

The Kenyan IPP experience

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Abstract

Public and concessionary finance for the expansion of power systems in Kenya dwindled in the 1990s. Meanwhile, demand for electricity services was on the rise. Private investment emerged to fill the gap with four Independent Power Producers (IPPs) established in the country by the second half of the decade. From 2000, the private market appears to have collapsed. Expansion of the power sector is once again led by the incumbent state-owned utility.

This paper examines the investment and development outcomes of the four IPP projects, and highlights a number of interesting features of this experience. Firstly, the regulator matters. Established after the first wave of IPP developments, the regulator helped to bring tariffs of the second wave down. Secondly, the tendering process (i.e. an international competitive bid) does not ensure competition for a country that has significant political risk. Bidders self select well before the tender begins, a process which led one Kenyan tender to attract only two bidders (one of which was non-compliant). Thirdly, local partners matter. Half of the projects had local partners, and those that did fared better in the long run. The impact of project financing, public perception and currency devaluation is also evaluated to glean lessons learned of past projects and help pave the way for a more sustainable future for the Kenyan power sector—which presently serves only 15% of the population.

Keywords: Kenya, Independent Power Producers, electricity sector, electricity production, project finance, electricity supply industry

1. Introduction: IPP challenge

Prior to the introduction of independent power projects (IPP), Kenya relied primarily on concessionary funding from multilateral and bilateral agencies to finance new power investments. In the 1990s, however, the global donor trend shifted toward private participation in infrastructure with concessionary funding being targeted at health and social services. This move away from development finance for power projects was aggravated by a general aid embargo, imposed on Kenya throughout the early and mid-1990s, for reasons linked to corruption and lack of advancement in the creation of a multi-party state, which affected all sectors, including power. Thus, a platform of reform for opening up the country's generation sector to private participation gradually emerged in the mid-1990s, paving the way for contracting the first set of IPPs in 1996 (McEwan, 2001).¹

This paper² examines Kenya's experience with private participation in the electricity sector, focusing on four independent power projects (IPP) at the generation level. The first part of the paper provides a brief overview of the IPPs, followed by a discussion of the electricity sector including reforms undertaken to date. Part two involves an analysis of the development and investment outcomes, namely the extent to which the country and the investors benefited from the projects and whether such projects will be replicated in the future.

While the early 1990s ushered in a new model for financing infrastructure projects, by the end of the decade developing countries saw foreign direct investment drop precipitously. From a high of US\$ 14 billion in 1996, investment in power projects dropped to a mere US\$3 billion in 1999 and to zero in 2000 (Sader, 1999). A similar pattern was seen in sub-Saharan Africa (SSA), which reached a peak of US\$0.8 billion in 1998, then fell to zero in 2000 (Private Participation in Infrastructure 2003).

Meanwhile, with limited public funding currently available, countries are once again faced with the challenge of how to meet electricity demand going forward. The Kenyan country study aims to address this investment conundrum through a detailed analysis of past and present power sector developments.

2. IPP background

Kenya developed four IPPs, for a combined capacity of 190 MW or just under 12% of the total installed capacity in the country, as detailed in Table 1.

2.1 Sector reforms

Kenya's Electricity Supply Industry (ESI) reforms have focused primarily on the generation sector, for which public funding was lacking throughout the 1990s, i.e. there were no publicly-funded plants between 1991 and 1998, despite the fact that expansion plans for a series of plants had been drawn up as early as 1991 by the national genera-

tor with implementation slated for 1994 and beyond.

In 1996, the Government of Kenya (GoK) officially liberalized power generation as part of a power sector reform effort (IFC, 1999) as indicated in Table 2. From this time onward, it became government policy that all bids for generation facilities would be put out for competition, open to both public and private firms, i.e. the national generator would receive no preferential treatment.

At the time, the sector was dominated by hydropower, as seen in Figure 1. All economically viable hydro sites had, however, been exploited and therefore diversification became necessary both for drought mitigation and to meet growing demand.

Among the first reforms to take place after the official liberalization was the unbundling of the state utility in 1997. Kenya Generating Company Limited (KenGen), which remained entirely in state hands, became responsible for all generation assets. Kenya Power & Lighting Company Limited (KPLC) assumed responsibility for all distribution and trans-

Table 1: Kenya's IPPs

Projects ³	Size (MW)	Cost (US\$ million)	Fuel	Contract type	Contract Yrs	Project tender - Project operation
Westmont	46	20	Gas turbine, burns kerosene/gas condensate (barge-mounted)	Build Own Operate (BOO)	7	1996-1997
Iberafrica	56	65	Medium speed diesel, burns HFO	BOO	7, 15	1996-1997
Tsavo ⁴	75	85	Medium speed diesel, burns HFO	BOO	20	1995-2001
OrPower ⁴⁵	13	54	Geothermal	BOO	20	1996-2000
Total	190	224	-	-	-	-

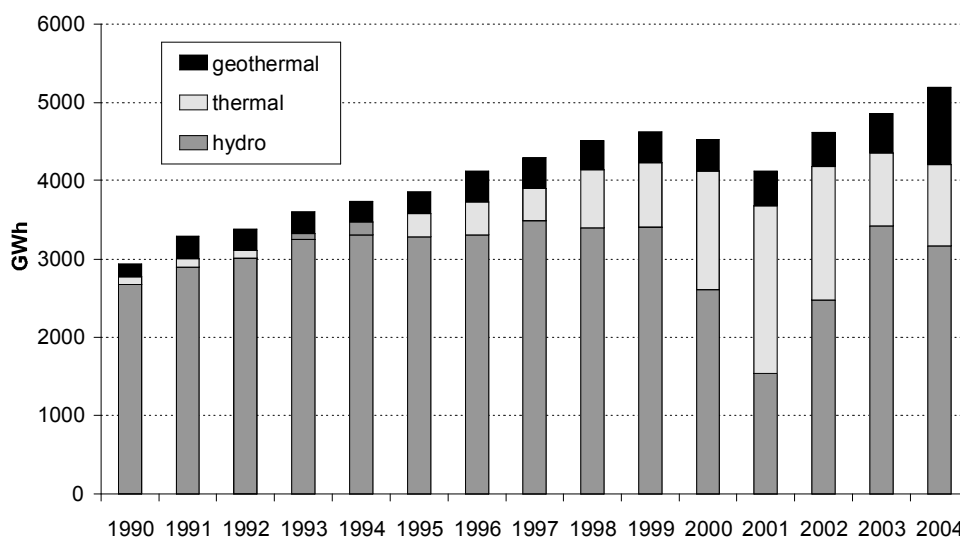


Figure 1: Electricity production by resource (1990 – 2004)

