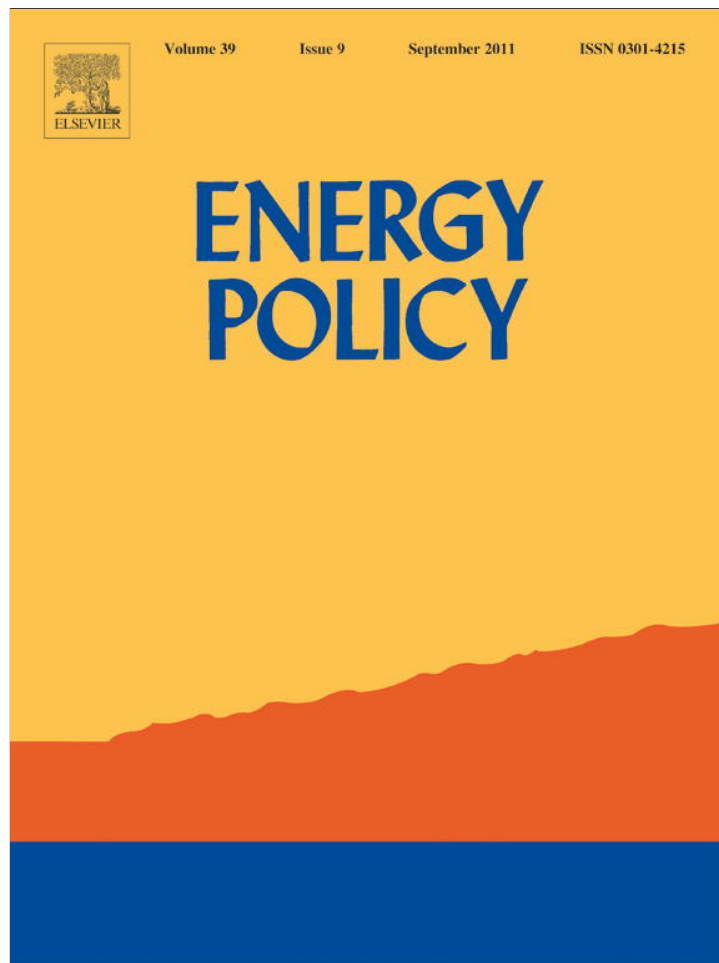


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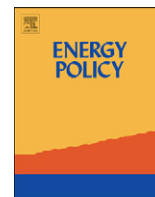


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## IPPs in Sub-Saharan Africa: Determinants of success

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### ABSTRACT

This study analyses the outcomes of independent power projects (IPPs) across Sub-Saharan Africa. Approximately 20 such projects<sup>1</sup> 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.

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### 1. IPPs in Africa: an overview

Approximately 20 grid-connected independent power projects (IPPs), each in excess of 40 MW, holding long-term PPAs with the largely state-run utilities, have been developed in Sub-Saharan Africa to date. In total, about 4 GW 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 (CTL), 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).<sup>2</sup>

### 2. 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, GTi Dakar and Kounoune I in Senegal, Tsavo, OrPower4 and Rabai in Kenya, Afam VI, and Namanve in Uganda). A number of additional IPPs have reached financial closure and are under construction (Bui in Ghana, Aba

Integrated in Nigeria, 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 (as well as at least three additional projects, through direct negotiation). 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 Allowance for Funds Used During Construction (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. Postcontract 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). 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 had no gas supply (although efforts to rectify the situation 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?

#### 2.1. Building up contributing elements to success, at country level

A wide range of elements contributed to project outcomes, including: clear policy frameworks; clear, consistent and fair

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<sup>1</sup> This study includes grid-connected projects, greater than 40 MW, with a long-term PPA with the utility, which have reached financial close and are under construction, operational, complete or concluded. Short-term rentals are largely excluded from the analysis.

<sup>2</sup> Although Mauritius has 4 IPPs (which, at approximately 200 MW combined, account for about 37% of installed capacity and a little less than 25% of production, as of end-2005), the country has not been included in this sample. The IPPs, which are all cogeneration plants, provide power and steam to the country's sugar mills.

