GAK
Geothermal Association of Kenya

Location: Eagle Centre, Naivasha, Nakuru County; Office Tel: +254 759 213 020 | E-mail: info@gak.co.ke ; Website: www.gak.co.ke ; P. O. Box 66642 – 00800, Nairobi, Kenya

OUR REF: GAK/OEO/21/05/08/01 DATE: 28/05/2021

THE CHAIRPERSON,
TASKFORCE ON THE REVIEW OF POWER PURCHASE AGREEMENTS,
EMAIL: ppa.taskforce@cabinetoffice.go.ke

DEAR SIR,

RE: SUBMISSION OF MEMORANDA FOR THE REVIEW OF POWER PURCHASE AGREEMENTS

The Geothermal Association of Kenya (GAK) is a professional, scientific and educational organization registered in Kenya by the Registrar of Societies to encourage, facilitate and promote of activities related to local and worldwide research, development and application of geothermal resources.

The Association draws its membership from stakeholders within the geothermal sector locally, regionally and internationally and these includes the developers, consultants, professionals, students, universities and manufacturers. Following the invitation to key stakeholders to provide input, we wish to submit the enclosed memoranda for review and consideration by the Taskforce.

We also wish to request for a virtual or physical opportunity to give an oral presentation so as to expound more on the submissions made in the memoranda.

We look forward to hearing from you.

Yours Faithfully,

FOR: GEOTHERMAL ASSOCIATION OF KENYA,

GEOL. MIKE KARANJA,
EXECUTIVE OFFICER, GEOTHERMAL ASSOCIATION OF KENYA.

Geothermal Association of Kenya

Location: Eagle Centre, Naivasha, Nakuru County; Office Tel: +254 759 213 020 | E-mail: info@gak.co.ke ; Website: www.gak.co.ke ; P. O. Box 66642 – 00800, Nairobi, Kenya

MEMORANDUM PRESENTED TO THE PRESIDENTIAL TASKFORCE ON THE REVIEW OF POWER PURCHASE AGREEMENTS

SUBMITTED BY THE GEOTHERMAL ASSOCIATION OF KENYA

DATED: FRIDAY, 28.05.2021

1.0. INTRODUCTION TO THE GEOTHERMAL ASSOCIATION OF KENYA

As the Umbrella Body for the geothermal sector in Kenya, GAK is a professional, scientific and educational organization registered in 2010. Its functions are to encourage, facilitate, and promote coordination of activities related to research, development, and application of geothermal resources in Kenya. Its membership includes local and international professionals in the geothermal sector, developers, academic institutions, consultants, and equipment manufacturers.

2.0. SUMMARY OF SUBMISSIONS

The Geothermal Sector in Kenya comprises of power producers from the public sector and the private sector. Generally, geothermal development typically comprises of (a) project definition and reconnaissance, (b) surface exploration, (c) exploration drilling and delineation, (d) resource analysis and assessment, (e) field development and, (f) steam production and field management. All the geothermal power producers are at different stages of geothermal development. This has been attributed to (a) time of entry or effective date of licensing and (b) activities that need to be done at various stages of the development.

A power purchase agreement (PPA) is both a legal and commercial document between a power producer and the off-taker and therefore, a PPA is at the heart of any power generation project. In the geothermal sector, there are three different scenarios as far as the Power Purchase Agreements are concerned. These scenarios are as follows:

a) **Category 1:** Geothermal power producers with operational Power Purchase Agreements – this category represents companies with running contracts with Kenya Power and are injecting electricity into the national grid.
b) **Category 2:** Power producers with Power Purchase Agreements but have not reached the electricity generation stage – this category represents developers who are at various stages of development such as surface exploration, exploration drilling, negotiation with their financiers, etc.
c) **Category 3:** Power producers without Power Purchase Agreements – this category represents companies with licenses but are in the process of acquiring the PPAs.

The above three categories have different challenges due to the different stages they are in. The table below presents a summary of the issues and the recommendations for consideration by the Taskforce. Further, section 3.0 presents the comprehensive submission of the summaries. Some of the submissions have been summarized in this section. Some have not and have been listed in section 3.0.

