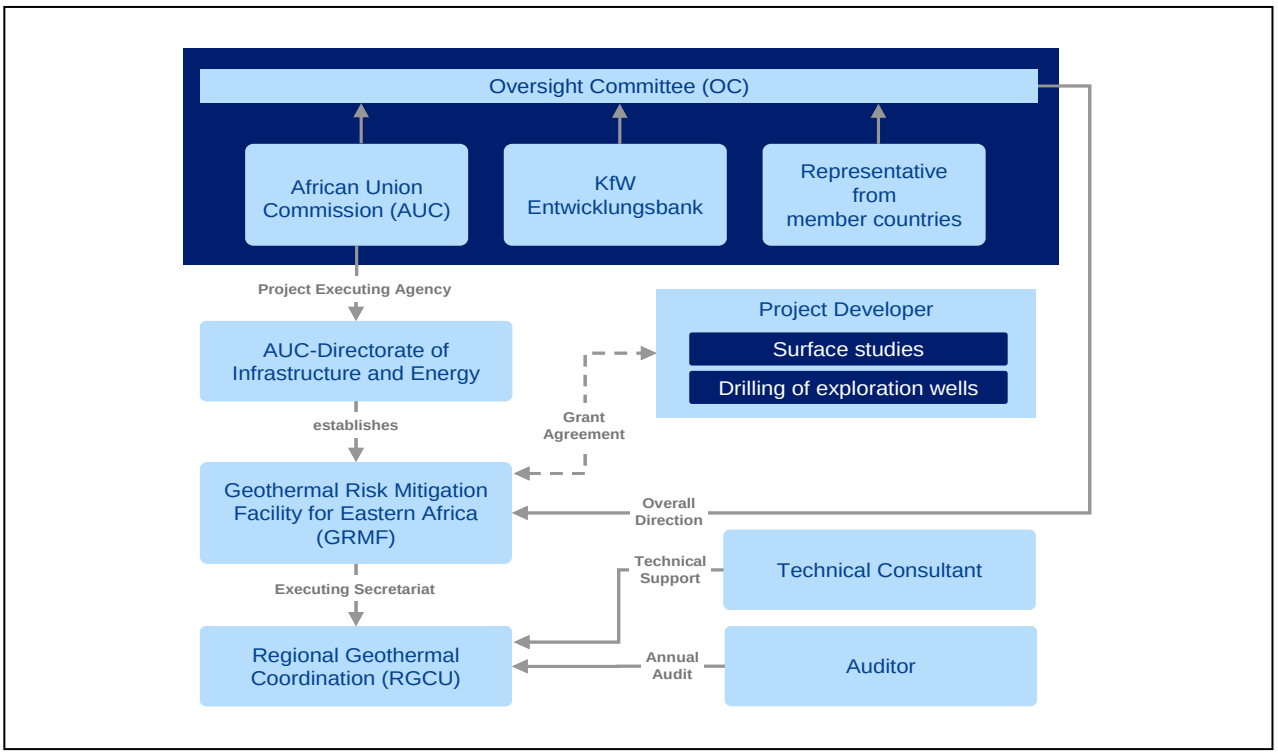

Figure 14: The structure of the GRMF Program

Applicants for surface exploration studies must provide detailed geological, geochemical and geophysical studies that justify further surface exploration that will lead to the siting of reservoir confirmation wells. Applicants for drilling grants on the other hand must have completed all necessary studies that identify viable drilling targets. They must also show progress toward obtaining an off-taker agreement for power generated should the project be successful.

Applicants for grants will be asked to provide relevant experience and expertise in carrying out geothermal exploration and/or geothermal power project development and financial capability to provide the funds necessary to cover their portion of the proposed scope of work.

5. IN SUPPORT OF GRMF

The focus of GRMF is upon removing what many, if not most, potential developers, be they from the private or public sector, believe is the greatest single obstacle to achieving widespread geothermal power generation in East Africa - the upfront cost and risks associated with detailed geoscientific investigations and the drilling of reservoir confirmation wells. However, other obstacles still confront developers of geothermal power in East Africa. These include, the lack of comprehensive institutional, legal and regulatory frameworks in many of the countries spanning the East African Rift; a lack of expertise and experience in negotiating complicated contracts, concession agreements and power purchase agreements; conducting project feasibility studies; project implementation planning; financial analysis; preparation of financing packages; bidding and contract preparation.

The success of GRMF will, to a large extent, depend on how well these other obstacles are addressed and minimized. It is thus critical to develop other multilateral and bilateral programs focusing on these other critical obstacles to wide spread development of geothermal power in East Africa.

To date there is increasing interest in filing this gap by, among others, the United Nations Environment Program (UNEP) which has the management of the African Rift Geothermal (ARGeo) Technical Assistance program funded by the Global Environmental Fund at some four million dollars US, continuing support from the Federal Institute for Geosciences and Natural Resources (BGR), the Icelandic International Development Agency (ICEIDA), KfW Development Bank (KfW) and an interest by the

United States Agency for International Development (USAID) to focus solely upon capacity building in support of the GRMF. Such support by USAID would provide upstream legal, institutional and regulatory assistance and advice and downstream negotiation assistance, financial analysis, project planning support and contracting assistance to project proponents and/or governmental agencies involved in project implementation.

