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LIGHT INSIDE

THE EXPERIENCE OF INDEPENDENT POWER PRODUCERS IN NIGERIA

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ACRONYMS

AOO	Acquire Own Operate
BPE	Bureau of Public Enterprises
BET	Bulk Electricity Trader
BOO	Build Own Operate
BOT	Build Own Transfer
DFI	Development finance institution
EPC	Engineering, Procurement and Construction
EOI	Expression of Interest
EPSRA	Electric Power Sector Reform Act, 2005
ESI	Electric Supply Industry
FGN	Federal Government of Nigeria
GSPA	Gas Sale & Purchase Agreements
GW	Gigawatt
ICB	International competitive bidding
ICRC	Infrastructure Concession Regulatory Commission
IOC	International Oil Companies
IPP	Independent power producer
IPPAN	Independent Power Providers Association of Nigeria
ISO	Independent System Operator
kWh	Kilowatt hour
LDC	Least Developed Countries
LOT	Lease Own Transfer
MW	Megawatt
NEPA	National Electric Power Authority
NERC	Nigerian Electricity Regulatory Commission
NIPP	National Integrated Power Projects
NNPC	Nigerian National Petroleum Company
NPDC	Nigerian Petroleum Development Company
PHCN	Power Holding Company of Nigeria
PPA	Power Purchase Agreement
PPP	Public-Private Partnership
PRG	Partial Risk Guarantee
ROT	Restore Own Transfer
SPDC	Shell Petroleum Development Company
T&D	Transmission and distribution
Tcf	Trillion cubic feet
TSP	Transmission Service Provider
YFP	Yinka Folawiyo Power Limited

Executive Summary

Change and hope abound. Nigerian President Goodluck Jonathan has made overhauling the electric power industry the top priority of his administration. Although nearly every single Sub-Saharan African country faces some form of electric power woes, Nigeria's challenge is distinct, given the sheer size, as well as the repeated attempts at power sector reform. This report examines the current electricity environment in Nigeria, with a focus on Independent Power Producers (IPPs)--past, present and future.[1] How have the IPPs come into the power mix and what impact have they had to date? What new IPPs are in the pipeline? What is the interface between current and future IPPs and the reform agenda? Finally, how may the Nigerian IPP experience to date come to represent a lesson-learned, for Nigeria, and for other countries, facing similar electricity challenges?

As of 2012, three large-scale IPPs produce approximately 25 percent of Nigeria's electric power, with the balance provided by the Power Holding Company of Nigeria (PHCN) and State governments, viz. about 1000 MW (IPPs) and 3000 MW (non-IPP), respectively. The introduction of IPPs has been gradual (dating to 1999), but according to the 'Road Map', the private power component will more than double in less than 5 years, including via the country's sale of its generating assets. Given the significant imminent change, a clear understanding of past experience with IPPs is paramount.

To date, all three IPPs have helped to advance the reform process, directly and indirectly. First they have been among the most visible elements of reform, other than the Nigerian Electricity Regulatory Commission (NERC), over the past 13 years. In this regard, the IPPs provide an important example to potential investors of private power at work in the country. Serious transaction experience has been gained, especially by stakeholders in government, with regard to the overal risk allocation in IPPs. With this has come a greater understanding with intepreting contracts, notably the PPA and fuel agreements. Furthermore, the existing IPPs have helped to reinforce the need for cost-reflective tariffs, together with the urgency to reform the gas supply network. In addition, the importance of international competitive bidding and/or more transparent bidding and contracting procedures has been highlighted.

[1] For the purpose of this report, IPPs are defined as power projects set up as special purpose project companies with a significant proportion of private equity and/or debt, and long-term power purchase agreements (PPAs) with the national utility or other large customers. The research scope is limited to grid-connected projects, which have reached financial close and are under construction, operational, complete or concluded. Short-term, grid connected, rentals are largely excluded from the analysis, due to the variation in contracting methods. Also excluded are the estimated 4000-8000 MW in off-grid generators, which make up a substantial part of Nigeria's power supply, as referenced above.