No	Topic	Item / Issue	Recommendation/Comment	Justification
1	Sustainability and viability of proposed and current power generation projects	The current total national output remains low compared to the national visions/ambitions and the total population of 50 million citizens.	To bridge the gap, and accelerate the developments in the country, a multisectoral contribution is important and collaborations between public and private sectors should be encouraged.	The diverse renewable sources of energy have their own advantages. Geothermal energy offers baseload capacity, it is renewable and cheap.
		The sustainability of projects is affected by various issues such as delays in the issuance of Letters of Support. The length for negotiation takes up to two years.	The period to acquire the letters of support should be shortened. The task force is requested to develop a regulation that promotes expediency of the processes.	Reducing period of issuance of the letters of support would eliminate project delays. The current delays have had ripple effects on the progress of projects.
		From a holistic perspective, there is a challenge in knowing the effectiveness of some of the projects.	The regulator should work towards regular publication of the total daily generation capacities and costs.	This will be able to guide on dispatch, current tariff, and impact of losses in the system.
2	Methods for sourcing of Power Producers & alternative sourcing frameworks	Energy auctions may not always guarantee low tariffs. This would primarily depend on the bids floated and the costs in those bids.	Cheaper and reliable sources of power should be considered for cheaper reliable power for the citizens.	There is need to ensure that the current system is exhaustively utilized.
3	Risk allocation between the Power Producers and Kenya Power under the PPAs	All power producers in the geothermal sector have unique risks	It is important that the risks are allocated to both government and the power producers as per respective roles. The risks have been indicated in the comprehensive submissions.	For some of these risks, the power producer has no control whatsoever and this may require allocation to the off-taker or Government.
		Termination or review of PPAs	Given that different parameters for the PPAs lasting 20 – 25 years had been agreed upon at the time of negotiation/signing and all the compliance levels and legal requirements were met. It is important to adhere to the contractual agreement.	This enhances the predictability of the sector and the regulatory regime as far as PPAs are concerned.
		PPAs do not contain termination provisions for convenience purposes by the power producer or the off-taker	If the Taskforce recommends termination or review, it is then requested to give compensation mechanisms to the Power Producer.	The power producer will have invested heavily in the project. Any reviews or termination will have adverse effects to the producer.

4	Current payment approach and suggestions on other viable payment structures	Some of the elements in the current payment approach are unknown.	There is a need to disclose information/statistics such as daily total costs for generation.	This will guide conclusively on the effectiveness of the current method of payment and if it is exhaustively utilized in the best economical way.
		System losses	There is a need to have control measures in place to ensure that the losses are significantly minimized.	Minimizing system losses will help in reducing the electricity cost.
		Minimal off-taking options	There needs to be appropriate structures earliest possible so that new off-takers can get into the market.	Having many options in the market will ensure that the capacities with the developers can be offloaded and this will reduce the over-reliance on one off-taker.
		Review of payment structure	Consider embarking on enhancing a comprehensive FiT framework	Reviewing the structure of existing PPAs will result to new issues such as the bankability of projects and may introduce new risks.
5	Strategies for engagement between the Power Producers and the lenders	Lenders interest rates are quite high	Lenders need to consider lowering their interest rates.	This action will reflect on the overall cost of power.
		Insurance premiums are also high	Some of the parameters in risk insurance are secondary and could either be waived or significantly reduced.	The high premiums add to the profit margin of the lender and subsequently the tariff.
6	Legislative, regulatory, policy, & administrative interventions	Transparency in cost structures	It is important to ensure that there is transparency in the costing structure.	-
		Having a cost-reflective energy mix	1. There needs to be consideration of baseload sources of power when approving PPAs. 2. There should be a consideration on cheaper baseload sources. 3. Consider and publicize the total generation cost of a system at a given moment.	These would be able to guide the nature and cost of the generation mix and advise on the next course of action
		Efficiency and Proper Planning in the Energy Sector	There is a need to develop a central agency/department to deal with all issues pertaining PPAs.	This agency will offer proper coordination on behalf of the Ministry of Energy, EPRA, and Kenya Power. It will reduce the time taken to acquire relevant documents. This shall be a win-win for all parties.
			The off-taker is requested to communicate with developers in a timely manner on pertinent issues.	Investment is pegged on sustainable clear-cut policies and communication processes.