6. CONCLUSION

A number of critical issues that will have a profound impact upon not only accelerating development of geothermal power in East Africa but expanding developments to countries spanning the entire East African Rift area are now being fully addressed through both bilateral as well as multilateral programs that directly target the needs of geothermal developments in East Africa.

The Geothermal Risk Mitigation Facility, being funded by KfW and the European Infrastructure Trust Fund and implemented by the Infrastructure and Energy Department of the African Union Commission, is rapidly becoming the center piece of these activities. And with coordinated support from such entities as UNEP, BGR, ICEIDA, USAID, and other development partners, the opportunity to finally harness the tremendous geothermal potential of the East African Rift countries to meet the energy requirements of the region at last seems to be within reach.

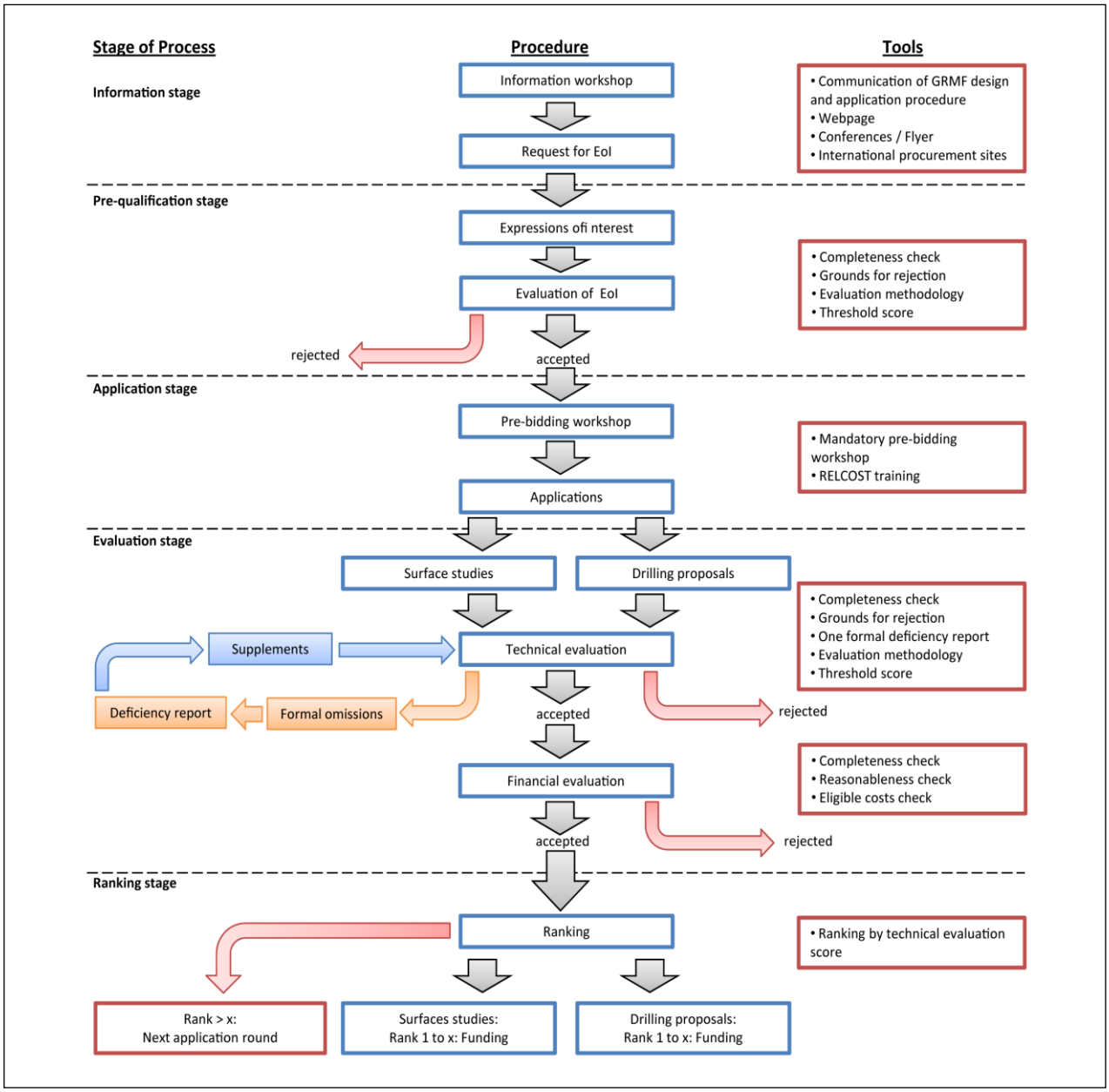

Figure 15: Schematic of the application and award process

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