In the present overhaul of the entire Nigerian Electricity Supply Industry, several important factors are noteworthy in terms of IPP development. While not being replicated, space has been afforded to the three 'legacy IPPs'; that is, contracts with AES Barge, Okpai and Afam VI will be upheld, unchanged, with the main change that the PPA will be administered by the Bulk Electricity Trader (BET), rather than the now defunct Power Holding Company of Nigeria (PHCN). A transitional entity, the BET is intended to be the present nexus between generation companies (Gencos), IPPs and distribution companies (Discos), as Gencos and IPPs will sell to the Bulk Trader, which will then resell power to Discos through vesting contracts. Despite this institutional change, for the legacy IPPs, by far the greatest difference will be the new entrants in power supply and their anticipated trading arrangements.

Those new entrants are multi-fold and are expected to include the divested Gencos, a slate of National Integrated Power Projects (NIPP), additional capacity from captive plants and new IPPs. The recent past points to a level of skepticism, as no new IPPs have materialized since 2008, when Afam VI came online, despite reforms taking center stage. There are, however, voices of optimism. Citigroup Global Markets projects that "Nigeria, India and Vietnam are expected to experience the highest real per capita GDP growth rates until 2050." They characterize Nigeria among 11 developing countries noted for their young populations and present poverty, with overwhelming growth prospects, across all sectors. According to the Bulk Electricity Trader, responsible for power purchases for the mid-term, the evolving market conditions will be attractive to new IPPs, provided the multi-year tariff order strikes the right balance, and sends the right signal to investors while simultaneously looking out for consumers. Other key stakeholders nod their heads in agreement: IPPs will present themselves as the existing reform environment settles.

Nigeria is unique, according to some experts, in the African context, due to the strong willingness to pay, together with the abysmal present power situation which hinders public and private sectors in virtually every activity. Bottom line, there is real, latent demand. In addition, there are indications that between 2013 and 2015, up to 1000 MW of additional capacity may be provided by between three to six different IPPs, with a "snowball effect" after 2015. That said, to meet the 2020 goal of 40 000 MW, new investment will need to multiply exponentially, and Nigeria will need to address the real impediments to doing business.

Certain strategies are being adopted to enhance the investment environment, including a critical Partial Risk Guarantee (PRG) being extended to the Bulk Trader, which counters the default risk of the Discos, thus reducing risks for potential new Gencos. Although the planning process has

been interrupted by different political administrations and the involvement of different government agencies, the present approach with strong executive oversight may help bring about more coherency. Also in the works is an overhaul of the gas sector, which should move the country towards more dependable fuel supply for its power projects, something that has been a severe hindrance, particularly for the first IPP, AES Barge, over the past decade. In sum, there is a way forward, and the voices of optimism, together with the requisite planning and prudent procurement strategies will hopefully lead to continuous light inside and out for Nigeria. Meanwhile, with the most extensive power sector reforms undertaken by any African country to date, Nigeria has the potential to offer countless lessons and case studies for other countries. The possibilities are endless.

I. Introduction & background

Change and hope abound. Nigerian President Goodluck Jonathan has made overhauling the electric power industry the top priority of his administration. His rhetoric appears to be backed by deeds, as a special action committee and taskforce, with representation of critical stakeholders, have been charged with implementing the 'Road Map for Power Sector Reform'.[2] Some indications that business is no longer continuing as usual is that as of September 2011, generation exceeded 4242 MW—the highest level in years (Ugwuanyi 2011).[3,4] In addition, over 300 expressions of interest (EOI) were received for the soon to be divested Nigerian electric utility successor companies; approximately 200 were short-listed and 129 went on to purchase bid documents, with firms representing the 'who's who' of international and domestic power.[5] Meanwhile, 34 Independent Power Producers (IPPs) have been licensed, although most have yet to be built. Cost-reflective consumer tariffs have been tabled, as well as a comprehensive plan to improve the commercial certainty within the electricity market (Onagoruwa 2011). As of January 2012, gas prices have also been increased, albeit sparking nationwide protests. A Bulk Electricity Trader (BET) has been established, and the World Bank is extending a Partial Risk Guarantee (PRG) to this entity to increase investor confidence in the sector, given, among other factors, the lack of creditworthiness of the distribution companies (World Bank per com 2011).[6]

