IPPs in Sub-Saharan Africa: determinants of success

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Key words: Independent power projects, IPP, power sector reform

This study analyses the outcomes of independent power projects (IPPs) across Sub-Saharan Africa. Approximately 20 such projects have taken root to date, concentrated mainly in 8 countries. A suite of country level and project level factors play a critical role in determining project success, chief among them: the manner in which planning, procurement and contracting are coherently linked, the role of development finance institutions along with the development origins of firms and credit enhancements.

This paper is an update and revision of an earlier paper published in Development Policy Review in 2008.
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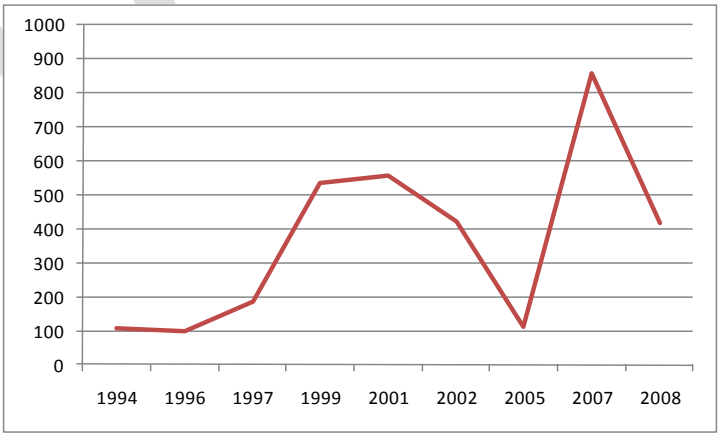
1 Introduction

At the beginning of the 1990s, virtually all major power generation throughout Africa was financed by public coffers, including concessionary loans from development finance institutions (DFIs). These publicly financed generation assets were considered one of the core elements in state-owned, vertically integrated power systems. In the early 1990s, however, a confluence of factors brought about a significant change. With the main drivers identified as insufficient public funds for new generation and decades of poor performance by state-run utilities, African countries began to adopt a new 'standard' model for their power systems, influenced by pioneering reformers in the US, the UK, Chile and Norway. Urged on by multilateral and bilateral development institutions, which largely withdrew from funding state-owned projects, a number of countries adopted plans to unbundle their power systems and introduce private participation and competition. Independent power projects (IPPs), namely, privately financed, greenfield generation, supported by non-recourse or limited recourse loans, with long-term power purchase agreements (PPA) with the state utility or another off-taker, became a priority within overall power sector reform (World Bank, 1993: 45, 51; World Bank and USAID, 1994: 1). IPPs were considered a quick and relatively easy solution to persistent supply constraints, and could also potentially serve to benchmark state-owned supply and gradually introduce competition (APEC Energy Working Group, 1997). IPPs could be undertaken before sector unbundling. An independent regulator was also not a prerequisite since the PPA laid down a form of regulation by contract.

In 1994, Côte d'Ivoire became one of the first African countries to attract a foreign-led IPP to sell power to the grid under long-term contracts with the state utility. Ghana, Kenya, Nigeria, Senegal, Tanzania and Uganda among others, also opened their doors to foreign and local investors.

Although IPPs were considered part of a larger power sector reform programme, the reforms were not far-reaching. In most cases, state utilities remained vertically integrated and maintained a dominant share of the generation market, with private power invited only on the margin of the sector. Policy frameworks and regulatory regimes, necessary to maintain a competitive environment, were limited. International competitive bids (ICBs) for those IPPs that were developed were often not conducted because of tight timeframes, resulting in limited competition for the market and, due to long-term PPAs, no competition in the market. These long-term PPAs and often government guarantees and security arrangements, such as escrows and liquidity facilities, exposed countries to significant exchange-rate risks. Finally, while Africa has seen private participation in greenfield electricity projects continue, private investment has been erratic, with 2007 representing the zenith, due largely to the financial close of one large project, Bujagali.

Figure 1: SSA IPPs, year of financial close (US$ million)



Several factors explain the recent trends in investment. Private-sector firms were deeply affected by the Asian and subsequent Latin American financial crises in the late 1990s. The Enron collapse and its aftershocks also featured prominently in influencing American and European-based firms to reduce risk exposure in emerging and developing-country markets and refocus on core activities at home. The financial crisis of 2008/9 has also had its toll. Furthermore, DFIs began to reconsider their position of restricted infrastructure investment, which had predominated throughout the 1990s. As concessionary funding became available again, many countries opted for a hybrid solution--part-public, part-private. Kenya represents among the clearest examples as will be highlighted later, with KenGen, the state-owned generator, building alongside IPPs, with support from DFIs.

Despite this revival of concessionary lending, investments are insufficient to address Africa's power needs, with only 25 percent of the population currently with electricity access, and poor supply the rule, not the exception. The cost of meeting Africa's power sector needs is estimated at $40.8 billion a year, equivalent to 6.35 percent of Africa's GDP. Approximately two thirds of the total spending need is capital investment ($26.7 billion a year); the remainder is operations and maintenance (O&M). Current spending aimed at addressing power infrastructure needs adds up to an estimated $11.6 billion. Approximately 80 percent of existing spending is domestically sourced from taxes or user charges. The rest is split among Official Development Assistance (ODA) financing (6 percent of total), non Organisation for Economic Co-operation and Development (OECD) funding (9 percent of total) and private sector investment (4 percent of total).

Tackling existing utility inefficiencies, which include system losses, under-pricing, under-collection of revenue and over-staffing would make an additional $8.24 billion available, but a funding gap of $20.93 billion would still remain (Eberhard and Shkaratan, 2010).

Closing Africa's power infrastructure funding gap inevitably requires undertaking reforms to reduce or eliminate system inefficiencies. This will help existing resources to go farther and create a more attractive investment climate for external and private finance, which still has the potential to grow. With the original drivers for market reform still present, private-sector involvement appears inevitable in the future.

This article seeks to evaluate IPPs in Africa by focusing on development and investment outcomes, namely, the extent to which reliable and affordable power has been provided for the host country, and satisfactory returns on investments and new investment opportunities have been achieved. Case studies of eight Sub-Saharan African countries (Côte d'Ivoire, Ghana, Kenya, Nigeria, Senegal, Tanzania, Togo and Uganda), which have some of the most extensive experience with IPPs, provide the empirical data for this analysis. At its core is a discussion of how the balancing of development and investment outcomes actually helps improve the sustainability of projects for public and private stakeholders alike. Contributing elements to success are also identified as the building blocks for more sustainable investments.

2 IPPs in Africa: an overview

Approximately 20 grid-connected IPPs, each in excess of 40 MW, with long-term PPAs with the largely state-run utilities, have been developed in Sub-Saharan Africa to date. In total, about 4GW of IPP capacity has been added. With few exceptions, they represent a small fraction of total generation capacity and have mostly complemented incumbent state-owned utilities.

Nevertheless, IPPs have been an important source of new investment in the power sector in a number of African countries; consider for instance Togo, in which Centrale thermique de Lome, the country's first IPP, will triple the country's installed capacity. The projects covered in this article account for the majority of installed IPP capacity and investment in Sub-Saharan Africa.

Table 1: African IPP sample, general project specifications

Country/ Project	Size (MW)	Cost (US$ million)	Fuel/cycle	Contract type	Contract Yrs	Project tender -COD
EAST AFRICA						
Kenya						
Westmont	46	65	Kerosene/gas condensate/gas Turbine (barge-mounted)	BOO	7	1996-1997
Iberafrica	109[1]	35	HFO/medium speed diesel engine	BOO	7, 15	1996-1997
OrPower4	48	105[2]	Geothermal	BOO	20	1996-2000, 2009
Tsavo	\75	85	HFO/medium speed diesel engine	BOO	20	1995-2001
Rabai	90	155	HFO	BO0T	20	2006-2009
Country/ Project	**Size (MW)**	**Cost (US$ million)**	**Fuel/cycle**	**Contract type**	**Contract Yrs**	**Tender -COD**
Tanzania						
IPTL	100	120	HFO/medium speed diesel engine	BOO	20	1997-1998
Songas	180	316	Natgas/open cycle	BOO	20	1994—2004
Uganda						
Namanve	50	74	HFO	BOOT	6	-2008
Bujagali	250	860	Hydro	BOT	30	2005-[3]
WEST AFRICA						

[1] This capacity figure include the investment in the 2009 expansion, however, associated investment is not yet available.

[2] US$105 includes only the loan portion for the 35MW part of the plant (Ormat, per com, 2010).

[3] The first phase of Bujagali's conceptualization spanning the mid 1990s until 2003 and involving AES, is not covered in this article. It should be noted that the project did not reach financial close during this time. Authors report only on the project from its second phase, starting in 2005.

Cote d'Ivoire						
CIPREL	210	105.6[4]	Natgas/open cycle	BOOT	19	1993-1995
Azito	288[5]	233	Natgas/open cycle	BOOT	24	1996-2000
Ghana						
Takoradi II	220[6]	110	Light crude /single cycle	BOOT	25	1998-2000
Sunon Asogli	200	NA	Combustion engine	BOO	20	2007-
Bui hydro[7]	400	622	Hydro	BOO	-	2005-
Nigeria						
AES Barge	270	240	Natgas/open cycle (barge-mounted)	BOO	20 (2 parts)	1999-2001
Okpai	450	462	Natgas/combined cycle	BOO	20	2001-2005
Afam VI	630	-	Natgas/combined cycle	BOO	20	2000-2007
Aba Integrated	140	385	Natgas/open-cycle	BOO	20/15	2005-
Senegal						
GTi Dakar	52	65	Diesel/Nafta	BOOT	15	1996-1999
Kounoune I	68	110	HFO	BOO	15	2003-2008
Togo						
Centrale thermique de Lome	100	200	Triple fuel (natgas/HFO/diesel)	BOOT	25	-2010

[4] Investment cost €87.8m or 57.6 billion CFA, with the average 1994 conversion of US$ to CFA, 545.100.

