**Kenya: Power Sector Review**
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## Introduction

Kenya is a poor country today and was significantly poorer in the mid-1990s when it started to reform its economy after a decade of negative per capita growth. As part of a wider range of structural reforms, the Government of Kenya decided to liberalize its power industry.[1]

Inadequate and unreliable electricity supply plagued the country. Kenya needed to significantly increase its installed power capacity, extend its transmission and distribution reach throughout the country, diversify away from its overreliance on hydropower, and improve overall operational performance of the power sector. To address a few of these issues, the Government of Kenya decided to partly unbundle the state utility and open up the power generation sector to private competition. The importance of diversifying its power mix is highlighted by the drought of 1999/2000 when Kenya had a 79% decrease in hydro capacity.[2] At the time, greater than 60% of Kenya's installed capacity was from hydropower, so this reduction in hydrogeneration more than halved Kenya's already insufficient power generation capacity. Hydropower represents 36% of installed capacity today, but it wasn't until 2012 that this reliance dropped below 50%. The rest of Kenya's power mix is provided by thermal (35%), geothermal (26%) and a combination of wind and solar (3%)[3]. Another surprising aspect of Kenya's power industry today is that in particular load areas it has sufficient power to export to some of its neighbors, primarily Uganda and Tanzania. A significant accomplishment of Kenya's power sector restructuring is that the ownership for more than 30% (695 MW) of installed

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[1] Kenya, Monetary Fund International and World Bank, *Kenya: Economic Reforms for 1996-1998: The Policy Framework Paper*Government of Kenya, 1996).
[2] Joseph Kapika, Anton A. Eberhard and Human Sciences Research Council, *Power-Sector Reform and Regulation in Africa: Lessons from Kenya, Tanzania, Uganda, Zambia, Namibia and Ghana*, 2013), p 1.
[3] Energy Regulatory Commission, *Installed Capacity in MW as of November 2014*, http://www.erc.go.ke/images/electricity/installed_elec_capacity_nov2014.jpg ed. (Kenya: ERC Kenya, 2015).

capacity is provided by independent power producers (IPPs), and as of 2010, Kenya had attracted more IPPs than any other African country.[4]

Presented below is an overview of steps taken by the Government of Kenya, the development finance institutions (DFIs) and IPPs, and the dynamics surrounding these steps that resulted in Kenya's success in attracting a significant level of private sector investment in its power industry.

## The liberalization of the power industry and the first wave of IPPs

### *Setting the stage for progress: the framework paper of 1996*

The policy framework paper (Kenya: Economic Reforms for 1996 – 1998) published by the Government of Kenya in collaboration with the IMF and World Bank at the beginning of 1996 clearly set out the government's intention to transform the power industry in Kenya. The initiative set out in this paper included: restructuring the stated owned utility, Kenya Power and Lighting Company (KPLC), having the private sector develop and operate two of five new power plants projected for development, adjusting tariffs for electricity *up* to 75% of the long-run marginal costs (LRMC) by June 1996 with the goal of achieving tariff pricing that covers 100% LRMC in the near future. This was part of a series of structural reforms started in 1993 that followed the enactment of a new constitution that reestablished Kenya as a multiparty democracy. Kenya's efforts at liberalizing its economy were not isolated to the power industry. The government took steps to eliminate exchange controls, promote civil service reforms, and privatize various state owned enterprises (211 by the publication date of the 1996 framework paper), and had partly privatized (reduced its shareholdings) in Kenya Airways, Kenya Commercial Bank and the

[4] Kapika, Eberhard and Human Sciences Research Council, *Power-Sector Reform and Regulation in Africa: Lessons from Kenya, Tanzania, Uganda, Zambia, Namibia and Ghana*, p 1.

National Bank of Kenya, among others[5]. For the power industry, this momentum of structural reform resulted in the Electric Power Act of 1997, which is the foundational document for the structure of the power industry in Kenya today.