[2] The Presidential Action Committee on Power (PACP) is headed by President Jonathan and made up primarily of key cabinet ministers; the Presidential Task Force on Power (PTFP) is headed by Prof Bart Nnaji and made up of heads of the Regulator (NERC), the Ministry of Power, the National Petroleum Company (NNPC) and other critical stakeholders. Meeting weekly, these two groups are intended to expedite implementation of the Road Map, which was launched in August 2010 largely to facilitate the activities spelled out in the 2005 Electric Power Sector Reform Act, namely commercialisation, divestiture of generation and distribution assets and introduction of competition, following the standard model for power sector reform (Presidential Task Force on Power, 2011a, see also See Gratwick and Eberhard for a discussion of the 'standard model' (2008)). Important to note in this context is that the administrations of President Jonathan (May 6, 2010-present), together with the previous democratically elected leader, General Olusegun Obasanjo (1999-2007), are both credited with helping to revolutionize and revitalize the telecoms sector--which in 2001 had 400 000 lines and a 0.4 teledensity, and a decade later, in 2011, had 89.8 million lines, and an associated teledensity of 64.16 (Okonji 2011). Parallels between the two industries are common, along with the stated aspiration to replicate the telecom success story (CNBC 2011); however, challenges remain in telecoms, a discussion of which is beyond the scope of this report.

[3] On December 13, 2011, this figure dropped unexpectedly by 1080 MW when Ebgin Thermal was taken offline due to gas line maintenance issues, as discussed in Section III.

[4] Installed generation is estimated at approximately 8644 MW (Bureau 2011a).

[5] Among the line-up are: AES Corporation, Contour Global, Globeleq and Tata, companies who already hold substantial equity in IPPs across Sub-Saharan Africa.

[6] Meanwhile, 'From Darkness to Light' has been broadcast across the continent, chronicaling Nigeria's journey towards a brighter future, albeit with some cautionary words, especially as relates to public workers (CNBC 2011). There were strikes in the first half of November (2011), which coincided with the first wave of bidders' site visits, however, it appears that they have not derailed the process; initial agreement has been reached with the unions, and, as affirmed by BPE during the

Prompted by severe underperformance, reform has been in the works since 1998, which represented the (legal) end of the State's monopoly over the electric supply industry. Despite the 1998 decree and the continued poor performance across generation, transmission and distribution, limited change occurred. In 2005, reform efforts accelerated via the Electric Power Sector Reform Act (EPSRA), which indicated how the National Electric Power Authority (NEPA) would be divided into a number of successor companies, an independent regulator would be established, and service would be extended and improved. At the time, it was among the most ambitious power sector reform programs on the African continent. By 2010, however, five years into the latest reform, very little restructuring had been undertaken, and available generation capacity was less than 4000 MW (a figure largely unchanged since the 2005 reforms), for a population of over 150 million, the largest on the African continent (Mohiuddin 2011). According to the Presidential taskforce, Nigeria's gap between demand and supply represents the greatest such gap in the world (2011). In a recent survey, 83 percent of firms indicated that electricity was a hindrance to doing business in Nigeria (World Bank 2011). Meanwhile, private, self-generation is ubiquitous; it is estimated that self-generation exceeds grid generation, and may be anywhere from 4000-8000 MW, representing a huge economic and environmental cost to society (World Bank per com 2011). Seen in this light, the hope and potential for change, which characterize the sector as of 2012, is significant, but it is not altogether new.

Although most Sub-Saharan African countries face some form of power woes, including South Africa, Nigeria's challenge is distinct, given the sheer size, as well as the repeated attempts at reform. This report examines the electricity environment in Nigeria, with a focus on IPPs--past, present and future. For this report, IPPs are defined as power projects set up as special purpose project companies with a significant proportion of private equity and/or debt, and long-term power purchase agreements (PPAs) with the national utility or other large customers. The research scope is limited to grid-connected projects, which have reached financial close and are under construction, operational, complete or concluded.[7] How have the IPPs come into the power mix and what impact have they had to date? What new IPPs are in the pipeline? What is the interface between current and future IPPs and the reform agenda? Finally, how may the Nigerian IPP experience to date come

Electric Power Transaction & Power Industry Reform Review (Nov 29), "The successor companies shall be handed over to investors without labor issues or liabilities," (Ndiribe 2011; Bureau of Public Enterprises 2011c:8).

[7] Short-term, grid connected, rentals are largely excluded from the analysis, due to the variation in contracting methods. Also excluded are the estimated 4000-8000 MW in off-grid generators, which make up a substantial part of Nigeria's power supply, as referenced above.

to represent a lesson-learned, for Nigeria, and for other countries, facing similar electricity challenges?