		Standardization of the Power Purchase Agreement Document	The PPA document can be highly standardized, applicable across board, and usable to all parties involved in the negotiation of PPAs.	Standardization would simplify the process and negotiation of PPAs.
		Least-cost power development plan	It is recommended that the document be reviewed after 3 years giving very clear guidelines and mechanisms to be adhered to in that period.	The plan should be able to among others, give considerations for projects that take longer to implement such as geothermal projects
		PPA Structure	That the PPA structure should accommodate ramped-up capacity in a staggered fashion - over specified periods of time.	The country's needs for power will increase over time and it is expected that the electrification of the country will continue. This model may be beneficial to the sector.
		Off-taker Flexibility	The power generator could have the option and flexibility of supplying excess power directly to third parties and industries.	This structure reduces KPLC take or pay risk under the PPA over a certain period of time.
		Universal Coverage	The task force is requested to consider that policies are in place to ensure that all citizens have access to power.	Implementation of those policies will help in bridging the demand–supply gap.
		Final Report of the Taskforce	All recommendations of the Taskforce be aligned with the Energy Act and other related regulations.	This will ensure that there is no overlap or conflict of mandates.
		Direct Use Applications	Consider having policies that would support the use of geothermal energy for direct use.	This will ensure that there are systems in place to promote direct use. This will boost the different sectors of the economy such as manufacturing, tourism, etc.
		Geothermal licenses	The task force is requested to consider looking into how long a developer should hold on to a geothermal license without having any developments in the geothermal field.	This will bring the expediency required from Government (on the issuance of Letters of Support etc) and power producer's on timely development of the resources.
		Discrepancy in Commercial Operation Dates	The Taskforce is requested to look into the conflicting guidelines on the Commercial Operation Dates issued by the mandated authorities and advise which COD is binding.	-
		Moratorium vs Time	The Taskforce is requested to provide cover to the developers on the time lost during the period of moratorium.	Licensed developers are losing on time because timelines that had been issued by Government keep ticking down even as the moratorium continues to be enforced.
		License area	Currently, the developers pay of license fees for the areas that might not be needed after surface exploration. The proposition is to allow for time to conduct detailed surface studies and locate sites for drilling at least 2 exploration wells. The request	This will enable the developers to demarcate the required geothermal area, which is then gazetted by the government as a geothermal resource area and allowing for subsequent payment of relevant ground fees.

			is for the Government to provide an exploration licence at the application of the concession and then a geothermal licence after surface exploration. With the current scenario, these costs are factored in the PPA negotiation yet not all the land shall be utilized in geothermal development	
		Harmonisation between National and County Levels of Government	Since the formation of devolved government functions, there is need for harmonisation of certain issues related to energy projects, for example access rights to the projects. Through the Ministry of Energy, who would then coordinate and issue directions through, the Council of Governors, the National Land Commission, the county government, the county commissioner and other relevant bodies, No Objection letters should be standardised based on an established and satisfactory Stakeholder Engagement Plan enabling access rights to allow projects to be developed	Harmonization will help to have smooth operations in relationships between the developer, national and county governments.

3.0. DETAILED SUBMISSIONS FROM THE GEOTHERMAL ASSOCIATION OF KENYA

In view of the above, the Geothermal Association of Kenya would like to present the following submissions:

3.1. Sustainability and viability of proposed and current independent power generation projects.

a) The current situation in the country, in terms of power generation, is largely public. This has been reflected by the installed capacity in the energy mix. The public sector domination is historical. Appreciative of the role played by the public sector, the total national output remains low if compared with the national visions/ambitions and the total population of 50 million citizens. To bridge the gap, and accelerate the developments in the country, a multisectoral contribution is important and collaborations between public and private sectors should be encouraged. The diverse renewable sources of energy are thus viable and each of these has its own merits over the other. Geothermal energy, for example, has its diverse usages, and apart from the generation of electricity, the resource can be used in Direct Use applications, geothermal tourism, among others. The resource is relatively cheaper than other sources of energy and it is a baseload source of power. This said, it is also important to note that through engineering techniques, geothermal energy can be converted to non-baseload if required.
b) Further, for the sustainability and viability of the renewable energy projects and in this perspective geothermal energy projects, the role of the Government is very critical. Efficiency is paramount especially in regards to the issuance of permits, approval of related processes, standardization of letters of support, time taken in the negotiation of PPAs, and much more.
c) Finally, to critically look at the sustainability and viability of a project, it is important to know more about the total daily generation costs. This will be able to guide on dispatch, current tariff, and impact of losses in the system.

3.2. Methods for sourcing of Power Producers & alternative sourcing frameworks

Energy auctions may not always guarantee low tariffs and this may lead the country to more issues depending on the tariffs in the market. Even with the current framework, several users are using captive generation based on their needs.

3.3. Risk allocation between the Power Producers and Kenya Power under the PPAs.

Notably, the development of energy projects is faced with several risks through the various phases of geothermal development. The risk matrix below presents some of the risks a geothermal project would encounter.