All these steps were undertaken at the encouragement of the World Bank and other multilateral agencies. The model of liberalization can be thought of as a "hybrid" model for it didn't include many of the important aspects that are characteristic of the "standard reform model" implemented around the world. The hybrid model implemented by Kenya seems to be typical for most countries in Africa where liberalization policies have been implemented[6]. Kenya did unbundle generation from transmission and distribution, but it retained a state-owned company in generation. The standard model would include further vertical and horizontal restructuring (i.e., the unbundling of the retail sector from transmission and distribution), which would have required an unbundling of the retail tariff structure, separating prices for competitive retail supply activities from the regulated network (transmission and distribution), and the creation of markets and trading arrangements for voluntary trading of power. Given Kenya's lack of sophistication in the mid-1990s and the country's capacity, the more modest liberalization program was a sensible approach. While the state retained control of the majority of the generation capacity, there were no publicly-funded plants between 1991 and 1998, despite the fact that expansion plans for a series of facilities had been drawn up as early as 1991 by the national generator.[7]

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[5] Kenya, International and Bank, *Kenya: Economic Reforms for 1996-1998: The Policy Framework Paper*

[6] Ioannis N. Kessides, "The Impacts of Electricity Sector Reforms in Developing Countries," *The Electricity Journal* 25, no. 6 (Jul 2012, 2012), 80.

[7] A. Eberhard and K. Gratwick, "The Kenyan IPP Experience. Program on Energy and Sustainable Development," *Center for Environmental Science and Policy, Stanford, CA: Stanford University (Working Paper no.49)* (2005).

*The Electric Power Act of 1997*

The Electric Power Act of 1997 (1997 Power Act) established an independent regulator (the Electricity Regulatory Board or ERB) and required the state-owned utility, KPLC, to divest its generation assets to a newly established state-owned generation company, Kenya Generation Company (KenGen). With this, KPLC became the sole transmission and distribution company as well as the sole provider of power to residential and commercial users. The government established that all procurement of new generation facilities be open to competitive bid from both the public and private sector as part of the structural reforms discussed above and before the enactment of the 1997 Power Act. The first two power purchase agreements (PPAs) for independent power producers were subject to a competitive bid, which was in line with the government's stated policy, but were done without the oversight of an independent regulator. The two plants, IberAfrica and Westmont, have been subject to allegations of corruption. To be sure, the regulator wasn't operational at the time the first two PPAs were negotiated, but in absence of this the two PPAs are perceived to have been negotiated on a "secretive" basis. The high cost for power under these PPAs is partly justified by the short seven-year PPA term versus the more typical 20-year PPA term for the power industry internationally and for Kenya's subsequent PPAs. Was the short PPA term required by the private investor due to the perceived risk of doing business with the Kenyan government or was it encouraged by the ruling elite for rent seeking purposes? Given the allegations of corruption associated with these two PPAs, I assert that the high rates and short-term structure were motivated by rent seeking interest on the part of the ruling elite.

The PPAs for the next two IPPs were done under the watch of the independent regulator. This included OrPower4, a 28 to 100 MW geothermal power plant (signed in 1998), and Tsavo, a 74 MW thermal (medium speed diesel) power plant (signed in 2000). Both facilities received 20-year PPA terms, and both were done on an open and competitive international tender basis. The tendering and negotiating

process for these two facilities was substantially longer; the Tsavo facility finalized its PPA in 2000 having started the tender process in 1996. The IFC played an important role in arranging the financing for the Tsavo facility and took a 5% stake in the operating company; this was the first project-financed power plant in Kenya, and, at a cost of $85 million[8], it was the most expensive of the first four IPP facilities.