[5] The initial project concept included specifications to raise capacity to 420 MW.

[6] The initial project concept included specifications to add a second phase of 110 MW and convert to combined cycle, however, lack of funding has limited the completion of this phase.

[7] The Bui hydro project was initiated in the 1960s but aborted after the coup in 1966. The project was reconsidered several times in the decades that followed. In 2005, the Government of Ghana signed Memorandum of Understanding with the Chinese firm Sino Hydro, and the plant is expected online in 2012.

3. Understanding the experience of IPP investments in Africa

What has been the experience of IPPs in Sub Saharan Africa? The majority of projects have delivered and their contracts have largely been upheld (namely CIPREL and Azito in Cote d'Ivoire, Takoradi II in Ghana, Iberafrica, Tsavo, OrPower4 and Rabai in Kenya, Afam VI and Aba Integrated in Nigeria, and Namanve in Uganda). The contracts of the two Senegalese projects (GTi Dakar and Kounoune I) have largely remained intact, although there are reports of changes in fuel supply arrangements. A number of further IPPs have reached financial closure and are under construction (Bui in Ghana, Bujagali in Uganda and Centrale thermique de Lome in Togo). Kenya is in the process of negotiating three more IPPs after an international competitive tender. There have, however, been some high profile mishaps which may have prejudiced the record in SSA. Two projects are presently in arbitration (AES Barge in Nigeria and IPTL in Tanzania). The costs of another IPP in Tanzania (Songas) escalated as a result of the unplanned, and later disputed, contracting of IPTL; its capacity charges were later reduced after government agreed to buy down the accumulated AFUDC costs. A dispute over escalating investment costs also marked the Okpai project in Nigeria. Changes may be noted in the contracts of one Kenyan plant (OrPower4, which reduced its tariff for the second phase of the plant). One project (Westmont in Kenya) had an initial seven year contract which was not renewed. The other early IPP in Kenya (IberAfrica) renewed its contract, albeit with much lower capacity charges, and has recently doubled its capacity. Post contract-changes, projects have largely gone on to make a significant contribution to the country's generation mix (the exceptions being Westmont, which ceased operation, and IPTL, which has operated intermittently during arbitration proceedings). Another high profile failure was the non-transparent procurement of the Richmond/Dowans plant in Tanzania which, after the levelling of corruption charges, has not been allowed to operate. Furthermore, there is evidence of stalled projects in the case of Takoradi II's second phase as well as Sunon Asogli in Ghana, which at the time of writing this paper had no gas supply (although efforts to rectify the latter are underway). What is different about those projects that have seen no change to date? To what extent may the development and investment outcomes be perceived to be in or out of balance? What are the contributing elements to success in each of these projects?

3.1 Building up contributing elements to success, at country level

Favourable investment climate

There are no investment grade ratings for any of the countries covered in the sample, in sub-Saharan Africa. Of the five countries that have received a speculative rating (Ghana, Kenya, Nigeria, Uganda, Senegal), four of these ratings (Kenya, Nigeria, Senegal and Uganda) were received after the first IPP deals were signed, with Kenya's investment climate defined, at the time, by its aid embargo in the mid-1990s. Tanzania is also worth mentioning in this context. Throughout the 1990s, all export credit agencies were off-cover in Tanzania; no foreign commercial banks were willing to lend, as there was no clean track record of commercial-loan repayment. Consequently, the possibility for a traditional project-financed IPP deal in this climate was limited. Nevertheless, as we have already noted, IPP projects were developed in challenging investment climates in a number of Sub-Saharan countries.

Contrast this scenario with IPP developments in North Africa, where there are three notable IPP success stories (in Egypt, Morocco and Tunisia) and in which countries have either had an investment grade rating or one notch below (Gratwick and Eberhard, 2008a). Credit enhancements and security arrangements have differed broadly between North and Sub-Saharan Africa but, interestingly, incentives offered to investors in IPPs were relatively similar across the pool of projects, with some variety with regard to tax breaks. For instance, nearly all projects appear to have benefited from both customs and VAT exemptions during construction, as well as full repatriation of profits. Currency conversion was also provided for virtually all of the projects. In terms of tax holidays, in East Africa, Tanzania provided a tax holiday of five years, but Kenya's tax holidays extended only until plant commissioning.

Although one would expect the investment incentives to increase with the perceived risk (with increased incentives offered in SSA), such a pattern is not apparent.

How did the perception of the investment climate impact on project development? Quite simply, with demand for IPPs outweighing supply, those countries with a better investment profile attracted more investors and ultimately were able to cement deals on terms more favourable to the host country. While not the only factor in influencing outcomes, the investment climate goes a long way in setting the stage for negotiations and more balanced contract terms and helps explain the initial imbalance in some of the SSA cases.

New policy frameworks and regulation

Although all eight countries in the sample have introduced legislation to allow for private generation, few have actually formulated and then realised a clear and coherent policy framework for procuring IPPs. Thus there is abundant evidence of tentative experimentation with private power that does not always lead to a sustained opening of the market for private investment. Furthermore, long-term PPAs have the potential to constrain wholesale competition in the future, although means to transition to wholesale competition with IPPs have also been identified (Woolf and Halpern, 2001). In addition, state-owned utilities are rarely exposed to market costs of capital, and direct comparisons of their costs with IPPs are often difficult to discern.

Nowhere in Africa is the standard reform model for power sector reform being adopted fully, namely, unbundling of generation, transmission and distribution, and introducing competition and private-sector participation at both the generation and distribution level (UNEP and UNECA, 2006: 67; Malgas et al., 2007a; Gratwick and Eberhard, 2008b). Most incumbent national utilities are state owned and in a dominant position. However, elements of the reform model have been adopted: for example, Kenya has unbundled generation from its national transmission and distribution utility; Uganda and Ghana (more recently) have unbundled generation, transmission and distribution, and Uganda and Cote d'Ivoire have introduced private concessions. The private sector has also invested in IPPs. There has been competition for the market, but not ongoing competition in the market in terms of customer choice. In effect, what have emerged across Africa (and in many other developing regions) are hybrid power markets. The incumbent state-owned utility continues to play a key role in the sector but because of inefficiencies and inadequate investment resources, IPPs are gradually being introduced. As we shall see later, these hybrid power markets give rise to new challenges which need explicit attention if private investment is to be accelerated.

All these countries have established independent regulators. In Kenya, the regulator, together with the adoption of ICB practices, has helped to reduce PPA charges radically (between the first set of IPPs negotiated and the second). A similar trend may be seen in Senegal, where the first IPP (GTi Dakar) was not overseen by the independent regulatory body and the second (Kounoune I) was, together with a more experienced Senelec, with benefits associated with the latter project (Regulatory Commission of Senegal, per com, 2010; IFC, per com, 2010b). Kenya's Energy Regulatory Commission (ERC) has also been instrumental in helping to set tariffs and manage the overall interface between private and public sectors. In Uganda, sponsors have noted the benefits of having the regulator involved from project inception, namely helping to increase overall transparency, especially in the case of the (complexity) of Bujagali. Staff from the Electricity Regulatory Authority (ERA) affirm that "ERA's presence has helped to focus minds on the requirements for setting up power supply projects so that investors coming in are clear of what is expected of them from the beginning hence align their bids to these requirements. As a result, we have increasing numbers of investors applying to set up IPP projects" (ERA, per com, 2010).

In Côte d'Ivoire, Ghana, Nigeria and Tanzania, however, regulatory agencies have come into force only after IPPs have been negotiated, and there has been little impact as of yet in terms of new investment. What has emerged as a general trend is that the mere presence of a regulator is not in and of itself a defining factor in attracting IPPs. An independent regulator may have positive, negative or no impact on outcomes. If, however, regulatory governance is transparent, fair and accountable, and if regulatory decisions are credible and predictable, there is greater potential

for positive outcomes for host country and investor alike. Evidence also points to the fact that effective regulatory oversight may lead to a reduction in the stated capital costs of projects for selectively bid projects, as well as improved efficiencies (Phadke, 2007: 10,25; Eberhard and Shkaratan, 2010).

A final policy and practice is worth noting in this context: in two of the eight sample countries (Nigeria and Tanzania) efforts have been made to exploit stranded gas as part of the IPP programme. In Nigeria, a reduction in gas flaring is central to the push for gas-fired power. In Tanzania, the IPP programme commercialised previously stranded (although not flared) gas via Songas and Mtwara (a small private concession in the south of the country). Both countries have seen a distinct set of challenges ; however, in general this larger policy has insulated projects from intense public scrutiny, with project sponsors and policy-makers alike able to point to the benefits of the commercialised gas and the reduction in fuel imports.

Behind many of these policies sit the development finance institutions, notably the World Bank, which has had a hand in nearly all power sector reform programmes in Africa. These institutions were particularly instrumental in advancing private-sector participation in generation. However, as many of those same institutions began reconsidering publicly-funded infrastructure investments at the end of the decade, countries have often followed with policies that reflect this movement – from state to market and back again, albeit with some changes to accommodate what has emerged as a more hybrid market, as will be discussed in greater detail below.

Linking planning, procurement and contracting

Intricately connected to sound policy frameworks are coherent power sector plans, which are linked to procurement and contracting. Ideally, the latter (planning, procurement and contracting) follow from the former (sound policy frameworks) and include a number of core components: setting a reliability standard for energy security; completion of detailed supply and demand forecasts; a least-cost plan with alternative scenarios; and clarifying how new generation production will be split between the private and public sectors as well as the requisite bidding and procurement processes for new builds. Among the most important aspects of coherent power sector planning is vesting planning and procurement in one empowered agency to ensure that implementation takes place with minimal mishaps (Eberhard and Malgas, 2010).