Risk Matrix

	Risk Type	Mitigation Measures and responsibilities
1	**Interface Risks**: An Example is the Lake Turkana Wind Project	i. Design-Build contracts ii. Operation and Maintenance contracts iii. Third-party Owner iv. Responsibilities to the power transmission company
2	**Environmental risks**	i. Compliance with international environmental standards e.g., World Bank guidelines ii. Using independent technical consultants to carry out ESIA studies. Allocated to power producer.
3	**Dispute Resolution**	Dispute jurisdiction in most contracts - arbitration is mostly international courts based in New York, Geneva, London or Dubai, Hague. Kenya and the region have established rule of law and arbitration courts in Rwanda, Arusha, and Nairobi.
4	**Termination Risks:** Example, the Kinangop and Walam cases.	Consider having co-option agreements
5	**Credit Risks:** depends on the sovereign rating and political risk of a country	i. DFI guarantees from the world bank, AfDB ii. Political risk insurance to protect the equity iii. DFI L.C. structures for the off-taker iv. Political Risk Guarantee v. Commercial Insurance vi. Letter of Support
6	**Force Majeure:** Concession agreements should excuse non-performance (with exception of payment obligations) as a result of events reasonably beyond the control of the project company.	Exclude both parties from performance (Time relief, compensation relief, termination relief)

7	**Legislative Changes:** Compliance in law over a long period of time. Cushioning of power producers from changes in taxation will make the investment space predictable for investors. Frequent and unpredictable tax changes would result in lengthy negotiations resulting in delays in project implementation	i. Progressive law and amendments based on borrowing of best practices and involvement of all stakeholders and players. ii. Be transparent and open in dealings. For example, all PPAs should be published for public scrutiny. Allocated to Government.
8	**Forex Risks:** PPA is dollar-denominated and borrowing is in us dollars. There is an inherent risk in currency fluctuations.	i. Hedging the risks in the long term. ii. Indexing to users. Divide portions for foreign currency and local currency roles. iii. Allocation to the contracting authority (KPLC)
9	**Social and Cultural risks**	i. Have a progressive and comprehensive Stakeholder Engagement Plan (SEP) to the required standards. ii. Consensus building, consultation, and transparency at all levels of project development. Allocated to both parties.
10	**Drilling Risks**	i. Have incentives from tax laws etc to encourage the setting up of the local industry. ii. Encourage innovative ways of raising funds through the use of capabilities of more developed producers. For example, GDC and KenGen could offer drilling services to the industry. Allocated to power producer.
11	**Political Risks**	i. Political goodwill to enable a thriving business environment and ease of doing business. ii. Incentives to attract FDIs, iii. Setting up of Industrial zones iv. Political risk insurance v. Provision of Government Letter of Comfort. Allocated to Government.

It is important that the risks are allocated to both government and the power producers as per respective roles. Risks can then be mitigated in ways acceptable to the various parties.

For some of these risks, the power producer has no control whatsoever and this may require allocation to the off-taker or Government. The opposite of this would lead to the risks being taken up by the producer and by extension to the consumer. On wayleaves, for example, the Government

can take up this risk and one way of mitigating its effects is through the development of master plans or other associated long-term plans.

Based on the following term of reference, "*probe the compliance of the PPAs and all associated agreements with Government policies, legislation and regulations and identify what appropriate actions should be taken, including the termination or renegotiation of the PPAs*;" This has been clustered as a source of risk.

a) Given that different parameters for the PPAs lasting 20 – 25 years had been agreed upon at the time of negotiation/signing and all the compliance levels and legal requirements were met, it is important to adhere to the contractual agreement to avoid portraying that the Kenyan jurisdiction is not predictable even on crucial matters such as Power Purchase Agreements.
b) PPAs are contractual documents and cannot be amended unilaterally. PPAs do not contain termination provisions for convenience purposes by either the power producer or the off-taker. Based on the Term of Reference that captures on termination of PPAs, and if the Taskforce then recommends for termination or review, it is then requested to give compensation mechanisms to the Power Producer for the amount and resources invested into the project including any foreseeable income during the term of the PPA.