II. A Brief history of IPPs

As of 2012, three large-scale IPPs produce approximately 25 percent of Nigeria's electric power, with the balance provided by the Power Holding Company of Nigeria (PHCN) and State governments, viz. about 1000 MW (IPPs) and 3000 MW (non-IPP), respectively.[8,9] The introduction of IPPs has been gradual (dating to 1999), but according to the 'Road Map', the private power component will more than double in less than 5 years, including via the country's sale of its generating assets (Presidential Task Force on Power 2011b). Given the significant imminent change, a clear understanding of past experience with IPPs is paramount.

A. Enron/AES

Nigeria's first IPP was born amidst the emergency power situation of 1999, and immediately after the passage of the 1998 legislation, allowing private participation in the sector. During that period, just over a third of the country's total capacity was in operation, and load shedding had become increasingly widespread.

Stakeholders report two versions of the inception of the project.[10] In the first version, Enron approached the Federal Government of Nigeria (FGN) and the Lagos State Government with a proposal to build own and operate an emergency facility, namely a 90 MW barge-mounted diesel plant to be run on liquid fuel, followed by a permanent facility comprising a 560 MW gas-fired plant,--both under a common PPA. In the second version of the story, the Lagos State Government apparently drove the process and directly approached Enron for the two-part project. In both versions, international competitive bidding (ICB) practices were overlooked and the deal was negotiated within months. The original power purchase agreement was signed in 1999 among the project company, the Lagos State Government, the Federal Ministry of Power & Steel and NEPA,

[8] Appendix A provides a list of all licensed Nigerian IPPs, including planned, under-construction and operational. Appendix B provides detailed project specifications on the three large-scale IPPs with private sector participation.

[9] Based on authors' definition of IPP, namely privately funded grid connected generation, Ibom (76MW), Trans Amadi (136 MW) and Omoku (150 MW) have not been included in this analysis for two reasons. First, although independent of the FGN, the projects were funded by the state governments of Akwa Ibom and Rivers, respectively. Secondly, these projects are presently not part of the FGN divestiture program, which will be discussed in greater detail, insofar as it impacts IPPs. Although not part of the overall analysis, this available capacity is included in the September 2011 tally of 4,242 MW, cited in the introduction. In addition, it is anticipated that Rivers State has two IPPs that may come on-line in 2012, which could contribute over 250 MW to the grid (IPPAN 2012). Finally, unless otherwise specified, capacity figures, other than for IPPs, are based on data released by the Bureau of Public Enterprises and Presidential Task Force on Power (2011).

[10] Stakeholders interviewed included staff at AES, Nigerian Electricity Regulatory Commission (NERC), and the World Bank. Data was also culled from the public domain.

with the expectation that the first plant would be on-stream by December 1999. Yinka Folawiyo Power Limited (YFP), a local Nigerian firm, was also involved at this stage as advisor to Enron, but not a signatory to the PPA.

Due to public pressure, however, this initial deal was modified, and negotiations would continue for another 6 months to mid-2000. Major objections were raised about: the lack of transparent and competitive bidding; the type of fuel to be used, the fact that the plant would not be penalized for poor performance; that the project company would receive excessive contract termination payments; and that capacity payments were deemed too high. Amidst the ongoing negotiation, the original plan for the land-based 560 MW plant was shelved (albeit not dropped). The major items to be changed involved increasing the initial plant from 90 MW to 270 MW (9 units of 30 MW each gas-fired open cycle) and switching the fuel from liquid fuel to natural gas, both of which had the effect of reducing the capacity and energy charges (with some reports of a reduction of up to ten times the original charge), with a final investment cost of US$240 million.[11]

It was agreed that the capacity charge would be flat, indexed to OECD CPI, for the 13.25-year duration of the contract, which would be backed by a sovereign guarantee. Capacity charges would be payable in US dollars. There was no separate fuel supply agreement; instead, fuel was to be provided by NEPA (subsequently PHCN), which would contract it directly from the Nigerian Gas Company.

A little less than a year before Enron filed for bankruptcy, the firm sold its shares in two tranches.[12] In September 2000, Enron sold 30 percent to AES. Then in December 2000, the firm sold the remaining 65 percent and 5 percent respectively to AES and YFP, which although present since project inception only became a shareholder in 2000. Enron did not complete construction, and the construction contract was transferred to AES Inc Virginia USA, with the plant coming online in May 2001 (Van Meeteren 2005).