**Table 1**  
African IPP sample, general project specifications.

Country/project	Size (MW)	Fuel/cycle <sup>a</sup>	Contract type <sup>b</sup>	Contract years	Project tender	COD
<b>EAST AFRICA</b>						
<b>Kenya</b>						
Westmont	46	Kerosene/gas condensate/gas turbine (barge-mounted)	BOO	7	1996	1997
Iberafrica	108.3 <sup>c</sup>	HFO/medium speed diesel engine	BOO	7, 15, 25	1996, 1999, 2008	1997, 2000, 2009
OrPower4	48	Geothermal	BOO	20	1996	2000, 2009
Tsavo	75	HFO/medium speed diesel engine	BOO	20	1995	2001
Rabai	90	HFO	BOOT	20	2006	2009
<b>Tanzania</b>						
IPITL	100	HFO/medium speed diesel engine	BOO	20	1997	1998
Songas	180	Natgas/open cycle	BOO	20	1994	2004
<b>Uganda</b>						
Namanve	50	HFO	BOOT	6	–	2008
Bujagali	250	Hydro	BOT	30	2005 <sup>d</sup>	–
<b>WEST AFRICA</b>						
<b>Cote d'Ivoire</b>						
CIPREL	210	Natgas/open cycle	BOOT	19	1993	1995
Azito	288	Natgas/open cycle	BOOT	24	1996	2000
<b>Ghana</b>						
Takoradi II	220	Light crude/single cycle	BOOT	25	1998	2000
Sunon Asogli	200	Combustion engine	BOO	20	2007	–
Bui hydro <sup>e</sup>	400	Hydro	BOO	–	2005	–
<b>Nigeria</b>						
AES Barge	270	Natgas/open cycle (barge-mounted)	BOO	13	1999	2001
Okpai	450	Natgas/combined cycle	BOO	20	2001	2005
Afam VI	630	Natgas/combined cycle	BOO	20	2000	2007
Aba Integrated <sup>f</sup>	140	Natgas/open-cycle	BOO	20/15	2005	–
<b>Senegal</b>						
GTi Dakar	52	Diesel/Nafta	BOOT	15	1996	1999
Kounoune I	68	HFO	BOO	15	2003	2008
<b>Togo</b>						
Centrale Thermique de Lome	100	Triple fuel (natgas/HFO/diesel)	BOOT	25	–	2010

<sup>a</sup> Fuel specified below as heavy fuel oil (HFO) as well as natural gas (natgas).

<sup>b</sup> Contract types listed below are Build Own Operate (BOO), Built Own Operate Transfer (BOOT) and Built Operate Transfer (BOT).

<sup>c</sup> Iberafrica has been developed in three stages, with 44, 12 and 52.3 MW being added for a total of 109 MW at the time of writing.

<sup>d</sup> The first phase of Bujagali's conceptualisation 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.

<sup>e</sup> 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 SinoHydro, and the plant is expected online in 2012.

<sup>f</sup> Aba Integrated is privately financed, but is not a classic IPP in that ownership will extend to the off-taker.

regulatory oversight; and coherent power sector planning linked to procurement and contracting, all of which will be treated in depth below.

### 2.1.1. 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 UN Economic Commission for

Africa (UNECA), (2006, p. 67); Malgas et al., 2007; Gratwick and Eberhard, 2008). Most incumbent national utilities are state owned<sup>3</sup> 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

<sup>3</sup> It should, however, be noted that a proportion of the shares of the two Kenyan utilities, KPLC and Kengen, are listed on the Nairobi stock exchange; Côte d'Ivoire has had its state utility under a private concession contract since 1990—an arrangement that is expected to continue until 2020. Tanesco in Tanzania and KPLC in Kenya have had private management contracts. There was an attempt (albeit aborted) to privatise Senelec in 1999 through a concession with Hydro-Québec and Elyo (which was annulled by the president in 2001). Uganda unbundled its national utility into separate generation, transmission and distribution companies and entered into long-term private concession in generation (Eskom) and distribution (Umeme—Globeleq). Nigeria has expressed an intention to unbundle and privatise but has still to fully realise this ambition.