The drought that started in 1999 and the poor fiscal situation during the late 1990s are partly accountable for the positive outcome that OrPower4 and Tsavo represent. The OrPower4 PPA, signed in 1998, was for up to 100 MW of geothermal power. The first phase of the installed power capacity was 13 MW, which included assuming ownership of an existing facility that had a capacity of 9 MW and adding an additional 4 MW of capacity at an all-in cost of $54 million[9]. An additional 41 MW, for a total of 54 MW, were not added until 2009. The Tsavo PPA was finally signed in 2000, which was well into the drought that started in 1999 and at a time when the government was scrambling to resolve the power capacity deficit exasperated by the country's over reliance on hydropower. The power deficit was having a material impact on the economy. This created an environment for the ruling elite who would be facing its first electoral challenge where the longstanding leader of the country, Daniel arap Moi, wouldn't be permitted to stand for election. The drought, the power capacity deficit, the approaching election, and the enabling assistance of the multilateral agencies factored into the seemingly small success of the Tsavo power PPA and the commissioning of the plant a year later.

A new government was elected in 2002 with the promise of rooting out corruption and fixing the economy. The public outcry over the cost of electricity and allegations of corruption with respect to the first two IPPs (Westmont and IberAfrica) coupled with the drought and associated economic recession led to a

[8] Eberhard and Gratwick, *The Kenyan IPP Experience. Program on Energy and Sustainable Development*, p 2.
[9] Ibid, pp 2, 10.

pledge from the newly elected government in 2002 to reform the electric supply industry and reduce tariffs.[10]

## The second wave of IPPs (2008 to 2015)

*The Sessional Paper No. 4 of 2004 and the Energy Act of 2006*

The Sessional Paper No. 4 of 2004 (2004 Policy Paper) is the foundational document for the next wave of energy liberalization in Kenya. The policy paper sets out a framework for "equitable access to quality energy services at least cost while protecting the environment…on a sustainable basis over the period 2004 – 2023."[11] The 2004 Policy Paper proposed the replacement of the current legislation governing the electricity and petroleum sectors (i.e., the Electric Power Act of 1997 and the Petroleum Act of 1994) to improve the regulation for the energy sector as a whole and bolster investor confidence[12]. It proposed many of the aspects incorporated into the current legislation, the Energy Act of 2006, and remains a guide for future policy actions that have yet to be undertaken at this point.

The Energy Act of 2006 (2006 Energy Act)[13]:

- repealed and replaced the Electric Power Act of 1997 and the Petroleum Act of 1994,
- established a single energy (power and petroleum) regulator, the Energy Regulatory Commission (ERC) which replaced the ERB established under the 1997 Power Act,

[10] Ibid, p 5.
[11] Institute of Economic Affairs, "Situational Analysis of Energy Industry, Policy and Strategy for Kenya," *Institute of Economic Affairs (IEA)* (2015), p 19.
[12] Ibid, p 19.
[13] Ibid, pp 19 - 21.

- established the Geothermal Development Company (GDC), a state owned company, to manage the geothermal resources including resource assessment and selling of steam to IPPs and KenGen
- established the Energy Tribunal whose purpose is to hear appeals of the ERC's decisions, and
- established the Rural Electrification Authority (REA) to address the lack of progress on getting power to the rural areas of the country.

The regulatory framework established by the 2006 Energy Act includes the Ministry of Energy and Petroleum, Energy Tribunal and the Energy Regulatory Commission. The functional institutions relevant to this discussion on IPPs include: KenGen, KPLC, and GDC. Following the 2006 Act and under World Bank pressure, the management of KPLC was franchised to a Canadian firm[14] for a two-year period.

The regulator in Kenya has been viewed as having a positive impact on the IPP sector for, "[the] regulator, together with the adoption of ICB [international competitive bid] practices, has helped to reduce PPA charges radically"[15]. One cross-Africa study noted how instrumental Kenya's Energy Regulatory Commission has been in helping set tariffs and manage the overall interface between the private and public sector and that the "mere presence of a regulator is not in and of itself a defining factor in attracting IPPs"[16]. The study found that if regulatory governance was viewed as transparent and accountable, the decisions would be seen as credible and that this was important for maximizing the impact for all parties.