Although agreement was reached and the plant has been online since 2001, further negotiations continued with regard to the availability-deficiency payment as well as the tax exemption certificate (which remains outstanding). The issues were ultimately taken to arbitration, and while the arbitration has been concluded, after approximately five years, the arbitral award is

[11] Although deemed more affordable, the second phase of negotiations did result in a cost in excess of US$1000/kw.

[12] Enron filed for bankruptcy protection on December 2, 2001. Prior to that, the firm's stock price reached a high of US$90 per share in August 2000, just before its sale to AES, starting in September 2000 (BBC n.d.).

still being awaited, together with a figure for the ultimate cost of the arbitration (RERA per com 2011). Throughout, secure fuel supply has been an issue for AES due to conflict in the Niger Delta, which flared up most recently in 2008/2009, and which impacts on fuel delivery to the plant, located in Lagos.

B. Corporate citizens, and more

The motivation for developing the Okpai and Afam VI IPPs was similar to that for Enron/AES Barge, namely persistent and severe power shortage. The primary private sector sponsors of the plants (Agip and Shell, both International Oil Companies, IOC) were approached by government to see how they could contribute, in partnership with the Nigerian National Petroleum Company (NNPC). "We got into that power plant purely as a way of identifying with the aspiration of the government of Nigeria to improve the power situation in the country…normally power business is not our business, however as a corporate citizen here, we felt that power is something that this country needs and we rose up to the challenge," (Mutui Sunmonu, MD and Chairman, Shell PDC, 2011, as excepted from CNBC 'From Darkness to Light').

However, Nigeria's second and third IPPs fall into a slightly different category. In the late 1990s, at the start of Nigeria's power sector reforms, the country contributed to more than 15 percent of global gas flaring (or approximately 1.6 trillion cubic feet (Tcf) per year). The commercial loss (estimated at US$2.5 billion annually) together with the environmental damage initially motivated the country to target 2008 as the year to end all flaring, a date that has subsequently been moved out to 2011, and more recently to December 2012 (Kupolokun 2002; Yusuf 2011). As part of this initiative, international oil companies were enlisted in harnessing gas for power, and the Okpai and Afam VI projects were subsequently born.

1. Okpai

In 2001, NEPA invited bids for a 480 MW combined cycle gas turbine plant along with the requisite gas infrastructure, via a Build Own Operate (BOO) structure, from a series of pre-qualified firms, namely oil firms active in the Nigerian petroleum sector, including Shell, ExxonMobil, Total, Chevron and Agip. A consortium composed of the Nigerian National Petroleum Corporation (60%), Nigerian Agip Oil Company (20%), and Phillips Oil Company (20%) presented the winning bid. It is important to note "there were no tenders [per se]. The FGN/NNPC simply agreed with the IOCs that the JV IPPs would be built," (NERC per com 2012).

Unlike the first IPP, the initial negotiation process was not marked by a series of stops and starts, but a phased plan was agreed upon from project inception. The 450 MW CCGT was to be built in two phases with 300 MW OCGT installed, which would then be upgraded with the addition of 150 MW to a CCGT. The dollar-denominated power purchase agreement with NEPA (later PHCN) would span 20 years, but would not be backed by a sovereign guarantee. Instead the security for the project lay in the fact that it was backed by Nigerian Petroleum Development Company's (NPDC), a subsidiary of NNPC, oil revenues. The contract stipulated 80 percent minimum capacity availability, take-or-pay. Following from the gas strategy, fuel was to be supplied directly by Agip. Ultimately, the Federal Ministry of Power and Steel signed the PPA together with Federal Ministry of Finance, Agip and NEPA, based on a Final Investment Cost (FIC) of US$312 million, and an approximate flat capacity charge.

In a departure from most IPPs throughout the developing and developed world, Okpai IPP was entirely equity financed, with the lead equity sponsor the state-owned oil company, providing 60 percent of total equity. According to government stakeholders, this is a common position by NNPC to provide equity rather than debt.[13]

Between the initial negotiations in 2001 and the plant coming on-stream (first 300 MW in April 2005, upgraded to 450 MW in November 2005), investment costs rose by US$150 million, to US$462 million. Causes cited for the increase in costs were: vandalism as well as underestimating the cost of the transmission infrastructure required. Parties resolved the dispute directly (i.e. out of court with sponsors directly), however, while the plant was producing power, due to the dispute, full payment was not made by PHCN. Therefore, as originally agreed to in the PPA, the plant did not amortize after 5 years.