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, however, 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 (CRSE, *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 Bujagali. Staff from the Ugandan 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, pp. 10, 25; Eberhard and Shkaratan, 2010).<sup>4</sup>

### 2.1.2. 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 (Malgas and Eberhard, 2011).

**2.1.2.1. The adverse consequences of not linking planning, procurement and contracting.** 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. The first two plants in Kenya (Westmont and Iberafira), the first plant in Nigeria (AES Barge) and Takoradi II in Ghana were negotiated amidst drought conditions. Generally, the speed was at a cost. Although both Westmont and Iberafira 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. In Ghana, agreement has never been reached over the second phase of the project.

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.

**2.1.2.2. The role of ICBs in planning, procurement and contracting.** 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% 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 gleaned 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, Iberafira, 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 potentially driving down prices.<sup>5</sup> For instance, it is known that the number of bids submitted to ICBs in North Africa

<sup>4</sup> Furthermore, alternatives to strictly independent regulation are increasingly being considered (viz. regulatory contracts, the outsourcing of regulatory functions, expert panels and regional regulators) which may provide a better match to a country's regulatory commitment and institutional and human-resource capacity (Eberhard, 2007, p. 14).

<sup>5</sup> On the other hand, given the fact that the cost to mount a bid is high, having an excessive amount of bidders would also not be desirable as some will not bid if they perceive their chances to be low (Rudo, *per com*, 2010a).

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).<sup>6</sup>

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.

*2.1.2.3. Reflecting on the mishaps of planning, procurement and contracting and the example of Kenya.* 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, 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 (Malgas and Eberhard, 2011). 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 convenes and chairs a planning committee comprising relevant departments and state-owned enterprises. Kenya Power and Light Company (KPLC), with the assistance of the World Bank, has assisted this committee in developing least-cost plans. 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 advisers 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 has tendered for three new IPPs, which would add to its existing five—maintaining its lead position in IPP investments in SSA.<sup>7,8</sup>

## 2.2. Building up contributing elements to success, at project level

Who were the investors and what did they do to navigate the changing policy and planning frameworks? 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. Not covered in detail here, however, are either the technical performance of plants or the strategic management of projects by investors.

### 2.2.1. Favourable equity arrangements

*2.2.1.1. Foreign vs. local.* Foreign firms have been the dominant players in Sub-Saharan African IPPs, unlike in Malaysia and China where local IPPs abound (Woodhouse, 2005, pp. 22–23, 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.<sup>9</sup> 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

<sup>7</sup> It is also noteworthy that Kenya has been cited by public stakeholders in both Ghana and Tanzania as having processes that should be emulated (PURC, *per com*, 2010 (May 21); EWURA, *per com*, 2010).

<sup>8</sup> 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.

<sup>9</sup> Projects such as Osagyefo Barge in Ghana and several projects in Nigeria (Ibom and Omoku) have been loosely termed IPPs by some. In Ghana, private participation was expected (but not achieved), and in Nigeria, projects, although independent of the national utility, have been led entirely by the Rivers and Akwa Ibom State Governments, respectively. We have excluded these from our analysis.

<sup>6</sup> Togo's next IPP in the pipeline, a 24 MW wind farm, however, is being procured via an ICB (Ministry of Energy of Togo, *per com*, 2010).

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, p. 11; Woodhouse, 2005). A total of 10 of the 21 projects had local equity participation, namely, Sunon Asogli, Iberafrica, IPTL,<sup>10</sup> 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.<sup>11</sup> Furthermore, in 4 of these 6 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% 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).

*2.2.1.2. 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. Industrial Promotion Services (IPS), a major shareholder in Tsavo, Azito and Bujagali, had operated in Kenya since 1963 and in Côte d'Ivoire since 1965.

Furthermore, 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% share in Côte d'Ivoire's Azito, 30% equity in Kenya's Tsavo and 56% in Tanzania's Songas. IPS holds a 23% share in Azito, and together with Duke Energy, a 49.9% share in Tsavo. IPS is also leading development of Uganda's Bujagali project, and a 35% 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 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.

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.