[14] Charles Hornsby, *Kenya: A History since Independence* (London; New York: I. B. Tauris, 2012), p 734.
[15] Anton Eberhard and Katharine Nawaal Gratwick, "IPPs in Sub-Saharan Africa: Determinants of Success," *Energy Policy* 39, no. 9 (Sep, 2011), p 5543.
[16] Ibid., p 5543.

*The coalition government and Kenyatta's rule: 2008 - Present*

Following a very disruptive and violent 2007 election, the international community forced the formation of a coalition government by the two leading political parties, the Party of National Unity (PNU) lead by Mwai Kibaki, the incumbent president, and the Orange Democratic Movement (ODM) lead by Raila Odinga. They were both part of the Kenya African National Union (KANU) party which ruled Kenya from independence to 2002. Despite being political rivals, they were both part of the party formed to oppose the KANU in the 2002 election. Kibaki announced the new 42-minister coalition government in April 2008 with a one-for-one distribution of members between ODM and PNU.[17] Kibaki was president, Odinga was prime minister, and two deputy prime ministers were appointed, one from each party.

While the government changed during the 2008 to 2015 period, many of the main actors didn't change. Kibaki's PNU deputy prime minister appointee under the 2008 coalition government, Uhuru Kenyatta, became president in 2013. Kenyatta is the son of the first president of Kenya who was also the founder of the KANU party that ruled Kenya for close to 40 years. Kenyatta was also the KANU presidential candidate in 2002 that lost to Kibaki. In 2008 Kibaki appointed Kenyatta as his deputy prime minister and then his Minister of Finance and finally his heir apparent in the 2013 election. Kenyatta won the 2013 election against Odinga, partly by joining forces with William Ruto, Kenyatta's PNU political rival. This intersection of political elites in Kenya is remarkable and partly explains the chaos of its development trajectory. That is, the elite club in Kenya is a fluid place where the elite rivals look out for one another while their followers, who are disadvantaged by the elite's actions, will remain true to the rivalry and suffer the consequences.

With the regulatory framework more firmly established after the 2006 legislation, Kenya's power sector started to see material traction with IPPs. During the period

[17] Hornsby, *Kenya: A History since Independence*, 958, p 769.

of the coalition government, April 2008 to March 2013, IPPs added 204 MW of capacity to the national gird and during the first few years of Kenyatta's government, between March 2013 and mid-2015, 348 MW of power from IPPs were added to the grid. This is a total 552 MW of power from IPPs added since 2008. This represents the addition of one new heavy fuel oil plant (Rabai) in 2009, and the expansion of capacity at previously existing IPPs. The existing plants included IberAfrica, one of the first two IPPs in Kenya, which doubled its capacity in 2008, and OrPower4, which increased its capacity from 13 MW to 56 MW in 2009 and then to 100 MW in 2014. Three new thermal IPPs came online in 2014 (Gulf Power, Triumph and Thika Power). These three new facilities and the Rabai facility received financial support from DFIs and, most prominently, the World Bank.

**Renewables**

Apart from the OrPower4 geothermal plant there has been limited large-scale renewable IPP energy capacity completed. That said, the OrPower4 plant was expanded from 13 MW to 48 MW in 2009 and then to 100 MW in 2014. Geothermal energy is superior to many alternative sources of energy, "it is renewable, has near-zero carbon emissions, extremely reliable (unlike hydro), can be used for based load power (unlike wind) and has a low operating cost"[18]. For many years development of geothermal seemed to lag behind given its clear benefits. The upfront costs for geothermal are high, but some noted the lack of funding for GDC to carryout its mandate to assess steam for purposes of attracting private sector investment in geothermal was blocked by "those who supply diesel…[who] hold significant sway in political circles"[19]. Despite these clear benefits, geothermal development has been delayed for years waiting for GDC to prove the steam as per their mandate. Some