That is the ideal, but the reality often takes on a different shape. As one stakeholder at Ghana's Public Utilities Regulatory Commission (PURC) notes about the recent past, "A crisis arises, and everybody panics; anybody who comes in [to propose generation] is listened to," (PURC, per com, 2010). The sample evaluated here has had several noteworthy planning mishaps, which subsequently impact procurement and contracting. In evidence are examples of demand and supply not being accurately forecast due partly to extended droughts, which in turn necessitated fast-tracking IPPs, i.e. plants were sped through to meet immediate power shortages. The first two plants in Kenya (Westmont and Iberafrica), the first plant in Nigeria (AES Barge) and Ghana's IPP were negotiated amidst drought conditions. Generally, the speed was at a cost. Although both Westmont and Iberafrica came on line within eleven months, they were later the source of scrutiny and investigation (due to un-transparent bidding practices and what were perceived as unnecessarily expensive charges). Furthermore, Westmont did not secure a second PPA, due to disagreement over a tariff, with public stakeholders unwilling to make similar concessions a second time. In the case of Nigeria, although fast-tracked, the AES Barge took nearly two years to come on line due to a renegotiation of the PPA.

An inability to estimate demand and supply accurately as well as set a clear reliability standard has also necessitated several cases of emergency power where units have been leased for one to two years with the purpose of plugging a short-term crisis. In 2009, approximately 750 MW of emergency power was in operation in SSA (Foster and Briceno-Garmendia, 2010). In all three of the East African countries in this sample as well as Ghana, the governments have ordered units to address drought and system collapse. Kenya harnessed 100 MW of emergency power in 1999-2001 and again in 2006 (supplied by Aggreko, Cummins and Deutz in the first instance and Aggreko

alone in the second). In 2007, Aggreko's contract was extended for an additional two years, and in 2009 Aggreko was selected to provide a further 140 MW for a total of 250MW of emergency power. Emergency power has been turned to repeatedly in Tanzania and Uganda also. In Ghana, emergency power was instrumental in reducing the impact of the 1998 drought, but with drought conditions reversing, the state failed to honour its contracts with SIIF Accra, which, as of 2007, seven years later, remains an unresolved conflict. Costs for this emergency power, at approximately 30-40 US cents/kWh, are high; however, they are still less than the cost of no power (IFC, per com, 2005). Tanzania has estimated that it has saved around US$1.00 for every kWh of outage averted (or about five to ten times the ordinary cost of generating electricity).

In Tanzania, the speeding through of one plant (IPTL) has resulted in perhaps the highest-profile IPP story on the continent to date. In this project, critical planning elements are missing, namely, a clear reliability standard, an accurate demand and supply forecast, a detailed plan for privately powered and publicly powered generation, and most importantly timely initiation of procurement and effective conclusion of contracts.

The Songo Songo gas-to-electricity project was in the Power System Master Plan, initially slated to come online within six months. However, the project was slow to materialise, given its technical and financial complexity. With deadlines passing and power cuts persisting, it is alleged that other ministries, affected by the power cuts, started second guessing whether the Tanzania Electric Supply Company Limited (TANESCO), the state utility, and the Ministry of Energy and Minerals, following the World Bank procurement procedures and relying on concessionary loans, would be able to deliver the project on time to address the shortages. As noted previously, the cost of unserved electricity to the economy was high and therefore Tanzania paid dearly for no power. Thus, the backdrop to the IPTL agreement appears to have been a failure to deliver on the Master Plan and hefty associated costs for many Tanzanians facing loss of services, TANESCO facing loss of revenue, and the Tanzanian economy facing loss of productivity, together with a clear interest in collaborating with Malaysian investors in the context of South-South partnerships.

The impact of this planning mishap was multi-fold: IPTL, which was negotiated quickly, behind closed doors, announced its total investment costs as US$150 m. (US$163 m. including fuel conversion), which the government and the World Bank would later argue was inflated by 40 percent. This argument would in turn lead to a lengthy arbitration process spanning three years. During the time that IPTL was being disputed, the Songo Songo gas-to-electricity project would be put on hold, mainly through pressure from the World Bank, its largest donor, due to alleged corruption in the sector. Although the arbitration would ultimately lead to IPTL's investment costs being reduced to US$127 m., the cost was still above and beyond the price that the government sought to pay. Furthermore, due to the delays, Songo Songo accumulated US$100 m. in interest charges on owner's equity, i.e. which the sponsor was owed by TANESCO. Additional costs to the state include the emergency power that was required due to both IPPs being unavailable until 2002 and 2004, respectively, as well as inflated costs associated with the Richmond/Dowans emergency plant, procured via a negotiated deal in 2006 for a period of two years, and which, like IPTL, has subsequently been the subject of further controversy and legal disputes.

Although it is easy in hindsight to accuse stakeholders of acting imprudently in the face of emergencies, the actual conditions of load-shedding and shortages appear to have provided few alternatives. The solution appears to lie in: taking steps to improve the investment climate, drawing up and implementing clear policy frameworks, (namely, spelling out where and how private power fits into a single-buyer model), building contingencies into the planning process, vesting planning in one agency, and conducting timely and open bidding but under less cumbersome bidding procedures.

Considerable attention has been paid to the importance of international competitive over selective bidding practices. Two studies have evaluated the relationship, demonstrating that, while there is evidence for ICBs leading to up to a 60 percent reduction in the stated capital cost of plants, there is also evidence for selective bidding proving effective

in certain instances, provided there is regulatory scrutiny (Deloitte Touche Tohmatsu Emerging Markets Ltd. and Advanced Engineering Associates International, 2003; Phadke, 2007).

ICBs are known to have been conducted for 9 of the sample of 21 IPPs. In the East African group, six projects (OrPower4, Tsavo, Rabai, Songas, Namanve and Bujagali) conformed with such bidding practices. In West Africa, ICBs were conducted for three of the projects (Azito, GTi Dakar and Kounoune I).

In terms of gleaning meaning from ICBs versus non-ICBs (which for this sample includes projects that were selectively bid and those that were unsolicited/directly negotiated), of the projects that have faced renegotiation, four were not bid via an ICB (IPTL, Iberafrica, AES Barge and Okpai), with the two exceptions being Songas and OrPower4. The absence of regulatory scrutiny is also noteworthy in each of these four projects. Furthermore, Westmont, which was selectively bid, quit the country after its first seven-year PPA expired. The other non-ICB projects have also, with the exception of CIPREL, encountered some difficulty or another, which has led to a change in how the project is being developed. For example, Ghana's Takoradi II has not been able to raise the finance for the second phase of the plant. Although reasons for these stumbling blocks may be traced well beyond the presence or absence of an ICB, the correlation is nonetheless revealing.

Furthermore, it should be noted that the success of the ICB process is intricately linked to the number of bids received, with more bidding driving down prices. For instance, it is known that the number of bids submitted to ICBs in North Africa was generally double to triple those submitted to ICBs in East and West Africa – with only three bidders in Kenya's Tsavo plant and two in the OrPower4 and Songas plants. All three projects have since been pressured to lower tariffs, as discussed repeatedly. In addition, the time and associated cost required to complete an international competitive bid should not be underestimated, with drought-related energy crises often cited as the reason why ICBs have been passed over. Consider for example, Togo's Centrale thermique de Lome, where the drought conditions of 2006 prompted a move to discontinue a contract with Electro Togo to manage a ROT of the plant. Rather than launching an ICB, however, the government chose to negotiate directly with an existing player, Contour Global, who had already been in discussions with the utility. Time and project familiarity proved more important than complying with international bidding practices, which risked extending the project development timeline (Ministry of Energy of Togo, per com, 2010).

Just as alternatives are being considered for strictly independent regulation, including contracting out, to match the institutional and human-resource capacity in a country, the SSA examples here point to the need for more efficient bidding processes that, while focusing on transparency and oversight, also expedite timely outcomes– all much easier said than done, but not infeasible for host countries to adopt and thereby move one step closer to balancing development and investment outcomes.

The question arises: why do these planning and contracting mishaps occur? In our view the answer lies in the changing nature of power markets across Africa and other developing regions. Previously, the national state-owned utility had sole responsibility for planning and building new generation capacity. But as power markets have been opened to private sector participation, it is not always clear who has responsibility for maintaining security of supply. Often the planning function is shifted to the Energy Ministry which does not have the capacity the capacity, resources or experience to undertake detailed power sector planning. The task is often contracted out to consultants who produce a Master Plan which quickly becomes out of date as global equipment and fuel costs, and other key parameters, change (Eberhard and Malgas, 2010). It is not only in planning where the absence of poor governance and institutional capacity is evident. There are no clear criteria for allocating new build opportunities to either the incumbent state-owned utility or to the private sector. Sometimes it is not clear whether plans are merely indicative, whether unsolicited proposals may be considered, or whether plans have legal force in determining which plants the regulator may licence or not. All too often, plans do not translate into timely initiation of competitive bid processes for new plant. And there is often insufficient capacity to negotiate with winning bidders or to conclude sustainable contracts. Transaction advisers may be appointed, but often there is little continuity and the overall policy

framework is lacking that defines which security packages or credit enhancement measures might be offered by government. Hybrid power markets give rise to these new challenges and explicit policies, governance and institutional arrangements need to be developed to assign responsibility for planning, procurement and contracting of new power generation capacity. Effective linkages between these three functions need also to be established.