*2.2.1.3. DFIs holding onto equity.* Meanwhile, the presence of DFIs persists in project equity. Six of the IPPs saw DFIs pick up equity shares. The International Finance Corporation (IFC) recently acquired a 20% share in Centrale Thermique de Lome; IFC also holds a 5% share in Tsavo's equity and 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% share in CIPREL. IFC and the German Investment and Development Corporation (DEG) each had an approximately US\$12m. equity investment in Songas, with both organisations selling their shares after the IPTL dispute became known. FMO maintains a 24% share in Songas (excluding the expansion of 65 MW), as well as a 20% share in Rabai (apart from its shareholding in Aldwych). CDC, independent of Globeleq, also holds a 6% share in Songas (excluding the expansion). It should be reiterated here that none of these projects, save Songas, has seen any contract changes.

What then, 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 or region, the presence of firms with development origins and development finance institutions.

<sup>10</sup> At the time of writing, the level of equity (including local equity) is under dispute in Tanzanian court.

<sup>11</sup> See the introduction to Section 3 of this report for further details.

### 2.2.2. Debt arrangements: global and local

With debt financing often covering more than 70% 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.<sup>12</sup> The recipe 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% 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, 2010). Westmont, Iberafrika and OrPower4, until recently, were also all financed entirely with the balance sheets of their sponsors. For Westmont and Iberafrika, 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.

**2.2.2.1. 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, Bujagali), IFC (Azito, Tsavo, Bujagali, GTi Dakar, Kounoune I), CDC (Tsavo, Azito), European Investment Bank (Songas, Bujagali), DEG (Tsavo, Azito, Rabai, OrPower4, Bujagali), FMO (Azito, Rabai, Bujagali), African Development Bank (Azito, Bujagali), West African Bank for Development aka BOAD (Kounoune I) PROPARCO (Rabai, Kounoune I, Bujagali), Emerging Africa Infrastructure Fund (Rabai), European Financing Partners (Rabai) and KfW (Bujagali), AFD (Bujagali, Kounoune I) and NORAD (Namanve). 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 an 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 as 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,<sup>13</sup> whereas, for the latter, IFC arranged all the debt and took a 5% 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" (Aldwych International, per com, 2010).

**2.2.2.2. 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, Aba Integrated of Nigeria and Namanve of Uganda. In Kounoune I, the project saw financing from the Banking Company of West Africa (CBAO), a local Senegalese private bank. For Aba Integrated, funding has been provided by Diamond Bank and Stanbic IBTC Bank Plc, both of Nigeria. For Uganda's Namanve project, project debt includes a commercial loan from Uganda's Stanbic Bank Ltd. (which is back-stopped by Standard Chartered Bank UK). 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 (€213m) 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% of total equity) as well as the fact that Morocco's commercial banks have a significant degree of state involvement.<sup>14</sup> 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 macro-economic 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%, 200% and 400% 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 this overall discussion of debt arrangements, it is worth noting the experience of Bujagali, which saw an over-subscription of debt in 2007, with the debt portion amounting to US\$670m, which is unprecedented for SSA African IPPs (IPS, per com, 2010). At a total investment cost of US\$860m, Bujagali is

<sup>12</sup> It is important to note the emergence of two Chinese firms (Shenzhen and Sinohydro) in Sunon Asogli and Bui hydro, respectively, in Ghana. The extent of Chinese government/export credit agency involvement in these projects is presently being reviewed by the authors, as such involvement could represent a new element and be a significant source of investment for other African IPPs. Foster and Briceno-Garmendia report on the general phenomenon of non-OECD funders, including the emergence of increasingly significant funding flows from China to SSA (2010, 78–79).

<sup>13</sup> In 2009, DEG arranged a US\$105 m. loan (Ormat, 2009).

<sup>14</sup> Banque Centrale Populaire (BCP) put up MAD1300 m. and MAD960 m. was extended by a consortium of banks consisting of BCP as the lead lender, the Banque Marocaine pour le Commerce Extérieure (BMCE) and Crédit Agricole (CNCA). Average exchange rate for the Moroccan dirham in 2003, the year that construction started, was 10.95MAD=1.00EUR (Interbank rate).

quadruple the investment of the average of SSA IPPs, at approximately US\$190m. 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).