Table 2: Kenya Electricity Sector Developments

Date	Development
1922	East African Power and Lighting Company formed and held by private investors (present-day KPLC's predecessor)
1954	Kenya Power Company (KPC), 100% government owned, established to transmit power from Uganda through the Tororo-Juja line (KenGen's predecessor); KPC managed by KPLC under management contract, i.e. establishing fully-integrated utility
1970	Government of Kenya obtained majority shares in KPLC
1991-1994	Aid embargo impacting all sectors
1995	Tenders for two IPPs initiated by MoE: one diesel (Tsavo), the second geothermal, (OrPower4)
1996	Government of Kenya decided to formally introduce competition into the generation sector
1996	Tenders for two additional 'stop-gap' IPPs issued by KPLC, PPAs with Westmont and Iberafrica signed; plants commissioned one year later
1997	Electricity Regulatory Board (ERB) established under the 1997 Electric Power Act and subsequently ERB inaugurated in 1998
1997	KPLC and KPC unbundled and KPC subsequently named KenGen
1998	OrPower4 PPA signed for between 28 and 100 MW
1998	Tsavo PPA signed for 75 MW
1999, 2000	ERB sets new retail tariffs
1999-2000	KenGen resumed its expansion plans adding Kipevu I (Diesel) and Olkaria II as well as an expansion at Gitaru Hydro, which had been planned in the early 1990s
1999-2001	3 emergency IPPs introduced during drought (Aggreko, Cummins and Deutz)
2000	OrPower4 began to operate an early generation facility of 9 MW in June 2000 and added additional 4 MW for a total of 13 MW six months later; firm indicated that it could provide up to 48 MW following a resource assessment, assuming government guarantees provided
2000	Tsavo PPA finalized and plant commissioned in 2001
2003	KenGen reduced tariffs (as set in 1999) from Kenya Shilling (Ksh) 2.36/unit to Ksh 1.76/unit
2003	Nyanja Commission issued its report on the electricity and petroleum sectors, personnel from Westmont, Iberafrica and KPLC indicted (among others) for flawed PPAs
2004	Iberafrica signed 2nd PPA for 15 years; Westmont stopped operating after the completion of its initial 7 year PPA
2004	New energy policy approved by Parliament and a new Energy Bill, amending 1997 Energy Act expected to become law later in 2005, which would introduce a number of changes, including increasing ERB's mandate
2005	Plans currently underway for government to sell 30% of its stake in KenGen

mission. The state owns 51% of KPLC, with the balance of shares traded on the Nairobi Stock Exchange.⁶

At this early stage of reform, the ESI lacked an independent regulator. It was not until the Power Purchase Agreements (PPAs) of both Westmont and Iberafrica had been signed with KPLC, and the plants had been commissioned in 1997 that the regulator was established, through the 1997 Electric Power Act. It took another year for the Electricity Regulatory Board (ERB) to start operations. Although not involved with the first set of PPA negotiations, ERB maintains that it has monitored all IPPs since its inauguration in 1998, as per its mandate.

Private participation in generation picked up again in 1998, when the PPA with OrPower4 to develop between 28 and 100 MW of geothermal power, was finally signed—marking the third IPP (after Westmont and Iberafrica). Within another two years, the PPA for the fourth IPP, to be developed by Tsavo Power Company (TPC), sponsored by Cinergy-IPS, Wartsila, the International Finance Corporation (IFC) and Commonwealth Development Corporation (CDC), was signed.⁷

Two UK-based consultancies (legal and engineering) assisted KPLC during procurement of the first two IPPs, while the World Bank financed some advisors to support the government with negotiations. The same two UK-based consultancies were

Table 3: Comparison of all plants: total generation nominal cost per unit, Kenya Shilling (Ksh)/kilowatt hour (kWh)

Supplier	1999/2000	2000/01	2001/02	2002/03	2003/04	July-Dec 2004
Iberafrica	8.7	10.2	10.2	10.9	10.4	6.4
Westmont	10.4	11.1	13.5	33.8*	59.7*	54.8*
OrPower4	-	6.1	6.6	6.4	7.1	6.1
Tsavo	-	4.2	5.6	6.8	11.1*	7.5
UETCL (imports)	5.3	5.5	4.8	4.4	4.4	4.4
KenGen Thermal	8.3	9.4	7.0	7.3	5.2	7.1
KenGen Non-Thermal	2.4	2.5	2.5	2.4	2.2	1.8
KenGen Overall	4.0	4.9	3.1	2.8	2.2	2.4
Mumias (bagasse)	-	6.6	6.7	-	-	-
EPPS (leased plant)	-	7.2	-	-	-	-
Annual weighted average cost per unit from all sources	4.6	6.1	4.4	4.0	3.3	3.6

Note: Data was provided by KPLC; IPP tariffs are a function of the capacity charge as well as the volume of energy generated and the prevailing fuel prices. *These particularly steep costs reflect the following situation: in 2002-2004, there were more favourable hydrological conditions in Kenya hence the unit cost from thermal plants was high since the capacity charges are paid regardless of the amount of generation.

again engaged to provide support during the procurement of Tsavo and OrPower4, but this time under funding assistance extended to the government by the World Bank.

Meanwhile, Kenya was experiencing, by the end of the 1990s, continuously mounting demand and finally a resumption of public funding. As a result, attention turned once again to KenGen and its long postponed expansion plans: Kipevu I, a 75 MW diesel plant and an additional unit of 80 MW at the existing Gitaru hydro facility. In addition, the World Bank together with the European Investment Bank (EIB), Germany's Reconstruction Loan Corporation (KfW) and the government of Kenya, funded a 64MW geothermal plant, Olkaria II, which came into commercial operation in late 2003. These investments were not open to general competition with the private sector, contrary to previous policy statements.

The next major change to impact generation reform was the drought starting in 1999, which prompted the Ministry of Energy to negotiate three emergency diesel-fired power plants.⁸ These plants are largely considered outside the purview of the ESI reform, even though they were operated by the private sector, due to the fact that contracts lasted only a year and a half.

The most significant impact of the drought was that it required KPLC to seek more costly power, which not only financially enfeebled the firm but also led to inflated prices for the consumer, as both foreign exchange and fuel costs are passed through in part.⁹ With IPPs associated with higher cost power, the drought led to public outcry against pri-

vate sector participation, which was seen to be taking advantage of a poor country in a dire situation.