Kenya, despite its earlier planning deficiencies and forced reliance on emergency rental power, more recently provides an interesting example where progress is being made in dealing with these planning, procurement and contracting challenges. The electricity law assigns responsibility to the Energy Regulatory Commission for electricity planning. Recognising that it does not have the internal capacity, resources or planning tools to develop detailed and up-to-date electricity plans, the ERC has delegated this function to the Kenya Power and Light Company (KPLC), but under the guidance of a government committee which ERC chairs. KPLC was unbundled in 1997 from generation (which is now in KenGen) and so has a neutral stance between the state utility, KenGen, and private IPPs. The energy ministry allocates new build opportunities to either KenGen or to a competitive bidding process for IPPs. KPLC has also been assigned responsibility for managing the procurement and contracting process for IPPs. Initially it did this with transaction advisors but now has largely built up this capability internally. Bid documentation and PPAs have largely been standardised and private project sponsors now have a clear understanding of how the process of procuring new power works in Kenya. As described by one project sponsor in Kenya, commenting in May 2010, "They have an IPP structure that is working. They have a track record. They can structure new projects based on experience gained from previous projects. And they have a very capable set of teams working in KPLC, the Ministry of Energy/Finance and KenGen. They understand project finance and are not surprised when a developer requests a comfort letter, as one example." The fruits of this approach are evident. Kenya is about to add three new IPPs to its existing five – maintaining its lead position in IPP investments in SSA.

One further, related issue arises in hybrid power markets: will the dispatch of state-owned generators and IPPs be transparent and fair. The nature of the contracts between the System Operator and the generators will impact on this issue, as will the Grid-Code and degree of regulatory oversight. This is another issue which requires explicit attention in terms of appropriate policies, governance, and institutional and contracting arrangements.

Abundant low-cost fuel and secure fuel contracts

The availability of competitively priced fuel supplies for IPPs has also emerged as a key factor in how IPPs are perceived and ultimately whether there is public appetite for more such projects, in large part because fuel is generally a pass-through cost to the utility and in many cases to the final consumer as well. Thus, if the IPP uses a fuel different from the incumbent fuel, and if that fuel is more expensive, there is greater potential for stress on the project.

In a number of countries (for example, Ghana, Kenya, Senegal, Tanzania and Togo), at the inception of IPPs, low-priced hydropower was the dominant fuel source. In these countries, IPPs were thermal powered, using a combination of imported fuel oil and domestically procured natural gas. IPPs have helped the countries to achieve greater fuel diversification; however, when the costs of IPPs (other than those running on domestically procured natural gas, namely Songas) were compared with state-owned, generally amortised hydropower, the new privately owned generation was seen to be largely more expensive, due partly to the energy/fuel charge. Furthermore, these countries witnessed a series of debilitating droughts over the course of the 1990s. Drought also wreaked havoc throughout the East African region between 2002 and 2007 and again in 2009. During this time, the existing hydropower infrastructure proved insufficient, and thermal, provided almost entirely by IPPs, was increasingly integrated into the fuel supply mix (from 10 percent to 60 percent in Tanzania), forcing up the price of power. Although more thermal power may be required, the public perception is that IPPs drive prices up, rather than a number of factors, including drought, which means that gaining public support for such projects is all the more challenging.

OrPower4, Kenya's geothermal IPP, deserves special mention in this context, of hydro-dominant systems, which have diversified with largely imported fuel oil. "At a price of US $29 per barrel of petroleum crude oil, this 48 MW geothermal plant is cheaper to operate than a heavy fuel oil fired plant. This means that at the current oil prices still above US$40 per barrel, OrPower 4 is providing cheaper electricity to the national grid than any existing oil fired plants in Kenya," (Ormat, 2009).

Contrast this story with Nigeria. Nigeria has relied entirely on domestically procured natural gas, and gas is the incumbent fuel. Until recently, although a series of issues affected project outcomes, most notably the investment climate and bidding procedures, fuel had not been an issue; however, civil unrest in the Niger Delta led to a disruption in the fuel supply in 2007-2009, albeit with improved conditions as of 2010.

At the beginning of this section, the claim was made that when IPPs use fuel that is either cheaper than and/or the same price as the incumbent fuel, they have a greater chance of success, as has been seen in several North African IPPs. There are few IPPs in SSA with secure, low cost fuel sources. There are, however, several noteworthy exceptions. In Tanzania, the natural gas from the Songo Songo field, which was dedicated to supplying the Songas plant and later to fuel IPTL, is cheaper than the imported fuel oil currently powering IPTL. However, disputes continue and IPTL diesel units have yet to be converted to gas. Also worth mentioning in this context is Ghana's Sunon Asogli Power Plant, which is completed but awaits fuel. VRA, the state-owned generator, is a foundation customer for the West African Gas Pipeline (WAGP) and from which it has been receiving gas as of February 2010, but Shenzhen, the project sponsor, will only receive gas when the pipeline is pressurized and higher volumes of gas flow.

The issue then is not simply whether a country has abundant, low-cost fuel, but whether security of supply is guaranteed through fuel contracts well into the future (on average 20 years). Fuel must be abundant and low-cost, both now and later, for it to have a positive impact on outcomes.

These many country-level factors are summarised in Table 2.

CES	Details
Favourable investment climate	-Stable macro-economic policies -Legal system allows contracts to be enforced, laws to be upheld, arbitration -Good repayment record and investment grade rating -Requires less (costly) risk mitigation techniques to be employed which translate into lower cost of capital and hence lower project costs and more competitive prices - Potentially more than one investment opportunity
Clear policy Framework	-Policy framework enshrined in legislation -Framework clearly specifies market structure and roles and terms for private and public sector investments (generally for single buyer model, not, yet, wholesale competition in African context) -Reform-minded 'champions', concerned with long-run, lead and implement

	framework
Clear, consistent and fair regulatory oversight	-Oversight improves general performance of private and public sector assets -Transparent and predictable licensing and tariff framework improves investor confidence -Cost-reflective tariffs ensure revenue sufficiency -Consumers protected
Coherent power sector planning linked to procurement and contracting	-Energy security standard in place; planning roles and functions clarified -Power planning vested with lead, appropriate (skilled, resourced and empowered) agency -Power sector planning takes into consideration the hybrid market (public and private stakeholders and their respective real costs of capital) and fairly allocates new build opportunities among stakeholders -Planning has built-in contingencies to avoid emergency power plants or blackouts - Responsibility for procurement is clearly allocated, plans are linked to procurement and bids are initiated in time - Procurement process is transparent and competition ultimately drives down prices - Capacity is built to contract effectively
Abundant low cost fuel & secure contracts	-Cost-competitive with other fuels -Contract safeguards affordable and reliable fuel supply for duration of contract

3.2 Building up contributing elements to success, at project level

Who were the investors and what did they do to navigate the varying investment climates as well as the changing policy and planning frameworks, including fuel supply? Starting with an evaluation of equity arrangements, this section examines trends in investor behaviour, and how investors secured revenue to service debt and reward equity, particularly in the face of exogenous stresses.

Favourable equity arrangements

Did the presence of local equity shareholders make a difference in project outcomes? Were projects with such participation less likely to face pressure from host-country governments to change their contract terms? How did a firm's prior experience with a country play out in terms of the making and breaking of deals? What about the presence of firms with development origins such as Industrial Promotion Services (IPS), Globeleq and Aldwych

International as well as DFIs? Table 3 lists each of the projects, followed by the country origins of sponsors and their respective equity share, whether projects faced a change in contract terms and finally if there was turnover of the majority equity partner.

Foreign firms have been the dominant players in Sub-Saharan African IPPs, unlike in Malaysia and China where local IPPs abound (Woodhouse, 2005: 22-3, 91). This should not be surprising, given the limited capital available in countries across the sample; however, it is worth noting, and it does raise the issue of foreign-exchange exposure, treated in the next sub-section. There were only three projects in the pool where local partners were the major stakeholder, Nigeria's Okpai, Afam VI and Aba Integrated, as referenced above. However, in two of these cases, the majority stakeholder was either the national utility or the national petroleum company (NNPC). In Okpai and Afam VI, the power projects fall under the rubric of a state-led gas-flaring-reduction programme, in which oil companies, currently are being engaged in power projects.

Local participation has been cited as a possible means of reducing risk (Hoskote, 1995: 11; Woodhouse, 2005). A total of 10 of the 21 projects had local equity participation, namely, Sunon Asogli , Iberafrica, IPTL, Songas, Takoradi II, AES Barge, Okpai, Afam VI, Aba Integrated and Bujagali. To what extent did such local participation impact favourably on outcomes? Of the 10 projects, 6 have encountered some form of change to their contract. Furthermore, in four of these six projects, either the state utility or another government entity held an equity share, which would indicate that the mere existence of a local partner might not be critical in setting an original sustainable balance. In the renegotiating of terms, how might a local partner make a difference? Kenya's Westmont and Iberafrica were both negotiated at the same time under similar policy frameworks. They are the only two examples in the project pool where one had local participation (Iberafrica) and the other did not (Westmont). Iberafrica first voluntarily reduced its tariff and then went on to negotiate a second 15-year PPA, in contrast to Westmont, which quit after failing to come to an agreement on a second PPA. The presence of a local partner may have helped in creating a longer-term solution; however, with just one example, the evidence is not conclusive. Togo's Centrale thermique de Lome, due online in July 2010, may provide an important example going forward; in this project, 25 percent of project equity must be sold to locals within the first five years, which may prove to be a more sustainable method for balancing investment and development outcomes (Ministry of Energy of Togo, per com, 2010).