3.4. Current payment approach and suggestions on other viable payment structures.

a) In the current payment approach, some elements are unknown and they need to come out clearly. For instance, the power producers could give an account of their daily total costs for generation. This will help in knowing if the electricity dispatch is being optimized by the off-taker. This will help the Taskforce/sector stakeholders know if the current payment approach has been exhaustively utilized in the best economic way so that other options can be looked into. For instance, these statistics would be valuable to know if the off-taker is utilizing costlier sources of energy and yet there may be cheaper options that go unutilized. Therefore, by knowing such statistics, it would go a long way in stabilizing the system, lowering the tariffs and total pricing. The opposite is also true, i.e if the off-taker is utilizing costlier sources of electricity, the total cost of power would be much higher than it should be.
b) In addition, the current costs are affected by systemic losses which when not properly managed, the percentage of loss will continue ballooning.
c) Kenya has only one national off-taker in Kenya Power whose first interests should be to the general populace giving the cheapest and reliable power. This position is, however, quite unfortunate given that the options are limited for power producers. However, the generators should be in a position and have the prerogative to look for markets for the extra capacity in

the event Kenya Power cannot take any more power in their current state. Therefore, given that the market is open for new off-takers, there needs to be appropriate structures earliest possible so that new off-takers can get into the market and developers can offload their capacities (or extra) to the new off-takers. Some off-takers may be stationed next to the resource and as this takes power to the people, it also comes with the benefit of reduced tariffs through lowered costs of production among others.

d) In regards to the payment structure:

Notably, "*take -or - pay*" clauses have dominated power purchase agreements in the sector for a long time in Kenya. This has its fair share of downsides. A power purchase agreement (PPA) is both a legal and commercial document between a power producer and the off-taker and therefore, a PPA is at the heart of any power generation project. An essential component in a PPA is the pricing aspect which ensures cash flow projections and allows forecast of revenues over the project's lifetime, hence determines the viability and profitability position. As such, the economics of the project revolves around the terms and conditions of the PPA, which go way beyond the mere purchase and sale of energy.

A shift to the "*Pay- when - taken*" approach will look unattractive to prospective lenders/ funders and investors in electricity generation. In addition to creating uncertainty in the industry, it may also potentially hinder the promotion of future energy and infrastructure projects. This would then reduce the ever-growing investor appetite that is evident in the country. Merchant power plants which are those that sell power into competitive wholesale markets and are financed by investors under the "*Pay - when- taken'* regime are exposed to different kinds of risks. This is in contrast with the rate-based financed power plants under *take -or -pay* approach. However, "Take *-or - Pay*" clauses are not always commercially viable when the position of the purchaser/off-taker is considered, as the purchaser is required to pay for the electricity that it does not intend to use without any option. This has a ripple effect on the consumer's price of electricity.

The rationale for the shift is to reduce the high fixed costs associated with contractual obligation and this has been portrayed by some as a reward to investors in electricity generation neglecting value -for money to the general public in the form of a reduced tariff.

It is important to note that any shift from the operational PPAs or the PPAs that are not under generation as yet would bring in new issues such as:

a) Risks and this would require fresh reapportioning among the parties.
b) Bankability of the same

Policy Implication & Recommendation

Feed-in-Tariffs were created to incentivize the private sector involvement and as such the critical aspect is to ensure that there are private sector players involved in the electricity generation. As such, there is no guarantee that energy auctions would reduce tariffs. This would primarily depend on the bids floated and the costs in those bids.

What that means is that it's possible to capture Kenyan's inspiration in the form of reduced tariff cost as well as retain and sustain the certainty in the electricity generation industry in a Feed-In - tariff regime. Therefore, the following aspects need to be addressed concerning feed-in tariff:

a) Embark on enhancing a comprehensive FiT framework,
b) Designing & structuring all categories of the energy generation industry, i.e. Large and Mini-grid generators. In this case, develop well-structured criteria which are available to all generators in all categories. Similarly, a Feed-in Tariff should be indicative of the direction of the country in respect to the Cost reduction aspect. In electricity generation, this should appear in the FiT framework.

The Tariff for PPA should be based on the financial model which would then vary from field to field because the conditions are different, the quality of resource is different, the transmission lines are varied in length, etc.

3.5. Strategies for engagement between the Power Producers and the lenders.

a) The power sector is considered by many as a long-term project spanning 20 to 25 years and by extension, having a stable cash flow. Also, by being a long-term project, the average risk of the project is much less compared to the short-term projects. This said lenders may need to acknowledge and appreciate the characterization of long-term investments. When doing so, they also need to consider lowering their interest rates and this action will reflect on the overall tariff.
b) The other aspect that touches on this issue is the premium rate for risk insurance. Notably, the margins are quite high. It is also important to note that some of the parameters therein are secondary and could either be waived or significantly reduced because they add to the profit margin of the lender and subsequently the tariff. A reasonable portion of the management and commitment fees, for example, may need to be reduced.
c) The developers propose that a fund for derisking geothermal development can be set up by both treasury and institutions with fund raising and management capability like NSSF, Pension Funds, and International development funds (Parhelion, GRMF). This fund could give more mileage to the development of geothermal resources.