Allegations of corruption in the power sector, together with a call to reduce tariffs, gained momentum. The new government, which came to power in December 2002, on the heels of the drought and a drought-induced recession, pledged specifically to address ESI reform and reduce tariffs. Among its first measures, the National Rainbow Coalition charged the Nyanja Commission with investigating alleged corruption in the electricity and petroleum sectors. By December 2003, the Nyanja Report was issued, indicting personnel in KPLC, Westmont and Iberafrica for corruption and flawed PPAs (*Kenya Risk*, 2004). The Nyanja findings have not, however, led to significant changes in the sector, with the integrity of the Commission itself being questioned along with the thoroughness of its investigation.¹⁰

While the Nyanja findings have been marginalized, ERB's efforts to maintain tariffs 'as low as reasonably possible' have been ongoing—before, during and after the commission's investigation, as per the Board's duties. Table 3 presents generation tariffs, currently regulated by ERB.

The future of the ESI reform is expected to involve an initial private offering (IPO) of KenGen, with 30% of the national generator privatized by 2007; some reports indicate that this may happen as early as end-2005 (*Kenya, 2005 and KenGen prepares IPO*, 2005). As for new generation capacity, the primary development is a 70 MW geothermal facility, Olkaria IV, which stakeholders indicate will undoubtedly be built by KenGen. Work is also

underway on the second phase of Sondu Miriu, a 60 MW publicly-financed hydropower plant slated to come on line by 2006, which was initially planned for the early 1990s but was abandoned in the aftermath of Turkwel,¹¹ the aid embargo and environmental concerns.¹² Joint-ventures with the state utility are also under consideration.

Also in the pipeline is the separation of transmission and distribution with a national Transco slated for end-2006. It has been hinted that future IPPs might have to compete more fiercely with interconnections, including that with Uganda, Tanzania and other SADC countries. Government oversight has been and is expected to continue increasing, and some stakeholders even speculate that government guarantees may be part of future IPP negotiations.

Figure 2 presents a schema of the current ESI. As of 2005, the Kenyan ESI consists of five different generation companies, and one integrated transmission and distribution company. Despite reforms and the introduction of IPPs, generation remains dominated by KenGen, which provides approximately 85.3% of all electric power in Kenya. The remaining four generation companies, which contribute about 11.2% of Kenya's power, are the independent power producers (IPP), with majority stakes owned respectively by Westmont,¹³ Union Fenosa, Cinergy (Duke)-IPS,¹⁴ and OrPower4. Imports from the Uganda Electricity Transmission Company (UETCL) meet about 3.4% of Kenya's demand. Finally the Rural Electrification Programme (REP), administered by KPLC and initiated in 1973, provides the balance of 0.2%, mainly in remote, isolated grids. Transmission and distribution is owned and operated by KPLC (Kenya Power & Lighting Company 2004 and SAD-ELEC 2004).

The Electricity Regulatory Board, which is directed on policy measures by the Ministry of Energy, regulates the generation, transmission and distribution of electric power in Kenya. ERB sets and reviews tariffs and also approves electric power purchase contracts, including those of IPPs. To date government has never overturned an ERB deci-

sion. While the Board maintains a significant degree of autonomy, in the six years of its operation, it has had five different chairmen (all appointed by the President), which has undermined the institutional memory and capacity of the organization. The ERB's role should widen to include regulation of the energy sector (including petroleum), assuming the proposed new energy bill passes through Parliament.

As of 2004, KPLC served around 686 000 customers. According to the Kamfor Study, the latest assessment carried out by the Ministry of Energy in 2000, 15% of the Kenyan population have access to electricity, with access in urban areas measuring 47% and that in rural areas a mere 3.8%. Although accounting for 85% of all customers, domestic and small commercial and industrial users represent just 36% of total revenue, depicted in Table 4.

Finally, it is worth noting in this context that KPLC incurred losses from the start of the drought of 1999 until 2003-2004, when the firm achieved modest profit, i.e. KSh 457 807 after tax (US\$1 = KSh 78.09, average exchange rate for January 2005). The losses were due to the fact that KPLC budgeted Ksh 6.29/kWh in 1999 for its retail tariff (without fuel cost and foreign exchange adjustments); meanwhile, the actual average selling price was Ksh 5.66 per unit in 1999-2000 and Ksh 5.86 per unit in 2000-2001. The situation was exacerbated by: reduced sales due to drought-induced economic recession; high line losses (with the

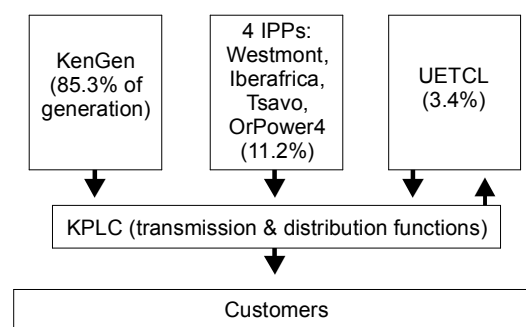


Figure 2: Kenya electricity supply industry

Table 4: Kenya electricity customer categories and tariffs

Category	GWh	Customers	Total revenue Ksh (mil)	Avg tariff price Ksh/ /kWh
Domestic, small commercial and small industrial	1376	680 277	8 885	6.46
Medium commercial and industrial	819	3 144	5 329	6.51
Large commercial and industrial	1638	424	8 816	5.21
Off-peak	55	918	272	4.95
Street Lighting	7	1 156	51	7.29
REP	150	93 442	978	6.52
Total/average	4 045	779 361	24 331	6.16

drought, the majority of the power was sourced from more remote stations in the south); increased customer payment default; increased theft; and increased fuel prices in the international market, which could not be fully passed on to consumers due to a pricing formula which assumes losses of maximum 15%.¹⁵ The more recent change in KPLC's balance sheet is accredited to the fact that normal hydrological conditions have returned. KenGen also converted Ksh 12.3 billion in debt owed by KPLC into equity in September 2003 (KenGen 2003). In addition, KenGen has reduced its selling price by 25% from Ksh 2.36 per unit (as set in August 1999) to Ksh 1.76 (as agreed in July 2003 with KPLC), but still registered profits of Ksh 2 519 879 000 in 2003.¹⁶ Furthermore, KPLC is no longer paying Westmont capacity charges, which amounted to US\$818 000 per month, as the developer did not negotiate a second PPA.

2.2 IPP frameworks and projects developed

Kenya has witnessed three different IPP frameworks, yielding seven IPPs. A fourth framework is currently underway. As noted in Section II a, in 2004, IPPs contributed 11.2% or 186.5 MW of Kenya's installed capacity.¹⁷

The first IPP developments occurred on the heels of the 1996 legislation opening up the generation sector to private investment. With power demand increasing, hydrological conditions weakening and insufficient public funds to build power plants, KPLC ordered two stop-gap IPPs in 1996. The PPAs stipulated seven-year contracts for two plants: a 46 MW barge-mounted kerosene burning gas turbine and a 44 MW medium speed diesel generator, burning Low Sulphur Fuel Oil (LSFO). Fifteen firms bid for these plants in what has been characterized as a selective international tender, i.e. with specific firms invited to bid. Of the 15 firms, Westmont, a Malaysian consortium, and Iberafrica, with majority shares owned by Spain's Union Fenosa, submitted the lowest bids and subsequently secured the contracts. Plants were commissioned less than a year later helping to plug the power shortage. It was here that the first IPP framework began and ended, as all subsequent plants would be developed under different conditions.