Table 3: Equity participation in IPPs

Project (country initial)	**Equity partners (country, % of equity held)**	**Change in contract terms**	**Equity turnover (#)**
Westmont (K)	Westmont (Malaysia, 100%) has sought to sell plant since 2004	-	-
Iberafrica (K)	Union Fenosa (Spain, 80%), KPLC Pension Fund (Kenya, 20%) since 1997	Y	0
OrPower4 (K)	Ormat (USA/Israel, 100%) since 1998	Y	0
Tsavo (K)	Cinergy (USA) & IPS (Int'l) jointly owned 49. 9%, Cinergy sold to Duke Energy (USA) in 2005, CDC/Globeleq (UK, 30%), Wartsila (Finland, 15%), IFC (Int'l, 5%) retain remaining shares since 2000	N	1

Rabai (K)	Aldywch-International (Netherlands, 34.%), BWSC (Danish, but owned by Mitsui of Japan, 25.5%), FMO (Netherlands, 20%), IFU (Danish bilateral lender, 20%)	N	0
IPTL (Ta)	Mechmar (Malaysia, 70%), VIP (Tanzania, 30% **in kind**), both have sought to sell shares	Y	-
Songas (Ta)	TransCanada sold majority shares to AES (USA) in 1999 and AES sold majority shares to Globeleq (UK) in 2003[8]	Y	2
Bujagali (Ug)	Sithe Global (USA, 58%), IPS-AKFED (32%), Government of Uganda (10%)	N	0
Namanve (Ug)	Jacobsen (Norway, 100%)	N	0
CIPREL (C)	SAUR International, with 88% (JV between French SAUR Group owned by Bouygues, 65% and Electricite de France (EDF), 35%) BOAD, (West African Bank for Development), PROPARCO, (the Investment and Promotions Company for Economic Cooperation, subsidiary of AFD), and IFC holding the remaining 12%; in 2005 all shares sold to Bouygues (France, 98%), except BOAD (2%)	N	1
Azito (C)	Cinergy (JV between Swiss ABB, 50% and Globeleq, 50%) holds 65.7% of shares, + CDC/Globeleq (11%), and IPS-AKFED (23%)	N	1
Takoradi II (G)	CMS (USA, 90%), VRA (Ghana, 10%), CMS sold shares to TAQA (UAE, 90%) in 2007	Y	1
Sunon Asogli (G)	Shenzhen (China), Togbe Afede XIV (Ghana/local strategic investor)	N	0
Bui hydro (G)	Sinohydro (China)	N	0
AES Barge (N)	Enron (USA, 100%) sold to AES (95%) and YFP (Nigeria, 5%) in 2000	Y	1
Okpai	Nigerian National Petroleum Corporation (Nigeria, 60%), Nigerian Agip Oil Company (Italy, 20%), and Phillips Oil	Y	0

[8] Due to complexity, turnover is detailed in this footnote: Ocelot (Canada), TransCanada (Canada), Tanzania Petroleum Development Corporation, TPDC (Tanzania), TANESCO (Tanzania), Tanzania Development Finance Company, TDFL (Tanzania, sponsored by EIB), IFC (multilateral), DEG (German), CDC (UK) were shareholders by 1996, with TransCanada the majority shareholder; IFC and DEG sold shares to CDC in 1997/8; TransCanada sold shares to AES (USA) in 1999; Ocelot/PanOcean sold shares to AES in 2001; AES sold majority shares to Globeleq (UK) and FMO (Holland) in 2003. *After the AES sale, equity shares and associated financial commitments (expressed in US$ million) in Songas were as follows: Globeleq: US$33.8 (56%); FMO: US$14.6 (24%); TDFL: US$4 (7%); CDC: US$3.6 (6%); TPDC: US$3 (5%) and TANESCO: US$1 (2%). This does not reflect the additional US$50 million that Globeleq committed for the expansion.*

(N)	Company (USA, 20%) maintained equity since 2001		
Afam VI (N)	Nigerian National Petroleum Corporation (Nigeria, 55%), Shell (UK/Netherlands, 30%), Elf (Total) (France, 10%), Agip (Italy, 5%)	N	0
Aba Integrated (N)	Geometric Power Limited (Nigeria)	N	0
GTi Dakar (Sn)	GE Capital Structured Finance Group (SFG) (USA), IFC	Y	0
Kounoune (Sn)	Mitsubishi (Japan), Matelec S.A.L (Lebanon)	Y	0
Centrale thermique de Lome (Tg)	Contour Global (USA, 100%)	N	0

Notes: N: no change in contract terms and/or in original project concept as laid down in PPA, Y: yes change in contract terms and/or original project concept.

Origins, experience and mandate of partners: Although globally IPP investments during the 1990s were led by a host of American and European investors who saw returns in their home markets diminishing, there was also a wave of investors originating from developing countries, particularly from Malaysia. In both Kenya and Tanzania, this article has profiled Malaysian firms committing to projects (including in one of the projects, Westmont, cited above, where the firm took neither foreign nor local partners). While it would be inaccurate to say that these firms overlooked the higher risk profiles of the African continent (and/or did not ultimately charge higher returns), there may have been a greater willingness to consider investments in the first place.

While the number of developing/emerging-country-based firms appears to be growing, three of the southern-based firms are trying to sell their shares (Mechmar and VIP in IPTL and Westmont). Thus, the home country of the firm does not mean that project equity is set for life, or that such a firm is best positioned to service debt and reward equity, since each of these sales appears to be motivated in part by an inability to do just those things.

A more revealing aspect than the nationality of the firm appears to be a firm's experience and mandate. Across the pool, examples pile up of firms being actively involved in the country prior to their IPP investment. Union Fenosa, the parent company of Iberafrica, had an existing relationship with Kenya through an information-technology contract. IPS, a major shareholder in Tsavo, Azito and Bujagali, had operated in Kenya since 1963, in Côte d'Ivoire since 1965. IPS, via the Aga Khan Foundation, has ties to the East African region dating as far back as the early 1900s. The Commonwealth Development Corporation (CDC), from which Globeleq was spun off, had a 50-year history in Tanzania. The Netherlands Development Company (FMO), which holds a majority share in Aldwych International, the main sponsor of Kenya's Rabai IPP, has been active in SSA since the 1960s. It may be argued that long-term relationships, with strong local management, appear to have contributed to the staying power of firms and often the rebalancing of contract terms, for certain projects.

The mandate of the firm also appears to play a central role in the investment decision as well as the terms of the deal. Until recently, the two firms that were increasing (rather than maintaining or reducing their stakes) were Globeleq and Industrial Promotion Services. Globeleq holds a 43 percent share in Côte d'Ivoire's Azito, 30 percent

equity in Kenya's Tsavo and 56 percent in Tanzania's Songas. IPS holds a 23 percent share in Azito, and together with Duke Energy, a 49.9 percent share in Tsavo. IPS is also leading development of Uganda's Bujagali project, and a 35 percent shareholder in equity. Although a smaller player than either Globeleq or IPS, Aldwych International, has also made significant inroads via Rabai in Kenya and is presently evaluating further expansion.

Although Globeleq, IPS and Aldwych are driven by commercial interests, these firms have emerged from agencies with a strong commitment to social and economic development. Globeleq remains wholly owned by Actis, which originated from the Commonwealth Development Corporation (CDC), and is now responsible to the private-sector promotion arm of the UK Department for International Development. The company's focus has changed somewhat in recent years, but the origins are key to its involvement (and continued interaction) in SSA.

"From 2002 to 2006, Globeleq acquired and developed a portfolio of approximately 2,500 MW of generation assets using equity capital. In 2007, Globeleq took advantage of very attractive market valuations and divested its assets in the Americas, Asia and North Africa, more than doubling the invested capital. Globeleq retained its brand, a pipeline of development projects and the SSA assets/investments which provided a platform for continuing business. Globeleq Generation Limited will develop, build and operate new power generation businesses in the emerging markets. In the short to medium term - due to market conditions resulting from the financial crisis, it is expected there will be attractive investment opportunities for Globeleq, with owners seeking to sell either operating or late stage greenfield development projects (Globeleq, per com, 2010b, italics added by authors).

IPS is the operating arm of the Aga Khan Fund for Economic Development (AKFED) in the industrial sector throughout Asia and Africa. Here, 'development' speaks perhaps louder than for any other firm, "IPS will only invest in projects with: a high developmental impact and a reasonable IRR -the IRR for Tsavo is approx 17-18%, for Bujagali, 19% which is considerably lower than typical IRRs in the region for these sorts of projects," (IPS, per com, 2010).

Aldwych International is an initiative of the Dutch FMO. While projects for these firms have to make commercial sense, they must also serve a clear developmental function for the country/community. It is this commitment that appears to be particularly helpful in the face of African risk.

Reviewing Aldwych International's experience in Rabai helps to illustrate this point. The firm has faced three different hurdles along the road to development and yet has stayed the course. Firstly, in the original tender, Simba, a Kenyan firm had the lowest bid; however, it was subsequently determined that Simba was incapable of developing Rabai. KPLC then awarded the project to Aldwych. In response, Simba brought a case to the Kenyan Public Appeals Board against KPLC. Simba lost its appeal but then appealed to the High Court. Eventually, Simba and KPLC settled out of court. Although Aldwych was not directly involved in the case, Simba's appeals caused a project delay of eight months (primarily due to the fact that lenders were unwilling to commit due to the controversy). The delay had the further effect of reducing Aldwych's projected IRR of Rabai by at least 1 percent. The second major hurdle faced by Aldwych was that in December 2007 (two months after the end of the action in the High Court) country-wide protests were sparked by the election results. Approx. 100,000 people were killed and hundreds of thousands wounded and displaced. This civil unrest further delayed financial close as lenders would not commit to a project in an environment where there were active allegations of political fraud. Thirdly, the global financial crisis struck in the 4th quarter of 2008, at the time when the project was just reaching financial close and also at a time when Aldwych was seeking to raise more capital (Aldwych International, per com, 2010a). Financial close did happen, and it should be added successfully, with the project picking up Project Finance International's Deal of the Year (in 2008), despite the setbacks it had encountered since the tender. Furthermore, none of the projects with involvement of such - firms with development origins, except Tanzania's Songas, has seen any changes in contract terms, which may signal a greater perceived balance from project inception as well as a better ability to withstand public pressure. Furthermore, in terms of the Songas change, although the buying down of the allowance for funds used during construction (AFUDC) of US$103 m. brought about a reduction in the capacity charge, the firm received full

payment upon the buy-down, and it therefore represents a different case from many of the contract changes cited above.