3.6. Recommendations on legislative, regulatory, policy, & administrative interventions that will be used in the implementation of the recommendations made by the Taskforce

a) **Transparency in cost structures:** It is important that the producers ensure transparency in cost structure because some of the costs are well known and margins can be ascertained through calculation.

b) **Power Planning and Energy Mix:** There needs to be a consideration on baseload sources of power when approving PPAs. In regards to meeting the peak demand, there should be more consideration on baseload sources which are cheaper compared to other sources which are more expensive and may not have the advantages of baseload capacity. In the same breath, it is important to consider and publicize the total generation cost of a system at a given moment (perhaps on daily basis) as this would be able to guide the nature and cost of the generation mix.

c) **Efficiency and Proper Planning:**

   i. **Development of a central agency:** The predictability of systems and ease of doing business have emerged as best practices in developed economies. Kenya's ambitions are in line with these visions and therefore the country should endeavor to set up systems that promote ease of doing business. In this regard, we recommend the development of a central agency that would handle all issues on Power Purchase Agreements. Given the mandate to deal with all related issues, the agency should be self-sufficient and should act as the linkage between the key authorities and should offer proper coordination on behalf of the Ministry of Energy, EPRA, KETRACO, Kenya Power etc. For instance, the transmission lines are constructed by KETRACO who may not recognize the agreement between a developer and the National off-taker and this means holding separate discussions with them. Having a one stop shop would come in handy in this regard and would reduce the time taken to negotiate the PPAs.

   ii. **Length of PPA negotiation:** Currently, the time it takes to negotiate PPAs is too long. In this review, the task force is requested to develop a regulation that promotes expediency of the PPA negotiations. The current delays in getting PPAs have had ripple effects on the progress of projects and the sourcing of funds. Time delays have a very big impact in the profitability of the project. Delay in the issuance of the GoK LoS, which may be issued well beyond the PPA Target Effective Date may lead to substantial challenges for the Project. As would be expected, financiers typically set schedules for disbursement and delays would lead to rescheduling of commitments to the Project and consequential cost overruns. This therefore adversely affects project progress thus hampering the achievement of key milestones. Power Producers may not be able to re-open engagement with key stakeholders including The Energy and Petroleum

Regulatory Authority (EPRA) after the issuance of the GOK Letter of support well after the Target Effective Date.

iii. **Proper coordination of planning in the sector:** The off-taker is requested to communicate with developers in good time on pertinent issues. Case in point: a recent late communication to a developer who was about to commission a project, being informed not to commission. It is important to acknowledge that planning is very critical because investment is pegged on sustainable clear-cut policies that are bankable.

iv. **Standardization of the Power Purchase Agreement Document:** From observation, a huge part of the PPA document can be highly standardized and applicable across all parties involved in the negotiation of PPAs. In addition to this, areas that cannot be standardized can be guided by policies based on the costs of the projects. The standardization would simplify the process and negotiation of PPA.

d) **Harmonisation between National and County Levels of Government:** Since the formation of devolved government functions, there is also a clear need for harmonisation of certain issues related to energy projects, for example access rights to the projects. Through the Ministry of Energy, who would then coordinate and issue directions through, the Council of Governors, the National Land Commission, the county government, the county commissioner and other relevant bodies, No Objection letters should be standardised based on an established and satisfactory Stakeholder Engagement Plan enabling access rights to allow projects to be developed.

e) **Need for a solid and comprehensive least-cost power development plan:** The plan should be able to among others, give considerations for projects that take longer to implement such as geothermal projects. It is also recommended that the document be reviewed after 3 years giving very clear guidelines and mechanisms to be adhered to in that period.

f) **Consideration for a Staggered PPA:** Depending on KPLC's present and future supply/demand requirements, a PPA can be structured with capacity being ramped up over specified periods of time. Specifically, the PPA can cater for multiple commercial operation dates where each date allows the generator to increase the capacity of the power plant and therefore the amount of power supplied. The PPA would contain details of the tariffs, procedures, dispatch, and timing of the initial and subsequent phases. Given that the country's needs for power will increase over time and it is expected that electrification of the country will continue, the ramping up in capacity can be sequenced to coincide with additional power needs over a few years. Such a structure allows KPLC to better manage supply/demand risk over a period of time.