The second IPP framework, which first emerged in 1995, when tenders were initially floated, was realized starting in 1998 when OrPower4, owned 100% by Ormat, a US-Israeli firm, signed a PPA to develop up to 100 MW of geothermal power. At the time of signing, OrPower4 assumed ownership of 9 MW of existing wells. To these the firm added an additional 4 MW during the emergency power crisis of 1999-2001. Since 1998, OrPower4 has completed resource assessments of the geothermal fields, which it is leasing from the government, and has

determined that the known proven geothermal reserves are 58 MW, the amount which is contractually required for a 48 MW plant. As a pre-condition to developing the additional 35 MW, however, the firm has required a supplemental PPA, as discussed in the next section.

A further IPP was built during this second IPP framework: a 75 MW medium speed diesel generator, burning Low Residual Fuel Oil (LRFO). The PPA, awarded to the Tsavo Power Company, was finalized in 2000, and the plant came on stream one year later (Wartsila was the initial bidder, and subsequently brought on co-bidders, IPS, IFC and Cinergy). Delays in the Tsavo plant have been attributed primarily to the financing. As Tsavo was the region's first project-financed power plant, there was little knowledge among stakeholders, and, the political risk prevalent at the time kept many potential funders at bay. In contrast to the first IPP framework, which was a selective international tender, both the OrPower4 and Tsavo plants followed international competitive bid guidelines. While this was considered a more transparent process, the competition was limited: only three firms bid for Tsavo and two (of which one was non-compliant) for the OrPower4 plant.

A third IPP framework spanned 1999 – 2001. By 1999, hydrological conditions had worsened. With no clear end in sight, the MoE decided to arrange a competitive bid for three emergency diesel-fuel IPPs. These units, awarded to Aggreko, Cummins and Deutz, three privately-owned foreign providers, for a combined 105 MW (587 GWh) were rented between 2000 and 2001.¹⁸ Considered quasi-IPPs by some, these projects were negotiated directly between project sponsors and the government. World Bank IDA credit of US\$72 million was also made available for these plants. Due to the fact that fuel is a pass-through to consumers, however, end-users bore the bulk of the cost, with government providing a subsidy only for the duty charge.¹⁹

A fourth framework is under development, and is largely a function of the pending energy bill. Among the changes that this new framework may introduce are:

- Government ownership of the geothermal resource-assessment process through the Geothermal Development Company, which would mean that IPP developers, such as OrPower4 would not be responsible for conducting their own assessments; the entity may also sell steam (as fuel) to either KenGen and/or IPPs;
- Provisions for large consumers to purchase power directly from generators with KPLC giving unfettered access to the transmission system (for a fee);
- New tax structure for IPPs, which would ulti-

- mately prove more favourable to investors;
- Build Own Operate Transfer (BOOT) contracts (rather than BOO);²⁰
- Special tariff regimes for off-grid developers to ensure that investments are commercially viable;
- New provisions for pico, micro and mini-hydros as well as other renewables.

3 Analysis of outcomes

The value of IPP projects for investors and host countries and the sustainability of these projects (i.e. if contracts hold and future investments are made) depend on whether investment and development outcomes remain broadly in balance. Returns to investors have to be adequate, investment opportunities should grow and the price and reliability of power should be satisfying for electricity consumers. These investment and development outcomes are influenced by a number of country-level and project-level factors.

3.1 Country-level factors

A review of the international experience of IPPs reveals a number of country-level factors, shown in Table 5, which are particularly important in evaluating development and investment outcomes.²¹ These factors, namely exogenous shocks, the investment climate and the electricity market, have often determined the fate a project. For instance, macroeconomic shock forced workouts in numerous projects throughout South America and East Asia.

Only some of these country-level factors are rel-

evant to Kenya's experience. With respect to exogenous shocks, Kenya has not been affected by a one-time macroeconomic shock and currency devaluation. Over the course of the 1990s, however, the country did see its currency depreciate more than 300% (from Ksh 22.9 = US\$1 in 1990 to Ksh 75.9 = US\$1 in 2003). Insofar as all PPAs are denominated in US dollars, this creeping devaluation does have an impact on the country and IPP outcomes. Investments are growing more costly as is fuel, which is imported in the case of Westmont, Iberafrica and Tsavo.

A second exogenous factor to be noted is drought. The first two IPPs, both diesel-fired, were rushed through to help plug the power shortage created by drought conditions of 1996-7. The third IPP (OrPower4) was requested to increase its capacity during another drought in 1999. In each of these instances, power was ultimately more expensive due to the emergency nature of the situation. Furthermore, after hydrological conditions returned to normal, the country was still locked into contracts with take or pay requirements.

As regards Kenya's investment climate, it was lacklustre throughout the 1990s with a GDP compound annual growth rate of 1.73% from 1990 to 2000 and just 1.37% between 1997 and 2000. Foreign Direct Investment fell by 3.40% a year over the decade. Kenya faced a donor embargo throughout much of the 1990s, which also impacted on investments in the electricity sector. Although organized as international competitive tenders, the tenders ultimately awarded to Tsavo and OrPower4

Table 5: Country level factors that affect IPP development and investment outcomes

Exogenous shocks

- macroeconomic shock (especially currency devaluation)
- drought
- war/civil unrest

Investment climate²²

- recent local and foreign private investment , i.e. precedent of private sector participation
- investor perception based partly on history as well as:
 - state of the economy
 - political stability and independent and established legal system
 - level of corruption
 - sovereign credit rating
 - multilateral and bilateral donor commitments
 - security guarantees (including availability of sovereign guarantees)

Electricity market

- market structure (e.g. single buyer model), including role of state utility
 - role and strength of regulator
 - wholesale and retail price cost/coverage
 - electricity supply/demand balance
 - incumbent fuel
 - sector procurement policy
 - prevalence of back-up generators and degree to which industrial/commercial base rely on grid
 - extent of interconnections with other countries
-

Table 6: Project level factors that affect IPP development and investment outcomes

Project partners
<ul style="list-style-type: none">• local/international investors• multilateral agencies• firms' commitment to sector/country• equity turnover
Project finance
<ul style="list-style-type: none">• debt vs. equity• sources• seniority of debt
PPA
<ul style="list-style-type: none">• off-take agreement (including ownership/transfer and risk allocation)• degree of sovereign or other guarantees for agreement• provisions for dispute settlement• impact on off-taker
Fuel type and agreements
<ul style="list-style-type: none">• imported or locally available fuel• exposure to FX risk• government or other supplier
Political & public perception
<ul style="list-style-type: none">• what did the general public and politicians think (and why)?• to what extent did the general public and political process influence the project and future projects?
Project management
<ul style="list-style-type: none">• O&M Budgeting

only attracted three and two bids, respectively, as mentioned earlier. Therefore, those investors who did approach Kenya were few and far between and ultimately charged higher risk premiums to offset the perceived high risks, which were exacerbated by the absence of sovereign guarantees.