Meanwhile, the presence of DFIs persists in project equity. Five of the IPPs saw DFIs pick up equity shares. The International Finance Corporation (IFC) holds a 5 percent share in Tsavo's equity and also is a shareholder in GTi Dakar in Senegal. Until 2005, IFC also held, together with the West African Bank for Development (BOAD), the Investment and Promotions Company for Economic Co-operation (PROPARCO), a 12 percent share in CIPREL. IFC and the German Investment and Development Corporation (DEG) each had an approximately US$12 m. equity investment in Songas, with both organisations selling their shares after the IPTL dispute became known. FMO maintains a 24 percent share in Songas (excluding the expansion of 65 MW), as well as a 20 percent share in Rabai (apart from its shareholding in Aldywch). CDC, independent of Globeleq, also holds a 6 percent share in Songas (excluding the expansion). It should be reiterated here that none of these projects, save Songas, has seen any contract changes.

Equity turnover: Of the 46 original equity partners in the sample pool of 21 projects, 7 have exited from 5 different projects. This statistic, however, tells only part of the story. First, as previously indicated, three shareholders have been actively trying for several years to sell their assets (both shareholders in Tanzania's IPTL and Kenya's Westmont). In the case of IPTL, Mechmar, the lead shareholder, has indicated that the arbitration settlement ultimately hurt equity partners, which has motivated the sale. VIP, the minority shareholder, cites the following causes: oppression by the majority shareholder; fraud by Mechmar in inflating the IPTL capital cost; and failure by Mechmar to pay its equity contribution (i.e. the project was 100 percent debt-financed). There has been no resolution of this conflict, and no willing buyers. In the case of Westmont, the firm did not secure a second PPA, due to disagreement over tariffs, and has, since 2004, been seeking to sell the asset. Second, if one focuses exclusively on majority shareholders, four of the majority shareholders in the 21 projects have sold shares at least once and two have been actively seeking to do so for at least five years.

The repeated refrain from most sponsors is that the sale of assets is motivated primarily by changing circumstances in home markets and/or related to corporate strategy; that is, the sale has little to do with host-country actions and reactions and/or poor investment outcomes, namely, the ability to service debt adequately and reward equity.

How does this refrain square with the contract changes? The majority shareholders in two of the projects that saw contract changes exited after such a change (namely, CMS in Takoradi II and Enron in what is currently known as AES Barge). Furthermore, as noted above, Westmont has sought to sell the plant since it failed to renegotiate a second contract, and Mechmar has actively been seeking to sell its shares post-renegotiation.

While fewer than expected investment outcomes may be partially motivating sales, turnover does not in and of itself appear to be challenging the long-term sustainability of contracts, since in nearly all cases sellers have found willing buyers to take over the original or recently renegotiated PPAs. The two exceptions here are again the Westmont plant, where the first PPA has expired and which was shrouded in controversy, and IPTL, which has been embroiled in lawsuits, and it may therefore be understandable why the plants have not attracted buyers. One stakeholder went so far as to assert, '[equity turnover is a] healthy factor in a maturing market. It is a good sign when investors come and go – not a bad or threatening thing.' The return of the government as shareholder, as planned in the case of Tanzania's IPTL, would, however, signal that some markets might actually be less mature than expected.

What, in the end, have been among the most critical characteristics of equity arrangements that have led to project sustainability? Overarching characteristics appear to be firms' prior experience in a country, the presence of firms with development origins and development finance institutions.

Debt arrangements: global and local

With debt financing often covering more than 70 percent of total project costs, competitively-priced financing has emerged as a key factor in successful projects. How and where to get this low-cost financing is the challenge, but possible approaches in the African cases lie in DFI involvement, credit enhancements, and some flexibility in terms and conditions that may allow for possible refinancing. The goal for sustainability appears to be that the risk premium demanded by financiers or capped by the off-taker matches the actual country and project risks and is not inflated.

While there is no uniform pattern in the debt financing for the projects considered here, there is a series of trends for how investors handled costs as well as practices that may ultimately contribute to success. Important to note at the outset is that, although non-recourse project financing is the norm for privately financed electric power plants in developing regions, this sample of 21 projects saw several notable exceptions, including Nigeria's Okpai and Afam VI plant, which were 100 percent financed by the balance sheet of equity partners, together with the second phase of Songas, which, however, was largely refinanced via a World Bank loan in 2009 (Globeleq, per com, 2010a). Westmont, Iberafrica and OrPower4, until recently, were also all financed entirely with the balance sheets of their sponsors. For Westmont and Iberafrica, the reason cited for this arrangement was that insufficient time was available to arrange project finance as plants had to be brought on line within 11 months. For Orpower4, reasons are linked, by the sponsor, to the lack of a security package, which was not forthcoming until 2006.

DFIs and their impact on projects: With limited appetite for projects among many commercial banks, development finance institutions are conspicuous in providing credit to projects across the pool. Such entities participated in nearly every IPP, including significant participation on the part of the World Bank/IDA (CIPREL, Songas, Aba Integrated, Bujagali, Kounoune I), IFC (Azito, Tsavo, Aba Integrated, Bujagali, GTi Dakar), CDC (Tsavo, Azito), European Investment Bank (Songas, Aba Integrated), DEG (Tsavo, Azito, Rabai, OrPower4, Bujagali), FMO (Azito, Rabai, Bujagali), African Development Bank (Azito, Bujagali) and PROPARCO (Rabai, Kounoune I), Emerging Africa Infrastructure Fund (Rabai), European Financing Partners (Rabai) and KfW (Bujagali), AFD (Bujagali, Kounoune I). In addition, Centrale thermique de Lome, Contour Global's project in Togo has seen the involvement of the Overseas Private Investment Corporation of the United States (OPIC) via a US$147m. loan package.

Much of this involvement is related to the long history of DFI activity throughout Africa coupled with the real and perceived risks across the continent, which preclude private investors from filling the financing gap. The involvement is also linked, however, to the broader mandate of power sector reform. Nevertheless, it is noteworthy that African IPPs, which by their very definition imply private investment, had such significant public involvement.

Although projects with DFI funding tended to take longer to reach financial closure, sponsors did cite clear benefits; multilateral and bilateral development institutions helped maintain contracts and resist renegotiation in the face of external challenges such Kenya's droughts when developers were pressured to reduce tariffs. A particularly revealing contrast is in the two Kenyan plants, OrPower4 and Tsavo, negotiated under the same policy framework, including via ICBs. The former plant initially saw no multilateral involvement in either its equity or debt, whereas, for the latter, IFC arranged all the debt and took a 5 percent equity stake. Tsavo has since resisted pressures to reduce its tariffs by the Kenya Power and Light Company (KPLC) and the government, with the presence of a multilateral development institution cited as among the reasons. OrPower4, on the other hand, has ultimately reduced its tariff for the second phase of the plant. Tanzania's Songas project, for which the World Bank together with EIB financed all the project debt, also deserves special mention here. The project took almost a decade to reach financial closure, but the World Bank played an instrumental role, in, among other things, pressuring the IPTL arbitration, which ultimately led to what has been widely perceived as more balanced contract terms. In commenting on the hurdles faced during financial close, including civil unrest following the 2007 elections, a spokesperson at Aldwych also mentioned the following: "The fact that all lenders at the table were bilaterals also meant that they

could appreciate the level of political risk/instability and ultimately wait it out until a peaceful solution was brokered (Adlwych International, per com, 2010a).

Locally denominated finance: Locally denominated financing appears to be among the solutions for more sustainable foreign investment; however, capital markets in many African countries are insufficiently deep or liquid to provide such financing for all projects. Three exceptions in the project sample are Kounoune I of Senegal, Geometric of Nigeria and Namanve of Uganda. In Kounoune I, the project saw financing from both the West African Bank for Development (BOAD), based in Togo, as well as the Banking Company of West Africa (CBAO), a local Senegalese private bank. For Geometric, funding has been provided by Diamond Bank and Stanbic IBTC Bank Plc, both of Nigeria. For Uganda's Namanve project, financing has been provided by Standard Chartered Bank of the UK via Stanbic Bank of Uganda. What has yet to emerge is the likes of financing in Morocco's Tahaddart, a 384 MW CCGT. It negotiated a locally denominated PPA, due to the fact that all of its debt (€213 m.) was financed by local banks. This local financing was aided by a number of factors, including the state utility's prominent role in the plant (holding nearly 50 percent of total equity) as well as the fact that Morocco's commercial banks have a significant degree of state involvement. With or without state involvement, no other country in Africa has, as yet, managed to arrange this level and depth of local financing for IPPs.

The main drawback for IPPs without locally denominated finance may be seen when projects undergo the effects of macroeconomic shock and currency devaluation. Over the course of the last decade Ghana, Kenya and Tanzania saw serious creeping devaluation, with their currencies losing more than 100 percent, 200 percent and 400 percent of their value, respectively, over the 1990s, which has inevitably had an impact on capacity charges. There has been pressure to reduce such charges as well as to reconsider IPP development in each of these countries at different stages.