g) **License area:** Currently, the developers pay of license fees for the areas that might not be needed after surface exploration. Derisking geothermal prospects is very capital intensive and a risky exercise before confirming the resource. Failure of hitting successful wells means huge

sunk costs and increase sectors risk exposure for drilling in geothermal. The huge concession costs on receiving a licence are not only prohibitive, but hinders initial investment in the geothermal sector. The proposition is to allow for time to conduct detailed surface studies and locate sites for drilling at least 2 exploration wells. This will enable the developers to demarcate the required geothermal area, which is then gazetted by the government as a geothermal resource area and allowing for subsequent payment of relevant ground fees. The request is for the Government to provide an exploration licence at the application of the concession and then a geothermal licence after surface exploration. With the current scenario, these costs are factored in the PPA negotiation yet not all the land shall be utilized in geothermal development.

h) **Project development:** During the project development phases, there is need for collaboration between various parties so as not to overload the developer with a lot of costs. Some of the areas of collaboration include:
    (i) Having a master plan for transmission lines in areas with several geothermal fields to avoid the scenario where each power plant would require a separate transmission line (this is not environmentally friendly)
    (ii) Civil works such as road and water infrastructure and much more. All these are ways in which stakeholders could partner (e.g. with county Governments) so as to reduce the costs from the developers side.

i) **Off-taker Flexibility:** The power generator can have the option and flexibility of supplying excess power directly to third parties and industries (industrial parks, manufacturers, agribusiness data centers). This structure reduces KPLC take or pay risk under the PPA over a certain period of time.

j) **Universal Coverage:** With the view of meeting the demand for the available electricity, it is recommended that the Taskforce ensures that policies are in place to ensure that all citizens have access to power and this should be facilitated by the National or County Governments. In addition to this, we recommend that Counties evaluate their rates of connectivity to electricity and come up with actions that will ensure that citizens use sustainable sources of power both for lighting and cooking.

k) **Final Reporting:** Before presenting the final report following the successful review of the Power Purchase Agreements, our submission is that all recommendations of the Taskforce be aligned with the Energy Act and other related regulations.

l) **Direct Use Applications:** As indicated elsewhere, geothermal energy can be utilized for Direct Use applications. These resources are located in remote areas and in areas with large acreage, good enough to encourage investments and use by host communities. The Taskforce is requested to consider having policies that would support the use of different forms of geothermal energy (steam and brine) for Direct Use applications.

m) **Period for holding a geothermal license:** The task force is requested to consider looking into how long a developer should hold on to a geothermal license without having any developments on the geothermal field and how this would affect the PPA from a Legal perspective.

n) **A sector with Multiple Off-takers:** The Taskforce is requested to look into the possibilities of private parties having PPAs among themselves such that one party (for instance a producer) could sell power to another party (an off-taker) and in this sense, reducing the reliance on the single national off-taker in Kenya Power. This is tied to the payment structure, should the Taskforce consider other approaches, different from the current, which would then reduce, significantly, the investment in the sector.

o) **Commercial Operation Dates (COD):** It is noted that there is a variation in the Commercial Operation Dates between the various authorities. The Taskforce is requested to look into the divergent guidelines on the Commercial Operation Dates issued by the mandated authorities and advise the producers which COD is binding. This could be conclusively addressed if the decision-making organs in the sector are coordinated at a central information center.

4.0. GENERAL SUBMISSIONS

a) Timing for Review of PPAs:
   i. The review of the PPAs is a welcome idea that has a vision of having favorable power costs for the general public. As the review is ongoing, some IPPs with PPAs have had to slow down negotiations with potential investors out of uncertainty of what the outcomes from the Taskforce would be. The Taskforce is requested to consider this so that the potential investors develop confidence in the PPA regime and predictability of the regulations in the energy sector in Kenya. In addition to this, the PPA review should consider the advantages of geothermal energy in the strategic direction for the power sector.
   ii. **Moratorium vs Time:** A moratorium was placed on all PPAs that had not been concluded as of the date of the appointment of the Taskforce. Further, developers who have been issued with licenses are losing on time because timelines that had been issued by Government keep ticking down even as the moratorium continues to be enforced. The Association requests the Taskforce to cover the developers on the time lost.

b) **Request for Exemption:** One of the geothermal projects has a signed PPA and has all other relevant documents in place. At the moment, Kenya Power has not given the go-ahead to the project. Given that the Power Producer has the lowest geothermal tariff, could they be considered for exemption so that they can proceed with the development plans?

c) **Consideration of the East Africa Power Pool:** There needs to be a framework for electricity resources to be traded outside the country's borders.