As with the investment climate, Kenya's electricity market had a significant impact on outcomes. Firstly, although common among African countries, Kenya's demand profile is miniscule (with just 1.2 GW installed capacity) compared to other developing countries in Latin America, East and South Asia, and Central Europe, which saw IPP investment. Little demand potential therefore inhibited investment. Another factor is that IPPs were perceived to be competing against 'cheap hydro', the incumbent fuel in Kenya (even though economically hydro sites had been exploited and the country faced drought conditions for much of the 1990s). This (mis)perception ultimately weighed against investors. Finally, the evolving regulatory regime had a large impact on outcomes. An independent regulator in Kenya was only established in 1998, after the first PPAs with Westmont and Iberafrica had been signed. These first PPAs therefore lacked the oversight of a third party which would have scrutinized tariffs and other terms of the contracts (especially contract duration) to a greater degree. Although Kenya's options were limited given the donor embargo and investor wariness, an inde-

pendent regulator would have undoubtedly helped in the negotiating process, which largely resulted in an outcome that favoured investors at the expense of development outcomes. In the next set of IPPs with TPC and OrPower4, the Electricity Regulatory Board played a critical role, insisting on lower tariffs. ERB also influenced the renegotiation with Iberafrica for a second PPA with KPLC, which ultimately culminated in a capacity charge equal to 50% the original.

3.2 Project-level factors

The project level factors, seen in Table 6, which emerged as significant in the global IPP context are: project partners, finance, the PPA, fuel type and agreements, public perception and project management. Each of the factors, with specific relevance to the Kenyan case study will be evaluated separately.

3.2.1 Project partners

There was substantial variety in the project partnering across the four IPPs. Two of the four IPPs had local partners (Iberafrica and Tsavo);²³ one had the involvement of a multilateral agency (Tsavo); two of the projects had stakeholders with a longer commitment to the country (Iberafrica and Tsavo), and only one of the four was a project-finance deal (Tsavo) with the other three relying on the balance sheets of their sponsors.

In the case of Iberafrica, the local partner con-

sisted of the KPLC Pension Fund (who owns 20% of the project). According to personnel at Iberafrica, a local partner was considered a requirement for Union Fenosa given Kenya's country risk at the time of investment. While the alliance between Iberafrica and the KPLC Pension Fund may have helped assuage Union Fenosa, it has been subject to some criticism and controversy, namely that with involvement with KPLC, the off-taker, there could not be a fair and transparent evaluation of competing bids. These allegations have been denied by both Iberafrica and KPLC who argue that the Pension Fund is governed independently from KPLC with a separate board of trustees. Thus the direct impact on outcomes is difficult to determine. On the one hand, the local partner assisted in providing security to the multinational firm; on the other hand, the local partner ultimately raised doubts about the project sponsor's integrity. Suffice it to say, actions speak louder than words and Iberafrica (with the partnership intact between Union Fenosa and KPLC Pension Fund) has managed to negotiate a second PPA, under the supervision of ERB, for a duration of 15 years, which would indicate that the arrangement is both sustainable and favourable.

Tsavo Power Company's local partner consists of Industrial Promotion Services (IPS), Aga Khan's Fund for Economic Development (AKFED) operating arm in the industrial sector throughout Asia and Africa. Although IPS has a global reach, the firm has been established in Kenya since 1963 and therefore for all intents and purposes was considered a local partner. While IPS projects must make commercial sense, they must also serve a clear developmental function for the country/community. The Tsavo plant met both criteria for IPS. The developmental function was met by the fact that the 75 MW would help Kenya plug a severe power shortage, i.e. the plant amounted to 28% and 34% of country's total thermal/geothermal generation in 2001-2002 and 2002-2003, respectively, and up to 10% of the gross annual energy requirement in 2002-2003.²⁴ In addition, the plant was expected to contribute to a reduction in tariffs, as it was significantly less expensive than emergency power generation procured at US\$0.30-.40/kWh. The commercial aspect was met by the fact that: a reasonable return on investment was expected (i.e. mid-teens); a series of first rate investors were involved; and the security package, together with the 20-year PPA promised a sound and secure arrangement with the national utility. Ultimately the local partner played a substantial role as it formed the backbone of the strategic partnership with Cinergy (Duke); together these two firms represent 49.9% of the equity. It may be concluded that the local partner had a positive impact on both the investment and development outcomes.

While multilateral institutions were absent in the

first round of IPPs, the IFC took both an equity stake in and played an important role in providing and arranging debt for Tsavo. As the private sector arm of the World Bank, IFC saw the Tsavo investment as a critical development to help meet rising power shortages in Kenya, which were adversely affecting the economy. Funds were not forthcoming from either international donors or the private sector as the former was maintaining an aid embargo and the latter was hindered by the myriad risks, heightened by the political instability, of any such investments. IFC thus saw its role as key in assuring private sector participants of project integrity and stability. IFC also recognized the potential 'demonstration effect' of the project as it aimed to be the first project-financed deal in the region. Both the investors and host country alike have benefited from IFC's decision to participate in Tsavo. It should be noted in this context, that certain other investors in Kenya's IPP sector (e.g. Ormat) had an expectation that the multilateral funding institutions would participate to a greater extent (than they ultimately did).

As regards firms' commitment to the country, the difference in the commitment among project developers is stark. The Malaysian based firm, Westmont, had only one African project. The firm entered the market with the signing of its PPA in 1996-7 and left promptly in 2004 after failing to agree on a tariff with KPLC. It is suspected that this abrupt departure was in part a function of the financial condition of Westmont's parent company in Malaysia as well. That said, there was little staying power and ultimately little long-term success. Iberafrica stands in contrast. Union Fenosa, the majority stakeholder in the project, entered Kenya in 1994-5, two years prior to the electricity offer, when its IT arm won a contract to provide services to GoK. Thereafter, the company established itself in the country, creating favourable ties and a solid name for itself. Tsavo's commitment is observed through its local partner's presence, dating from the 1960s. Finally, Ormat's commitment spans only the time of its contract. The firm entered both the country and the continent for the first time when it signed its PPA with KPLC. As noted earlier, Tsavo has been characterized as the most successful from both a development and an investment perspective. It is also the firm with the longest commitment to Kenya.