[18] Jason Wendle, "Assessing the Impacts of New IPPs at Country Level? Case Study on Kenya," *Private Sector & Development* 18 (2013)(null)., p 21.
[19] Ben H. Willis, "Crunch Time for Solar Energy in West Africa," *PV-Tech*April 20, 2015.

argue that the oil interests don't want progress made on the renewable side.[20] There is a more vibrant discussion about the lack of solar and how the incentive structure including the feed-in tariff and the limited tax holiday are partly to blame. One industry publication stressed the lack of coordination between various ministries required to bring a deal together. The article also mentioned that the relevant groups, the Ministry of Land and the Ministry of Energy and the Treasury, aren't organized.[21] Significant steps have been taken to attract the private sector into renewables since 2012, so it is surprising that more progress hasn't been made.

That said, SkyPower signed an agreement with the government on the 27th of July 2015 to develop a utility scale solar project, 1000 MW at a cost of $2.2 billion.[22] It is not clear whether or not a PPA has been signed for there is no mention of a PPA in the various press releases, but SkyPower's business is to own and operate solar plants around the world, which leads one to believe that this will be an IPP facility. Obama's US-Africa Clean Energy Finance Initiative and his trip to Kenya that ended the day before the SkyPower deal was announced may have factored into the signing of an agreement with SkyPower for in the government's press release, Kenyatta refers to Obama's initiative. The political dynamics of this segment of the market are unclear pending a greater understanding as to whether or not SkyPower will be an IPP investment and how that investment will be funded.

[20] Wendle, *Assessing the Impacts of New IPPs at Country Level? Case Study on Kenya*, 18-21, p 21.
[21] Ben H. Willis, "Calls for Kenya to Increase Solar FiT Or Risk Losing Investmnt," *PV-Tech*March 6, 2014.
[22] Erick Ombok, "SkyPower Links $2.2 Billion Deal for Massive Solar Power Pant in Kenya," *Renewable Energy World.Com; Bloomber News* July 24, 2015.

**Building confidence and know-how**

*Transparency*

International competitive bidding has been shown in some studies to lead to as high as a 60% reduction in capital costs, but it should be noted that it has also been shown that selective bidding has also been effective when coupled with regulatory scrutiny.[23] The importance of the bidding process employed is critical, according to a legal analysis of the risks of investing in the power sector in emerging economies, where it is noted that corruption is "primarily a social risk" and that "the use of transparent and competitive bidding appears to be the most effective protection against the pressure of corruption"[24]. To support this assertion, the author notes examples from Tanzania, Turkey, Kenya and India and notes further that "direct negotiation intrinsically suffers from low levels of transparency"[25].

The market for IPPs in Kenya has been made possible due to the support of the FDIs, who have provided financial support in the form of direct equity, guarantees as well as general political support against the government in times of financial stress trying to renegotiate the contract. While this has been the case and an advisory firm focused on Kenya noted in an overview in Kenyan IPP market that "some investors are also willing to forgo letters of comfort, given KPLC's perfect record of payment to IPPs".[26]

[23] Eberhard and Gratwick, *IPPs in Sub-Saharan Africa: Determinants of Success*, p 5543.
[24] Erik J. Woodhouse, "The Obsolescing Bargain Redux? Foreign Investment in the Electric Power Sector in Developing Countries," (Fall, 2005 / Winter, 2006), p 12.
[25] Ibid., p 20.
[26] Wendle, *Assessing the Impacts of New IPPs at Country Level? Case Study on Kenya*, 18-21, p 21.

*Know-how*

The cross-Africa study by Eberhard and Gratwick referenced earlier speaks to the challenges and mishaps of planning and procurement throughout Africa. They make special note of Kenya's regulator's engagement of KPLC and the World Bank to develop its least-cost energy development plans. Having divested its generation capacity, KPLC is seen as a "neutral" party between KenGen and IPPs and has been given the responsibility for managing the CIB process. Over time the regulator has been able to build up its internal capabilities.[27] Eberhard and Gratwick quote a project sponsor's comments concerning Kenya from May 2010, which makes the point that Kenya has a credible process and a "very capable set of teams working in KPLC, the Ministry of Energy/Finance and KenGen"[28].