### 2.2.3. 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, Iberafrika, Tsavo and Rabai in Kenya, Afam VI in Nigeria, Centrale Thermique de Lome in Togo, Bujagali and Namanve in Uganda). Immediately below, we summarise 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 Iberafrika 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. Iberafrika's second and third PPAs are notably longer than its first (and with second negotiations (of 1999/2000) presided over by the then Electricity Regulatory Board, tariffs have been deemed significantly cheaper). 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).<sup>15</sup>

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.<sup>16</sup>

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.

### 2.2.4. Credit enhancements and security arrangements

The underlying credit risk of the projects has been largely dealt with via a suite of credit enhancements, namely guarantees, insurance and cash (which has taken 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\$12m, which falls away after debt repayment in 11 years (KPLC, *per com*, 2010). 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.<sup>17</sup>

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 Iberafrika), 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.<sup>18</sup> In these instances, the partial risk guarantee (PRG) covers all debt of the commercial banks on agreed risks that have been guaranteed by the host government, i.e. if the project company defaults, and the sovereign guarantee is not honoured, then the PRG (backed by IDA) would pay the

<sup>15</sup> It is, however, worth reiterating in this context that failure to agree on both the security package and the capacity charge contributed to delays in the development of OrPower4's additional 36 MW.

<sup>16</sup> It should be noted that while this dispute was resolved, a subsequent and prevailing dispute relates to the level of actual equity in the project which in turn affects WACC and the allowed rate of return.

<sup>17</sup> The security arrangement for Kenya's Tsavo plant is detailed in the text, and OrPower4 has since been granted a similar security package. It was specified that Tanzania's IPTL would have an escrow account equivalent to between 2 and 4 months of capacity charge, but this account has not been established. Songas was granted an escrow account for the first 115 MW, with the government matching every US\$1 spent by the project company. No escrow account was required for the Songas expansion; furthermore, the escrow account was used in part to help buy down the AFUDC. The project also negotiated a liquidity facility equivalent to 4 months capacity charge for the first 3 years, declining to 2 months starting in year 4 through the remaining years of the contract. Uganda's Bujagali has a liquidity facility backing the PPA, Côte d'Ivoire's Azito plant has an escrow account equivalent to one month's capacity charge. GTi Dakar in Senegal was given an escrow account and for Kounoune I both an escrow account and letters of credit were extended. In Ghana's Takoradi II, there is an US\$ 3 million Letter of Credit provided by government; other Ghanaian projects are currently under review by authors. For Centrale thermique de Lome in Togo, the project has an escrow account equivalent to one month of full operation and a letter of credit of two months of full operation. The letter of credit reduces to one month after two years of no incident of payment, and falls away after four years of no incident of payment.

<sup>18</sup> In addition a PRG for Kounoune I was approved by the World Bank but was ultimately not signed by the Government of Senegal, as the lender that the PRG would have covered was still willing to fund the project (IFC, *per com*, 2010a).

commercial lenders; IDA then claims repayment from government (World Bank, 1997, 1999; IFC, per com, 2010a).

In addition, other measures have been engaged. Both AES Barge and Centrale Thermique de Lome have political risk insurance provided by OPIC. OrPower4, and Bujagali have MIGA guarantees, largely relating to currency inconvertibility, expropriation, and political risks.

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, 2010b). 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, it should be noted, have created a contingent liability on KPLC's balance sheet, hampering it from raising letters of credit required for the firm's transmission and distribution businesses (KPLC, per com, 2010). 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 credit worthy, it is still not an investment grade company (Aldwych International, per com, 2010); "credit worthiness 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, 2010c).

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\$30m. 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 off-taker, 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, 2010b). 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).<sup>19</sup>

### 3. 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 contributing 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 responsibility 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,

<sup>19</sup> It should, however, be noted that for IPPs in Central Asia and or for cross border projects such as Laos to Thailand (Nam Theum II), a PRG and/or other 'strong' credit enhancements would be employed. Also noteworthy is that in the middle income Latin American countries cited above, due to the privatisation trajectories, there were few IPPs per se, and in the few cases where there were, e.g. Colombia, there is evidence of involvement by bilateral and multilaterals to help back the investments (Rudo, per com, 2010b).

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.

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