3.2.2 Project finance

The financing arrangements for each of the IPPs are quite distinct, as summarized in Table 7.

In the case of the stop-gap IPPs, firms were given 11 months to bring plants on line from the signing of the PPAs, which meant that firms had to rely primarily on their own balance sheets rather than setting up elaborate project finance arrange-

Table 7: IPP project financing

<i>Project (US\$ million)</i>	<i>Westmont</i>	<i>Iberafrika</i>	<i>Tsavo</i>	<i>OrPower4</i>
Total project costs	20	65.1 ^a	85	54 ^b
Total equity and %	NA	18 (27.6%)	18.97 (22.4%)	NA
Total debt	NA	47.1 (72.4%)	66.03 (77.6%)	NA
Local equity	0	3.6	% of 9.46 ^c	0
Local debt	0	14.4	0	0
International (private) debt	NA	32.7	>26	NA
Multilateral and bilateral financing	0	0	40	0 ^d

Notes:

- Iberafrika, total project costs US\$65 million, with first phase (44 MW) priced at US\$51.5 million and second phase (12 MW) at US\$13.5.
- US\$54 million includes the amount invested in a 13 MW power plant and completed geothermal wells for 58 MW including 20% reserves to support a 48 MW power plant.
- IPS and Cinergy jointly own 49.9% of project equity, IPS is a local partner.
- MIGA guarantee provided.

ments. Project costs for Westmont, the first stop-gap IPP, amounted to US\$20 million. Little is known about how exactly the Malaysian consortium funded this plant, but it is believed that it relied mostly on company funds.²⁵ In contrast, the cost of Iberafrika, the second stop-gap IPP, totalled US\$65.1 million and the firm shared costs with a local partner and through local and foreign commercial banks. The discrepancy in project costs, between the similar sized Westmont and Iberafrika plants, can be attributed to two primary factors namely, technology and location. Westmont is a barge-mounted open cycle gas turbine (using kerosene), located off Mombassa while Iberafrika is a diesel generator, located near Nairobi.

In contrast to Westmont, Iberafrika's financing structure is more widely known. The project, which was carried out in two phases with the first phase of 44 MW priced at US\$54.5 million and the second phase of 12 MW costing US\$10.5 million. Project equity amounts to US\$ 18 million. Ownership is shared, with 80% held by First Independent Power East Africa Limited—an entity owned by two Spanish firms, Union Fenosa (90%) and JHR Consultants (10%) – and 20% held by the KPLC Staff Pension Fund. Project debt, amounting to US\$47.1 million, was provided directly and indirectly by Union Fenosa and the Staff Pension Fund.

TPC followed a different route than its predecessors, Westmont and Iberafrika, with regard to financing. Unlike with the first two plants, TPC was not required to commission its plant within an 11 month timeframe, which allowed the company to seek out more creative financing schemes. Tsavo became the first project in East Africa to be financed on a project finance basis without government guarantees. Project equity, amounting to US\$18.93

million or 22% of total project costs, was split among IPS-Cinergy (49.9%), which comprises a local partner and an American-based power company, CDC, a public-private UK development entity, now Globeleq (30%), Wartsila, a designer and operator of power plants (15%), and IFC (5%).²⁶

Project debt for Tsavo, amounting to US\$ 66.06 million, was provided by IFC (US\$17 million in direct loans and US\$26 million syndicated loans), CDC (US\$13 million in direct loans) and the German Investment & Development Corporation (DEG) (EUR 11 million in direct loans and EUR 2 million in syndicated loans). Given the absence of sovereign guarantees, which are generally a prerequisite for a project-financed investment in a developing country, a series of alternate arrangements were made. Key documents for project completion were the Letter of Comfort provided by the government and the security package provided by KPLC. The Letter of Comfort addresses force majeure and political issues, but does not qualify as a sovereign guarantee due to its limited application and coverage. The security package involves an escrow account to which KPLC must provide one months payment of approximately US\$4 million for the duration of 12 years, i.e. the period of primary debt repayment; and a stand-by Letter of Credit, which covers three months billing of approximately US\$12 million. Initially 100% cash cover was required for the Letter of Credit; however, this has since been eased to 20%.

It should be reiterated here that no plants received government guarantees – although the costs of the emergency power plants were supported in part by government. Kenya has maintained a policy of not extending government guarantees to private sector projects, unless there is an overriding

public interest.

Finally, financial closure for OrPower4 has not yet been achieved. To date, US\$54 million has been invested solely by Ormat—for both appraisal and drilling of the new geothermal wells. Contrary to its initial expectation, the firm has been unable to enlist either multilateral financing institutions (MFIs) or any other international energy companies, although it did obtain a MIGA guarantee. After witnessing the financial position of KPLC disintegrate in 1999, Ormat requested a supplemental PPA, which specified a Letter of Comfort and security package, similar to those obtained by TPC. Neither KPLC nor MoE have acquiesced and therefore development of a further 35 MW identified by OrPower4 during a resource assessment remain undeveloped.

In conclusion, it is noteworthy that the star project, Tsavo, had the most diverse project financing, however, the deal also took the longest to close.

3.2.3 PPAs

Among the most apparent differences in the first three IPP frameworks is the duration of the PPAs – with the first stop-gap framework stipulating seven years, the second, specifying 20 years and the third, emergency framework, covering only the period of the drought. The emergency plants understandably were temporary.²⁷ In the first period, the Iberafira and Westmont plants, providing about 100 MW of power, were seen as a 'stop-gap' measure to quickly meet capacity shortages. Publicly-financed plants, which were considered less costly, were in the pipeline, but funding was not forthcoming. Government opted for a short-term solution with the expectation that by, if not before, 2004 when the PPAs were slated to end, the situation would be altered, i.e. potentially more favourable for the government/country. Furthermore, given the political risk at the time of stop-gap IPPs, investors were wary of committing to longer terms. The second IPP framework was the first indication of the government seeking a longer-term solution to private investment in the sector.

There is also a marked difference in the generating costs of the IPPs with the first wave (Westmont and Iberafira) amounting to approximately double the cost of the second wave (Tsavo and OrPower4) as depicted in Table 3. The higher cost of the first wave has been accredited to the short timeline allotted and severe drought condition. It is noteworthy that the second wave was not only cheaper than the first, but it was also competitive with KenGen's plants.