2. Afam VI

As with Okpai, the development of Afam VI was prompted by persistent power shortages, and the gas-flaring reduction policy of 2001. The project, which came online in 2008, involved a brownfield and greenfield investment namely: refurbishment of the existing 270 MW (Afam V) under an acquire operate own (AOO) contract and the addition of 624MW (Afam VI) under a BOO

[13] It should be noted that a number of stakeholders have raised questions as to the ultimate efficiency given the fact that the WACC is increased by such (100% equity) financing; the rationale suggested is that this approach could be adopted where financing opportunities are limited.

arrangement.[14] The companies invited to submit bids included: Agip, ExxonMobil, Total and Chevron. Negotiations started like those for the country's second IPP in 2001. Shell Petroleum Development Corporation (SPDC) was selected as the Joint Venture operator of a consortium composed of NNPC (55%), Shell (30%), Elf (Total) (10%) and Agip (5%).

Investor incentives, as noted previously, were similar to those granted to upstream gas projects. As with Okpai, a 20-year dollar-denominated PPA was negotiated, backed by the Ministry of Finance Letter of Credit, which represented a change since negotiations with Okpai. Initially, the only way that FGN could guarantee PHCN's payment obligations was by pledging NPDC crude oil. In January 2006, however, Nigeria received a BB- credit rating, which meant that it no longer needed to pledge its crude oil or income stream as security against PHCN's default. A Letter of Credit from the Ministry of Finance was considered adequate security. The terms of the agreement stipulated take or pay with minimum available capacity of 80 percent. The final investment cost was set at US$540 million for the project. Shell was identified as the fuel provider. As with Okpai, the project was 100 percent equity financed.

Although Okpai and Afam VI presently represent the only two JV-IOC IPPs, it is important to note that as of 2006, Nigeria's Ministry of Petroleum Resources announced plans for six additional similar projects, for a total of nearly 4000 additional MW, all due online between 2007/8. These projects were to be led by NNPC in collaboration with Agip, Shell (x2), ExxonMobil, Total, and Chevron (Nigerian Ministry of Petroleum Resources 2006). None of these projects, however, materialized, in the timeframe identified, nor did the additional large-scale IPPs, or the state-owned plants which altogether were to achieve a target of 21 000 MW by 2010.[15] Furthermore, although intended to be part of the gas-flaring reduction/monetization efforts, it should be noted that most of the gas comes from Shell's Okoloma Gas Field and is non-associated gas (NERC per com 2012). Reflecting on the trajectory of IPPs to date, one stakeholder recently remarked, there has been

[14] It should be mentioned that the Afam project was initially conceived of as a Restore Own Transfer (ROT) for the existing Afam I-IV units and a Lease Own Transfer (LOT) for Afam V unit, however, after assessing conditions of the plant, Shell Petroleum Development Company (SPDC) proposed (and host country counterparts agreed) that Afam I-IV should instead be replaced with a new CCGT unit, which became the 624 MW in the form of Afam VI. Additional changes prompted by the transfer of security from NNPC to the Federal Ministry of Finance involved parties agreeing that Afam V should be negotiated on an Acquire Own Operate (AOO) rather than LOT basis and Afam VI be a Build Own Operate (BOO) rather than a Build Own Transfer (BOT).

[15] An additional three JV-IOCs projects have recently been identified, involving Exxon, Total and Chevron, with those led by Exxon (Qua Iboe, 500MW) and Total (Obite, 417MW) at the EPC tender stage. Unlike Okpai and Afam VI, these projects have followed ICB processes. In terms of timelines, it is anticipated 2-3 years to come online from the time of the award (IPPAN 2012).

"underlying chaos in IPP development", which adds some complexity to the recounting of history and ultimate analysis of the projects, (BPE consultant per com, 2011).