**Conclusion**

It has been argued that solutions for development problems need to be context specific and that solutions determined to be technically sound and shown to work in one context are unlikely to work in another situation. A related point is that best practices are sometimes too ambitious given the starting point of the country or entity where they are to be employed. The point here is not to forget or ignore what has been learned elsewhere, but rather to adjust expectations and adapt the execution so that change is made at an appropriate pace so that the situation is not exasperated and made worse by good intentions to fix the problem. The transformation of Kenya's power sector over the last two decades is emblematic of a prudent approach to structural change.

The structure of the liberalization was modest and somewhat limited in its ambition. The country opened its generation to competition by allowing the private

[27] Eberhard and Gratwick, *IPPs in Sub-Saharan Africa: Determinants of Success*, 5541, p 5544.
[28] Ibid.

sector to enter the market to compete to supply power capacity. It didn't privatize the existing generation capacity nor did it stop developing power capacity under the state owned (majority controlled) KenGen. An independent regulator was established, which was a critical ingredient to making the reform work. And, the World Bank and other donor agencies stayed committed to promoting the private sector's entry into the Kenyan power market. This support didn't wane in light of potential manipulation of the process with the first PPAs. The IFC stepped in to facilitate the financing of the Tsavo project, which was the first project-financed IPP in Kenya up to that point. As the first two projects came online and the government dealt with the renegotiation of the first two PPAs, which had relatively short terms, a lot was underway in the country and the sector. If progress is measured by the increase in IPP power capacity, not much progress was made between 2000 and 2008, but this would not be a good measure. During this time, the government and the various entities (KPLC and the regulator, among others) took more ownership of this structural reform as evidenced by the Sessional Paper No. 4 published in 2004 and the 2006 Energy Act. The Sessional paper put in place aspirations for the industry for the years 2004 to 2023. That said, best practices are present and contributing to the process, for best practices provide an important reference point for finding an appropriate solution for the then current situation which will change as the adjustments take hold and require further adjustment.

Kenya is a different place today than it was when the structural adjustments were being implemented. The economy has evolved and there is a more dynamic economic base; one of the reasons for this is that Kenya's economy is relatively more diversified than many of the African countries with large deposits of natural resources. The country has matured politically too. Over this period, Kenya has gone from a single party autocratic government to a multiparty democracy, with a relatively new constitution that has partly devolved powers to a regional level. As the economy and politics have changed, the dynamics that would have limited progress before are no longer relevant. Take Kenyatta's family's business, which is one of the largest dynasties in Kenya, and its numerous commercial sectors

including hospitality, dairy, media and banking.[29] These commercial holdings could be seen as a potential conflict of interest or as an explicit alignment of interest. Looked at narrowly in the context of the power sector, this broad commercial interest in the general Kenyan economy aligns the President's interest with that of the broader public given how fundamentally developmental access to power and other basic services are to an economy. The line on this gets a bit blurred when it comes to his family bank (The Commercial Bank of Africa) being a significant lender to KPLC.[30]

A shifting political calculus on the part of Kenya's elite, a changing economic environment (headwinds in the beginning and tailwinds most recently), a set of institutions receptive to evolving, and a persistent donor community resulted in a significant development in the power IPP sector in Kenya. The donor community seemed to have been happy with half wins for they stayed engaged. It seems that the World Bank continued to promote programs and policies emblematic of best practices (i.e., calling for the further unbundling of distribution from KPLC), but seemed to be happy with the incremental change made. In the current positive economic environment in Kenya it would be good to see the country make more progress on the electrification of the country and to continue to expand its level of capacity as well as its energy source mix.

[29] Victor Juma, "Kenyatta Business Empire Goes into Expansion Drive," *Business Daily (Nairobi)*November 11, 2013.
[30] Kenya Electricity Generating Company Limited, 2015).

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