The major commonality among the PPAs of all Kenyan IPPs was the Build Own Operate (BOO) structure. Reasons provided for why Kenya adopted the BOO structure are varied: it was a simpler arrangement than BOOT; it was a World Bank rec-

ommendation; a BOO mitigated project risk, by ensuring that developers would properly maintain their plants. The vast majority of stakeholders, however, appear to be uncertain about why such a structure was adopted. Also it is worth reiterating in this context that is that going forward, government stakeholders are keen to explore the BOOT structure.

In addition to being BOOs, the PPAs signed between KPLC and project developers specified take-if-tendered conditions, i.e. the plant must be prepared to deliver electric energy if asked to do so, with the following capacity levels stipulated: Westmont, Iberafira and Tsavo at 85% and OrPower4 at 92%.

Of the four PPAs negotiated with KPLC, none have been cancelled to date, although one has expired and one has been renewed on different terms. In August 2001, Iberafira expressed its interest to both ERB and KPLC to negotiate a second PPA (as per the Electric Power Act such a request must be initiated three years before license/PPA expires). Negotiations commenced at this time. KPLC and Iberafira reached agreement on tariffs, however, ERB rejected the rates. Thereafter, Iberafira and ERB reached agreement on rates, but KPLC rejected the rates. In December 2002, the new government came to power, and all negotiations were stalled until June 2003 due to changes in ERB, MoE and KPLC staff. In April 2002, Iberafira reduced the capacity charge of its first PPA by 37%. This was not a renegotiation per se, but a voluntary act on behalf of the firm to demonstrate its commitment to a second PPA.²⁸ In September 2003, Iberafira reduced its capacity charge again—this time to 59% of the original PPA agreement. Finally, when re-negotiations re-commenced they culminated in agreement on a second PPA (for a duration of 15 years) in August 2004, in which the capacity charge agreed was 50% that of the original PPA.

Westmont also requested a second PPA, but the firm and KPLC could not agree on a tariff. As a result, Westmont did not pursue any formal procedure with ERB. In August 2004, with the completion of its seven-year PPA, Westmont ceased operating. Currently, the barge mounted gas turbine is resting idle off of Mombassa. There is some speculation that KenGen may purchase the unit, but there was no confirmation as of June 2005.

In the case of OrPower4, a supplemental PPA has been requested by the firm to mitigate financial risks posed by the off-taker, KPLC. Further development (i.e. above the existing 13 MW) is contingent on the supplemental PPA, discussed in the previous section, but to date, neither KPLC nor the MoE have agreed to the changes.

Suffice it to say the project that has met with the greatest success (Tsavo) also had the most comprehensive PPA.

3.2.4 Political and public perception²⁹

The IPPs have generally been perceived as expensive, i.e. more expensive than KenGen. Owners have also been portrayed as opportunistic, profiting from Kenya's drought situation and poor investment climate. Absent from these portrayals has been an accurate description of the state's inability to finance and build competitive plants within a short timeframe. Few IPP owners have countered the stereotypes, with the exception to Tsavo. Tsavo has also developed a US\$1 million community development fund, disbursing US\$50K annually (over the 20-year PPA) to benefit environmental and social activities in Kenya's Coast Region.

While it appears that the predominately negative public perception has not forced change in existing plants, it may be among the factors influencing future IPPs, i.e. no existing plans for additional plants.³⁰

4 Conclusion

The IPP experience in Kenya is interesting in a number of respects. Despite a difficult investment climate (e.g. an aid embargo and no sovereign guarantees available) foreign investment was made in IPPs. Initial stop-gap IPPs were understandably expensive, with wholesale tariffs more than three times KenGen's. High prices are attributed to the fact that plants were procured during a drought, under severe time pressures, with a truncated tender process. Furthermore, with PPAs of only seven years duration, investors had little time to extract returns. In the second wave of IPPs, projects were tendered under international competitive bid standards. The result was significantly cheaper power than the first wave, with wholesale tariffs competitive with KenGen's. During this second wave, Iberafica (one of the initial stop-gap IPPs) also halved its capacity charge in its negotiations for a second PPA.

In the end, Kenya experienced a fairly positive development outcome. The requisite power was supplied, albeit initially at a high rate to the country and consumer. Later, prices became more competitive. Throughout, however, Kenya has experienced significant devaluation of its currency. Between 1990 and 2003, the Kenyan Shilling depreciated more than 300%. Considering all PPAs are denominated in US dollars, this change weighs heavily on the country. As for investment outcomes, in the first wave, it is believed that investors fared well given the high tariffs charged. In the second wave, outcomes appear to have been positive, but more modest. All deals (in both the first and second waves) have held, which is a positive indicator for investment outcomes.

In addition, a number of interesting features of Kenya's IPP experience can be noted, namely the nature of the project partners, the role that multilat-

eral agencies played as well as the role of the regulator. As regards project partners, Malaysian based Westmont had no prior experience in Africa. Equally inexperienced in Africa was Ormat, an US/Israeli based firm. These two companies opted not to engage local partners. Westmont has since left after it failed to reach agreement on a second PPA and Ormat (through project company OrPower4) has developed only 13 MW, or just 10% of the maximum size specified in its contract. In contrast, both Iberafica and Tsavo Power Company had significant local partner stakeholders, each with a long-term experience in Kenya. Union Fenosa, the dominant shareholder in Iberafica, also had additional projects in Kenya's IT sector. The Iberafica and Tsavo plants have fared significantly better than Westmont and OrPower4. Iberafica negotiated a second 15 year PPA, and Tsavo is recognized as the first project-finance deal in East Africa to be realized without government guarantees. Tsavo has also made a good name for itself through its US\$1 million community development fund. Finally noteworthy in the context of project partners is the role that IPS and Globeleq are playing across the continent and the emergence of a new breed of investor. As European and American based firms such as InterGen and AES have retreated to their home markets, IPS and Globeleq have stepped in to fill the development gap, picking up majority stakes in Egypt's Sidi Krir (682 MW), Tanzania's Songas (180 MW) and Uganda's Bujagali (250 MW). While motivated by commercial interests, both Globeleq and IPS also have a larger appetite for risk and a commitment to emerging markets. It is expected that future developments will be led by these types of firms.

Multilateral agencies were largely absent from the first wave of IPPs (other than to assist government in negotiating) but played an important role with regard to the second wave. IFC took both an equity stake in and arranged the syndication for Tsavo. OrPower4 obtained a MIGA guarantee. The involvement of multilaterals helped give credibility to projects and in the case of Tsavo provide reassurance to other investors, namely the American powerhouse Cinergy, who together with local partner IPS, took the majority share of the project. IFC also resisted any changes to renegotiating Tsavo's tariff.