C. Impact of the 'legacies'

While less power than expected has ultimately come online, it may be argued that all three 'legacy IPPs', as they are commonly referred to, have helped to advance the reform process, directly and indirectly. First they have been among the most visible elements of reform, other than the Nigerian Electricity Regulatory Commission (NERC), over the past 13 years. In this regard, the IPPs provide an important example to potential investors of private power at work in the country. Serious transaction experience has been gained, especially by stakeholders in government, with regard to the overal risk allocation in IPPs. With this has come a greater understanding with intepreting contracts, notably the PPA and fuel agreements (BPE consultant per com 2011). In the case of Enron/AES specifically, the arbitration has been partly attributed to the fact that government did not honor its tax concession, which could have been avoided with clearer contracting and associated enforcement from project inception.

Furthermore, the existing IPPs have helped to reinforce the need for cost-reflective tariffs, with all IPPs (as well as state government owned plants) owed significant funds primarily due to the inability of current tariffs to meet PPA costs (IPPAN 2012; NERC 2012; World Bank 2011). The increasing urgency to reform the gas supply network has also been highlighted by the experience of IPPs (World Bank per com 2011). In addition, the importance of ICBs and/or more transparent bidding and contracting procedures have been identified. As one former NERC staffer indicated, "The… way [the arbitration] … could have been avoided…would have been to have put in place a transparent negotiation process for the entire project *ab initio*," (RERA per com 2011).

The table immediately below sumarizes a list of what have been deemed contributing elements to success for IPPs at the 'country-level' and 'project-level', by stakeholders across Sub-Saharan Africa (SSA) and in other developing regions as well. Notable in the Nigerian context is that many of these elements, particularly at the country-level, were lacking at the time of the first IPP (in 1999), and yet, there has been an evolution in the last 10-year period, with some stakeholders going as far to assert that the, "contributing elements to success at the country and project level are [now] existing in the power sector" (USAID per com 2011). A more nuanced view, particularly in light of the present delays in power sector reform, would, however, indicate areas for improvement, as will be discussed in subsequent sections.

Table 1: Contributing Elements to Success[16]

Factors	Details
Country-level factors	-Favourable investment climate -Clear policy framework -Clear, consistent and fair regulatory oversight -Coherent power sector planning linked to procurement and contracting -Abundant low cost fuel & secure contracts
Project level factors	- Favourable equity partners - Favourable debt arrangements - Secure and adequate revenue stream - Credit enhancements and security arrangements - Positive technical performance - Strategic management and relationship building

A final point worth noting is that one could argue that the 'legacies' are almost isolated from the emerging market design, and that the 'competition for the market' actually is antithetical to competition in the market, once long-term PPAs are signed; that is, once the contracts are penned (generally with a duration of 20 years), there is no further competition in the market. The sort of isolation (and associated comfort), created via a long-term PPA, may be required to boost investor confidence, given the state of the ESI at the outset, but there is also a chance that IPPs may become barriers to ongoing structural reform, including movement toward wholesale competition.

[16] These 'Contributing Elements to Success' (CES) are explored in greater detail in Eberhard & Gratwick, "When Power Comes: An Analysis of IPPs in Sub-Saharan Africa," (2011).

III. IPPs, new generation and the reform agendas

Although Nigeria has seen the emergence of three large-scale IPPs and the establishment of a regulator, the model or standard for power sector reform, intended to move fully integrated utilities to competition, to increase overall efficiency, was not realized in totality. This standard, popularized by England and Wales, and subsequently Chile and Norway, spelled out a phased process advancing from corporatisation, to commercialisation, the passage of the requisite legislation, establishment of an independent regulator, introduction of IPPs, restructuring/unbundling, divestiture of generation and distribution assets, and finally culminated in the introduction of competition. The fact that Nigeria's reform has been piecemeal, when measured against the 'standard' is not unusual; most other Sub-Saharan African countries have followed a similar pattern. The adoption and integration of IPPs and an independent regulator, while admittedly not easy, are seen to be among the more simple activities of reform, since these developments may happen on the margin, without a complete overhaul of the state-owned utility, a politically charged and potentially more complex process.