In closing, it is worth noting the experience of Bujagali, which saw an oversubscription of debt in 2007, with the debt portion amounting to US$670 m, which is unprecedented for SSA African IPPs (IPS, per com, 2010). At a total investment cost of US$860 m, Bujagali is quadruple the investment of the average of SSA IPPs, at approximately US$190 m. Much may be attributed to and learned from the way in which the project was structured, the development partners and the PRG (as will be discussed in the following sections).

Securing revenue: the PPA

All of the projects evaluated had a long-term power purchase agreement with the incumbent state-owned utility to ensure a market for the power produced and to secure revenue flows for debt and equity providers.

In addition to indicating who would buy the power, the PPAs detailed how much power capacity would be available as well as capacity and energy charges. How plants would be dispatched, fuel metering, interconnection, insurance, force majeure, transfer, termination, change of legal provisions, refinancing arrangements and dispute resolution were generally all clearly laid out as well. Nearly all of the contracts specified some form of international dispute resolution and a minimum availability.

Sponsors negotiated or were granted outright US dollar- PPAs, thereby reducing project sponsors' exposure to currency devaluation, which in certain cases was severe. How, then, did the PPAs fare over time? As mentioned at the outset, the bulk of projects in this sample have endured or are, having reached financial closure, on the road to being cornerstones of the power supply, and their contracts have largely been upheld (viz. CIPREL and Azito in Cote d'Ivoire, Bui in Ghana, Iberafrica, Tsavo and Rabi in Kenya, Afam VI and Aba Integrated in Nigeria, Centrale thermique de Lome in Togo, Bujagali and Namanve in Uganda).. Immediately below, we summarize some of the (few) contract changes that have occurred.

Costs in Kenya's first wave of IPPs were inflated in part due to the short duration of contracts (only 7 years). With Iberafrica facing ongoing pressure to reduce its tariff, coupled with an interest in negotiating another contract, the sponsor voluntarily reduced its capacity charge, enshrined in the PPA. Iberafrica's second and third PPAs are notably longer than its first (and with negotiations presided over by the Electricity Regulatory Commission, tariffs have been deemed significantly cheaper). Westmont did not negotiate a second contract after it failed to obtain the same terms, namely, capacity charges, spelled out in its first PPA. The changes in Kenya's OrPower4 and Tanzania's Songas projects have also been related in part to the final amount of the capacity charge (as originally spelled out in the PPA).

In terms of Nigeria's AES Barge, initially sponsored by Enron, the renegotiations of 1999-2000 brought about several changes in the PPA, including a change in the fuel specifications (from liquid fuel to natural gas), which led to a major reduction in the fuel charge for the off-taker. The present arbitration with AES Barge involves, among other things, reconsideration of the availability-deficiency payment as well as the tax exemption. In each of the cases reviewed here, it has been the original terms of the PPA that have in hindsight been viewed as unsustainable for the host country and therefore challenged. The case of Tanzania's IPTL is slightly different. Although the contract was considered initially unsustainable due to the added capacity of Songas, the IPTL arbitration was prompted by what was deemed a breach in the PPA, namely, the project sponsors' substitution of medium for slow speed engines, without passing on the capital cost-savings to the utility, as per the PPA.

The PPA has been a central document; and in certain cases, as noted above, it has been the focal point of the discussions when deals have been considered out of balance, but the overriding take-away is that deals and contracts have endured, over time.

Credit enhancements and security arrangements

The underlying credit risk of the projects was largely dealt with via a suite of credit enhancements, namely guarantees, insurance and cash (which took the form of escrow accounts, liquidity facilities and letters of credit of varying amounts and tenures). For instance, the Tsavo plant in Kenya has an escrow account equivalent to one month's capacity charge and a stand-by letter of credit from KPLC, which covers three months billing of approximately US$12 m. It is known that a minimum of 12 of the 21 projects had some form of cash security arrangement, with typical terms being between one and four months capacity charge in reserve.

Not surprisingly, the number of credit enhancements appears to diminish as risk profiles improve. However, there are noticeable exceptions such as the first wave of plants in Kenya (Westmont and Iberafrica), where the risk appears to be entirely reflected in the (higher) capacity payments negotiated; however, corruption was also alleged in both these plants. Thus, the 'security arrangement' may lie not in a letter of credit, but in an informal agreement among sponsors.

Of the many different credit enhancements, it is sovereign guarantees that have been most commonly employed. Such guarantees are known to be extended for at least 9 of the 21 projects in the pool: Tanzania's IPTL, Nigeria's AES Barge, Côte d'Ivoire's Azito, Ghana's Takoradi II (phase I), both GTi Dakar and Kounoune I in Senegal, Togo's Centrale thermique de Lome, and Uganda's Bujagali and Namanve. Several of the projects without guarantees (Tsavo and Rabai) were, however, given added assurances by the government, in the form of comfort or support letters, through which political risk is assumed. Furthermore, in the case of the Okpai plant in Nigeria, security in the form of the state-owned oil company's revenues was extended. Thus, if the off-taker defaults, NNPC, among the most liquid firms in the country, is liable.

World Bank partial risk guarantees are seen in two of the projects: Azito and Bujagali. In these instances, the partial risk guarantee (PRG) covers all debt of the commercial banks, i.e. if the project company defaults then the PRG (backed by IDA) pays the commercial lenders; IDA then claims repayment from government (World Bank, 1997;

1999; IFC, per com, 2010a). It is only after there is a breach in the sovereign guarantee that the PRG is triggered (Sinclair, 2007: 36).

In addition, other measures were engaged. Both AES Barge and Centrale thermique de Lome have political risk insurance provided by OPIC. OrPower4, Kounoune I and Bujagali have MIGA guarantees, largely relating to currency inconvertibility, expropriation, and political violence.

What, then, is the relationship between such credit enhancements and the sustainability of projects? To what extent have they been effective in attracting and/or assuaging lenders? And to what degree have such mechanisms helped keep projects intact or led to a swift resolution, in the face of external pressures?

There is evidence for Azito's and Bujagali's partial risk guarantee being among the keys to commercial lending (World Bank, 1999). In the case of Bujagali, the PRG was instrumental in motivating and solidifying the involvement of four commercial banks, which: completed the funding requirement (together contributing US$115 million); matched the maturities of other (IFI) lenders of 16 years and provided very competitive pricing. Some have likened the PRG to a hammer effect, with the World Bank guaranteeing what the government has already guaranteed and thus making the government's commitment two-fold. However it should be noted that this instrument is not necessarily appropriate for all SSA IPPs since PRGs are typically used in situations where the project is large, the country is in an early stage of reform and when there are commercial lenders. Furthermore, the government of the country has to request the PRG; thus, it must be a significant project in the eyes of both the government and the World Bank, which explains why this instrument was used for Azito and Bujagali (Rudo, per com, 2010a). That said, in projects without PRGs but with DFI involvement, the security arrangements and credit enhancements are similar, with the DFIs generally accepting the political risks (such as Azito and Songas)

The lack of sovereign guarantees has been cited as the main obstacle to developing the second phase of Ghana's Takoradi II. In Kenya, the only country in the SSA pool not to extend any sovereign guarantees since it first introduced IPPs in 1996, stakeholders in Tsavo indicated that, without such a guarantee, the presence of the IFC became critical, both to help arrange debt and share in equity.

Other credit enhancements have been used in abundance in Kenya, including a suite of escrow facilities, which have largely cash-strapped KPLC. Government guarantees were recently tabled again, and debated in cabinet, however it looks like government will provide only letters of support going forward and retain its no-guarantee policy. Although, project sponsors as well as KPLC cite the absence of sovereign guarantees as hampering the ability to raise private finance, ERC's rejoinder to this charge is that IPPs have been introduced to help commercialise the sector; government guarantees work against this goal, and MIGA and other risk insurers are available.

Why, though, is there an ongoing necessity for such credit enhancements if Kenya has five IPPs to its name, a proven track record of payment via KPLC and the promise of four additional IPPs in the near-term? While KPLC is creditworthy, it is still not an investment grade company (Aldwych International, per com, 2010b); "creditworthiness is in the eye of the beholder – and...subject to interpretation and the risk profile that a lender is willing to accept. They [KPLC] are not investment grade, so the rest is subject to looking at the details of their credit and their liquidity position - particularly vis a vis their short term obligations," (Rudo, per com, 2010b).

Finally, it is important to note that in no projects have the sovereign guarantees, political risk insurance (PRI) or PRGs been invoked, including in those projects which ultimately have faced a change in the contract (namely, AES Barge, IPTL, OrPower4 or Takoradi II). Recourse to international arbitration has only been made in the case of IPTL, with the arbitration serving to shave US$30 m. off the investment cost. In addition, there is evidence that a MIGA delegation was sent to ascertain the facts when, in the case of Kenya, OrPower4 was pressured by both the government and KPLC to reduce its tariff, but the guarantee was never officially invoked. Although pressure from KPLC continued after the MIGA visit, pressure from the government subsided.

In concluding, it may be helpful to reflect on the overall application of security arrangements and credit enhancements. Although there is some variation in the project sample, by and large the variation is limited, with the size of the project, the track record of the regulatory regime, including its stability and credibility, and the credit worthiness of the offtaker, being the main determinants. While there is resistance to government guarantees on the part of some country stakeholders, as noted above, project developers and multilaterals, chief among them the World Bank, maintain: "the first level of support has to come from the government"(World Bank, per com, 2010).