d) **Local content:** With a view of promoting local expertise both from a technological angle and a feasibility perspective, we wish to recommend the development of policies on the use of locally

available skills and technology in geothermal development. Given Kenya's position worldwide in the development of geothermal resources, the country has proven expertise to carry out projects to world-class standards. This has been proven through the exportation of skilled manpower regionally. With this, the Taskforce is requested to consider the provision for local content on all manner of procurements and the respective organizations should only source internationally if the required skills or equipment are unavailable locally. It is evident that the use of imported skills and technology is much more expensive than similar or better quality available locally and this has its ripple effects. Local content can also be considered in form of a partnership between the procuring entity and local experts.

e) **Occupational Safety and Health:** OSH is a fundamental practice in the geothermal sector at the community level and operations. A submission is made for the prioritization of this in geothermal development.
f) **Promotion of Geothermal Energy:** Given the vital role played by the geothermal sector in Kenya, deliberate efforts should be made to promote its use and publicize its status and development. This recommendation seeks to make geothermal energy a household name to promote geothermal tourism as a key resource unique to countries in specific geographical and geological terrains, and Kenya is very fortunate to be strategically positioned in this regard.

Finally, the Geothermal Association of Kenya remains available to make an oral presentation on these memoranda to verbally expound on the submissions made.

ANNEX 1: BRIEF BACKGROUND OF THE GEOTHERMAL SECTOR IN KENYA

Kenya is well endowed with high-temperature geothermal resources of which, about 92% remains untapped. These resources are located within the Kenyan Rift Valley which forms part of the eastern branch of the East Africa Rift System (EARS). These geothermal resources are located in various locations in the country, from Lake Turkana in the North to Lake Magadi in the Southern part of the country. The resources can also be found in the coastal area and the West along the Nyanza Rift.

Studies carried out in these prospects indicate a potential of over 10,000 MW. The availability of geothermal energy as a baseload source of power has demonstrated its viability. Owing to its reliability, geothermal energy stands to play a big role in realizing Vision 2030.

Present-day successes in Kenya can be attributed to studies and projects that were carried out in the past decades. A major milestone in the sector was when the first two wells were drilled in the 1950s by Craelius East African Drilling Company Limited. The company drilled two geothermal exploration wells, X-1 and X-2, North of Olkaria. The wells were not successful as anticipated. This was preceded by various studies dating back to the 1800s.

During the period 1974-1976, Kenya's economically exploitable hydroelectric potential was limited and investigations were mounted to locate viable alternatives for power generation. However, the major known energy resource as of 1978 was hydroelectric power. Globally, the oil crisis of 1973 demonstrated the dangers of Kenya's dependence on imported oil, (World Bank, 1979). The Government realized that Kenya's economy would become vulnerable to sudden increases in petroleum prices as long as oil remains the major source of primary energy, and substantial amounts of foreign exchange expended towards paying for crude oil imports. Thus, the Government's strategy was to develop and utilize domestic power resources as much as possible to reduce dependence on imported oil.

A least-cost development study for the Power sector had been done by EAPL company consultants. The study indicated that there were only two best alternatives for Kenya at the time, and these were diesel-generated power and geothermal power. In comparison, geothermal energy was found to be cheaper and this was as a result of the oil prices in 1979. The proposed project would thus ensure that the demand for power in Kenya by 1981 would be met at the minimum cost, (World Bank, 1979). The Olkaria field had been systematically investigated and explored and, according to estimates, was capable of supporting power generation of 100 MW and possibly as much as 200 MW. Two other potential sites, at Lake Hannington and Eburru, had not been fully explored but were expected that, with further drilling, geothermal power could make a significant contribution to meeting Kenya's power needs. This led to more activities in the sector that saw the first power plant constructed in 1981. The second and third units were commissioned in November

1982 and March 1985, respectively. Many more power plants have since been constructed to what it is today.

Over the years, there have been several reforms that saw the unbundling of the energy sector in 1997. During the 2nd wave of energy sector reform, Kenya developed the Energy policy document, the sessional paper No. 4 of 2004 which resulted in the establishment of various energy sector parastatals, among other provisions. The Feed-in-Tariff Policy for wind, biomass, and small hydro was published in March 2008. The policy was revised in 2010 and the latest revision was done in December 2012. Chapter 4 of the Constitution of Kenya, extensively outlines the fundamental rights and freedom in its much-lauded Bills of Rights indeed if one is to carefully examine article 43 the Bills of Rights enshrined include 1) Access to the highest attainable standard of health 2) Accessible and adequate housing 3) reasonable standard of sanitation and education. All these cannot be achieved without national wide access to reliable and most importantly affordable electricity supply hence electricity is an enabler to these aspirations as envisaged in the Constitution.