Finally, the role of the regulator is noteworthy in Kenya's IPP experience. Inaugurated in 1998, after PPAs with Westmont and Iberafica had been signed, ERB was also noticeably absent from the first wave. The Board was, however, able to apply pressure on Iberafica as it negotiated its second PPA and can be credited with helping to reduce capacity charges. ERB oversaw Tsavo's development from start to finish and has also been intricately involved in OrPower4. It maintains an impor-

tant tariff setting function. Despite these achievements, ERB's institutional memory and capacity have been undermined by changes in personnel: in the six years of its operation, it has had five different chairmen (all appointed by the President) and numerous board changes.

While the existing IPPs appear to be here to stay (save Westmont), future development remains uncertain. Recent investments in the power sector have been supported by multilateral agencies in alliance with KenGen. KenGen's expected IPO of 30% of its shares may change the dynamics of the electricity market, but for now, it appears to be business as usual (pre-1990s). Multilateral and bilateral aid will, however, probably be insufficient to meet either the actual or latent power needs in Kenya, where only 15% of the population has access. Further private sector investment thus seems inevitable.³¹ Creating a sustainable balance between investment and development outcomes is Kenya's challenge.

Notes

- 1 This paper is based largely on interviews and correspondence, conducted between December 2004 and August 2005, with stakeholders involved in Kenya's IPP experience, from the following organizations: the Ministry of Energy, Kenya Power & Lighting Company Limited, the Electricity Regulatory Board, Kenya Generating Company Limited, Ormat, Tsavo Power Company, Industrial Promotion Services, Iberafrica, and the International Finance Corporation. Due to the sensitivity of the data, individual names are not cited. While every effort has been made to capture the diversity of views expressed by different stakeholders, the authors have also sought to ensure the accuracy of all statements by confirming individual statements with the larger pool of stakeholders.
- 2 The paper is part of a global IPP study, led by Stanford University's Program on Energy and Sustainable Development (PESD), which includes detailed reports on twelve different countries. The overarching purpose of the study is to evaluate the IPP experiences across a number of countries and projects and thereby glean best and better practices for the future. See <http://pesd.stanford.edu/docs/ipps.php> for information on the PESD IPP study.
- 3 In addition, three emergency power plants, owned and operated by private companies, Cummins, Deutz and Agrekko, totaling 105 MW, were rented for 1.5 years between 1999-2001 to plug the power shortage during the drought.
- 4 The Tsavo plant, which is owned and operated by Tsavo Power Company (TPC) is also commonly referred to as Kipevu II. For the sake of clarity, the authors will use 'Tsavo' throughout this paper.
- 5 The OrPower4 plant, which is owned and operated by Ormat, is also commonly referred to as Olkaria III. For the sake of clarity, the authors will use 'OrPower4' throughout this paper.
- 6 Of the 51%, approximately 10% is owned by the National Social Security Fund. The government's direct stake is therefore only about 40%. Private KPLC shares had been traded on the Nairobi Stock Exchange (NSE) as early as 1954 when the NSE was started. Prior to that, the firm was listed on the London Stock Exchange.
- 7 Cinergy-IPS, the majority shareholder in TPC is a joint venture between Cinergy Global Power Inc. and Industrial Promotion Services (Kenya) Ltd. As of May 2005, Duke Energy has bought Cinergy's stake.
- 8 It was estimated by the World Bank that without the emergency power facilities, losses to the economy would amount to US\$400 million or about 4% of GDP over the period of a nine-month span, with costs for emergency power facilities estimated at US\$110 million (World Bank, 2000).
- 9 KPLC did not, however, bear the financial burden for the three emergency power plants, as discussed in the next section.
- 10 Repeated attempts to obtain a copy of the Nyanja Report were made through a range of stakeholders including at the MoE, ERB, KPLC, KenGen and each of the IPPs, but the report proved unavailable for public consumption.
- 11 The 106 MW Turkwel hydro plant, which was tendered in the late 1980s, came on stream in 1991 and was funded principally by the French Development Agency, was considered to be more costly than warranted, causing a degree of donor wariness around further power development projects. Despite the controversy surrounding the Turkwel plant, according to selected personnel at the Ministry of Energy, the plant remains one of the country's most reliable power assets.
- 12 In a new development, as of September 2005, KPLC has invited bids from the private sector for a 80 MW thermal plant to be operational by 2007. No mention of this plant and/or plans for such a plant was made during stakeholder interviews and correspondence between December 2004 and August 2005.
- 13 As of late 2004, Westmont is no longer in operation.
- 14 Duke Energy has now purchased Cinergy.
- 15 When losses are higher than 15%, there is always a portion of the fuel cost that KPLC cannot recover.
- 16 In contrast, KenGen's profits for 2002 amounted to Ksh 2 280 397 (KenGen, 2003).
- 17 This figure (186.5 MW) does not include the emergency IPPs which totaled 105 MW of power but were only active from 2000 – 2001.
- 18 Actual capacity installed was 99 MW as Deutz delivered 24 MW instead of the 30 MW contracted.
- 19 The overall high retail cost of the emergency power plants was a function of the fuel costs and the capacity charge: the fuel cost was high due to inland transportation costs and the capacity charge was high due to the short duration of contracts as well as the negative investor perception of Kenya's power sector (The World Bank, 2001).
- 20 The 80 MW thermal plant noted in footnote 12 will indeed be a BOOT plant, as confirmed by KPLC.
- 21 As noted in footnote 2, this paper is part of a larger

study led by Stanford's PESD program, surveying the global IPP experience.

- 22 The 'electricity market' also figures prominently in investors' decision making, but for the purpose of this study, the 'electricity market' will be treated as a separate section rather than a component of the 'investment climate'.
- 23 The reason provided by OrPower4 for not engaging a local partner was because the project was too small.
- 24 Previous references to IPPs accounting for 11.2% of Kenya's power refer to installed capacity of all plants for 2004 and, therefore, do not contradict this statement which reflects actual production from Tsavo in 2002-2003 (as referenced in KPLC Annual Report 2003-2004).
- 25 Repeated inquiries to Westmont's offices in Kenya and Malaysia, from November 2004-February 2005, went unanswered.
- 26 Interviews with stakeholders revealed that Cinergy has been increasingly less involved in operations of the TPC. With Duke Energy buying Cinergy in May 2005, it remains to be seen what will be the future of this equity partnership.
- 27 The emergency IPP agreements were signed between the government and Deutz, Aggreko and Cummins, respectively, while all other PPAs were signed between KPLC and project developers. Furthermore, these agreements were not full-fledged PPAs.
- 28 Contrary to popular press reports, Iberafrica did not amortize its plant over the seven years of its first PPA due to this voluntary reduction to its capacity charge starting in 2002.
- 29 Although this study has not surveyed the public at large, it has followed general press accounts and parliamentary debates related to IPPs, which are seen as a proxy for the general public.
- 30 See footnote 12 related to new IPPs.
- 31 See footnote 12.

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