Furthermore, it is important to note that there has been very little evolution since the first set of IPPs, with all projects supported by a PPA, as described in the previous section, and the credit risk largely carried by a government guarantee. The PPA remains required where there is no developed power market, along with a government guarantee, where the off-taker is not credit worthy, which helps explain why these credit enhancements are seen in most Sub Sahara African IPPs (IFC, per com, 2010a; Rudo, per com, 2010a). Contrast this situation with other developing regions such as middle income countries of Latin America where the PRG and other credit enhancements and security arrangements are virtually absent due to the fact that power markets are in operation, and local lenders are "in the drivers seat and generally very comfortable with local developers and regulation" (World Bank, per com, 2010).

Positive technical performance

Virtually all IPPs in the sample have shown positive technical performance, with exceptions noted in the case of Nigeria's plants because of fuel supply, as well as more recently Kounoune I in Senegal (NERC, per com, 2010; IFC, per com, 2010(b). When asked generally about the most favourable IPP experience to date, one public stakeholder simply indicated: "their technical performance," (ERC, per com, 2010).

The performance of IPPs is generally superior to that of state-owned plants. An argument for extending WAGP gas to the Sunon Asogli Power Plant is presently being made in part due to the superior technical performance of Sunon to VRA (PURC, per com, 2010). The Ministry of Energy of Togo has indicated that Centrale thermique de Lome's technical performance is anticipated to be more efficient than the state-owned counterpart (per com, June 2010).

In terms of availability, in Kenya, between 2004 and 2006, IPPs had an average availability of approximately 95 percent versus KenGen's thermal plants, which averaged 60 percent. Furthermore, KenGen recently raised cash via a bond in the Kenyan Capital Markets to build a project similar to Rabai (100MW in Mombasa). This will allow KPLC, which will have a PPA with KenGen, to be able to compare the cost of the KenGen project with the costs of an IPP model, such as Rabai, which also has a PPA with KPLC (Aldwych International, per com, 2010a).

Strategic management and relationship building

Once 20-year contracts are in place, it would seem that the deal is set and the revenue secured, with clear provisions to ensure debt repayment and reward equity. There are, however, several other interrelated actions that deserve mention here. One involves relationship building, including via local partners (as previously discussed) and community social policies adopted by sponsors. Another relates to how sponsors handle the onset of stresses, including through capacity charges and refinancing.

In terms of social policies, numerous project sponsors have adopted outreach programmes to improve relations with local communities. For instance in Kenya, Tsavo power set up a US$1 m. community development fund for the duration of the 20-year PPA, from which grants of $50,000 each are disbursed each year to benefit environmental and social activities in Kenya's Coast Region. Iberafrica has a social responsibility programme, and IPTL also is an active donor to its immediate community. CMS's social responsibility involvement in Ghana (before it sold its

shares to TAQA in 2007) included providing scholarships for secondary and tertiary education as well as support for medical clinics and the construction of drainage systems. Bujagali also has a suite of social outreach programmes. Although the sums are not significant, these programmes, particularly when well advertised, have the potential to win allies and counter the stereotype of IPPs.

Another perhaps more significant action is how sponsors cope with stress, such as macroeconomic shock and associated currency devaluation or pressure from host governments which perceive costs to be too high. Although anecdotal, there is evidence of how strategic management helped put Kenya's Iberafrica back on track, in contrast to Westmont, where no such action is in evidence. Kenya's Iberafrica has dealt with two stresses: drought and alleged corruption. It is important to reiterate in this context that the project was also up for a contract renewal at the time when the following actions were undertaken. According to stakeholders at Iberafrica, the IPP voluntarily reduced its capacity charge at a time when KPLC was operating in the red, due in part to a drought-related recession, to show its support for the country and signal its interest in a second contract (the first lasted seven years). Iberafrica later secured a second contract, albeit after even further reductions were negotiated and passed by the electricity regulator.

For Rabai, in December 2007, following the elections, the project sponsors witnessed country-wide protests, which largely stalled financial closure. Sponsors chose, however, to continue work on the project, including on the environmental impact assessments so that the project would not lose too much time/momentum (Aldwych International, per com, 2010a).

A final area which may yield greater balancing in terms of development and investment outcomes is in the refinancing of projects, evidence for which may be seen in Songas which refinanced the second phase of the plant. Possible refinancing in the case of IPTL, with the Government of Tanzania proposing to buy the outstanding debt and possibly equity, could also lead to what may be perceived as more balanced outcomes. If and when the government buys back IPTL, it will make a one-off payment on behalf of the utility and then pass the asset ownership to TANESCO, which may subsequently decide to convert the plant to run on natural gas. Through this transaction, the capacity charge will be reduced to a token amount, and following conversion to gas, the energy charge dropped from US$9-12 m. to US$1-1.5 m. per month. The PPA will be terminated, a new agreement drafted, and the customers will see discounted tariffs.

Refinancing does, however, have only limited application, and must be dealt with carefully during the project negotiation, for, as one banker candidly indicated: 'if project finance bankers are expected to finance projects with the understanding that periodically it will be necessary to have a restructuring, the outcome of which is uncertain, the result will be to eliminate the availability of non-recourse financing' – which, given the already low levels in Africa, should be avoided.

It is the government's willingness to share risks over the life of the project, which may also be pivotal in the long-term sustainability of projects. Strategic management does not occur in a vacuum, with the sponsor alone. Often the host-country government may not only be an active counterparty, but even, as evidenced in the refinancing of IPTL, initiate such strategic management. Other government-led initiatives include the Government of Tanzania's buying down of Songas' AFUDC.

The myriad project-level factors are summarised in Table 4.

Table 4: Contributing elements to successful: IPP investments, project issues

CES	Details
Favourable equity partners	-Local capital/partner contribution, where possible -Risk appetite for project -Experience with developing country project risk -Involvement of a DFI partner (and/or host country government) -Reasonable, fair ROE -Firms with development origins
Favourable debt arrangements	-Competitively priced financing, involvement of DFIs -Local capital/markets mitigate foreign exchange risk -Some flexibility in terms and conditions (possible refinancing)
Secure and adequate revenue stream	-Commercially sound metering, billing and collections by the utility - Robust PPA (stipulates capacity and energy charges as well as dispatch, fuel metering, interconnection, insurance, *force majeure*, transfer, termination, change of law provisions, refinancing arrangements, dispute resolution, etc.)
Credit enhancements and security arrangements	Guarantees: Sovereign guarantees, Partial risk guarantees Insurance: Political risk insurance Cash: escrow accounts, letters of credit, liquidity facilities
Positive technical Performance	-Technical performance high (including availability) -Sponsors anticipate potential conflicts (especially related to O&M, and budgeting) and mitigate them
Strategic management and relationship building	Sponsors work to create good image in country through political relationships, development funds, effective communications and strategically manage their contracts, particularly in the face of exogenous shocks and other stresses

4 Conclusion

Despite numerous challenges, a number of Sub-Saharan countries have managed to attract and sustain private investments in Independent Power Projects. More than 20 large IPPs have taken root in about eight countries. A number of smaller, private projects have also been developed. While some IPPs have encountered some contract

changes, nearly all have survived and are countributing to social and economic development.We have identified the main contributing elements of success. At the country-level, factors such as favourable investment climates, clear policy and regulatory frameworks and the local availability of cost-competitive fuels, clearly help. Of growing importance are effective planning, procurement and contracting policies and practices. Kenya provides an example of how responsibilty for these functions may be allocated and institutionalised.

Although the evidence is not conclusive, strategic management on behalf of sponsors and government, as well as strong technical performance, have been used to strengthen projects. The role of firms with development origins such as Aldwych, Globeleq and IPS, and DFIs, such as IFC, Proparco, FMO and DEG, is increasingly important in the development and bringing to financial closure of new IPPs in Sub-Saharan Africa. Furthermore, the fact that projects with participation of these firms and DFIs were less likely to unravel signals two points: such projects may have been more balanced from the outset, and when an exogenous stress struck, they may also have been better equipped to resist any form of host-country government pressure.

Some final observations may be made. First, there is evidence for contract unravelling across the pool of African IPPs where an imbalance is perceived between development and investment outcomes. Secondly, the incidence of such unravelling does not necessarily signal the end of a project's operation. New agreements may be reached that prove sustainable. Third, efforts must continue to close the initial gap between investors and host-country governments' perceptions and treatment of risks (or else examples of further contract unravelling will continue). Finally, the means of closing the gap may not be only, or mainly, via increasing the sort of new protections, including PRGs or political risk insurance, and may instead lie in systematic treatment of the numerous contributing elements to success defined by this study.

Appendix A: Small IPPs in Sub-Saharan Africa <40 MW

Country	Name of project	MW/size	Status	Fin. close	Tech/fuel
Angola	Chicapa Hydroelectric Plant	16	Operational	2003	Hydro
Burkina Faso	Hydro-Afrique Hydroelectric Plant	12	Operational	1998	Hydro
Kenya	Mumias Power Plant	35	Operational	2008	Cogen
Mauritius	Belle Vue Power Plant	100	Operational	1998	Cogen
Mauritius	FUEL power plant	40	Operational	1998	Cogen
Mauritius	St. Aubin Power Project	34	Operational	2004	Cogen
Mauritius	Deep River Beau Champ	29	Operational	1997	Cogen
South Africa	Bethlehem Hydro	4	Operational	2005	Hydro
South Africa	Darling Wind Farm	5	Operational	2006	Wind

Tanzania	Mtwara Region Gas-to-Power Project	12	Operational	2005	Natgas
Uganda	Electromaxx	20	Operational		HFO
Uganda	Bugoye/Tronder Hydro Electric Power Project	13	Operational	2008	Hydro
Uganda	Mpanga Hydro Power Project	18	Construction	2008	Hydro
Uganda	Buseruka/Hydromax	10	Construction	-	Hydro
Uganda	Ishasha	5	Construction	-	Hydro

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