However, Nigeria reforms are ongoing, and while not in the 'standard' order, unbundling of the National Electric Power Authority (NEPA) into a number of successor companies, comprising PHCN, occurred (i.e. that is, before complete commercialization), with full licenses in effect from January 2010, upon payment of license fee. Thus the previously vertically integrated state-owned utility was reconfigured as separate generation companies, a transmission company and 11 distinct distribution companies. The incorporation of the Bulk Electricity Trader (BET) in July 2011 was among the next series of key reforms to be enacted, as described below. With ongoing reforms, championed by the Jonathan administration, and largely overseen by the Bureau of Public Enterprises, together with the Presidential Task Force on Power and the Presidential Action Committee on Power, PHCN has largely become defunct, as assets are prepared for privatization and a phased introduction of competition, as described below. As the Presidential Task Force on Power writes, "currently 70 percent of power supply in Nigeria comes from state-owned power plants," (2011b). However, to meet stated goals of delivery and expansion, including an identified target of 40,000 MW by 2020, "in the next 3 to 4 years, 70 percent of our power will be generated by private companies," (2011b).

A. The Generation mix

In the present overhaul of the entire Nigerian Electricity Supply Industry, several important factors are noteworthy in terms of IPP development. As previously mentioned, while not being replicated, space has been afforded to the 'legacy IPPs'; that is, contracts with AES Barge, Okpai and Afam VI will be upheld, unchanged, with the main change that the PPA will be administered by the Bulk Electricity Trader (BET), rather than the now defunct PHCN.[17] A transitional entity, the BET is intended to be the present nexus between generation companies (Gencos), IPPs and distribution companies (Discos), as Gencos and IPPs will sell to the Bulk Trader, which will then resell power to Discos through vesting contracts. Despite this institutional change, for the legacy IPPs, by far the greatest difference will be the new entrants in power supply and their anticipated trading arrangements, as detailed in the next section.

Top priority is being given to the divestiture of all federally-owned thermal generation plants, including Egbin, Sapele, Delta, Geregu, Omotosho, Olorunsogo, and Afam, originally comprising NEPA, featured in greater detail below.[18] They amount to approximately 4988 MW in installed capacity, however, of this only 1978 MW is actual available capacity. Among the most recent challenges faced is that Egbin stood idle as of December 13, with the consequence that approximately one quarter of the existing Nigerian grid supply was compromised. There are ramifications for the divesture program here as well since plant condition has disintegrated, which could dissuade some investors.[19]

[17]"As PHCN has been unbundled into a number of generation companies (see footnote below), 11 distribution companies and one transmission company, NERC no longer recognises PHCN as an institution. This concurs with Section 22(2) of the EPSR Act 2005. However, the unbundled companies still retain a so-called "corporate headquarters" where some activities (such as procurement) are centrally coordinated. Presently, PHCN earns a "corporate headquarters charge" from the tariff but this will cease when the new tariff schedule is implemented in January 2012. Therefore, PHCN is officially (if not physically) defunct,"(NERC per com 2011a).

[18] Two thermal plants (Calabar, and Oji, with installed capacity of 6.6 and 10 MW respectively, but with neither presently producing power) are being sold as mere sites and not part of core assets. In addition, there are three FGN hydro stations, namely: 1) Shiroro; 2) Kainji; and 3) Jebba, which are not being divested per se, but for which management contracts are being sought; outright divestiture is not possible due to water rights (NERC per com, 2011a; Onagoruwa 2011:13; CNBC 2011). However, these three plants were among the original seven to be unbundled from NEPA, and these amount to 1900 MW in installed capacity and 1380 MW in actual capacity. Finally, although similar in name to 3 NIPPs (Geregu, Omotosho and Olorunsogo), these are part of FGN's legacy plants and only share physical/site proximity to the above-noted non-FGN plants. See footnote 14 for a discussion of Afam.

[19] Other elements of the reform program, namely the overhaul of the gas infrastructure and the divestiture of the 11 distribution companies are not discussed in detail as this report focuses primarily on IPPs and those areas immediately related.

Table 2: Federal Government of Nigeria thermal projects up for divestiture

Project name	Year of construction	Location	Installed capacity (MW)	Available capacity (MW)
Egbin	1986	Egbin, Lagos State	1320	1100
Sapele	1978, 1983	Sapele, Delta State	1020	90
Delta	1966	Ughelli, Delta State	900	300
Geregu	2007	Geregu, Kogi State	414	276
Omotosho	2007	Omotosho, Ondo State	304	76
Olorunsogo	2008	Olorunsogo, Ogun State	304	76
Afam (V)	1963	Afam, Rivers State	726	60

Excerpted from BPE (2011a: 7)

Concurrent to this divestiture is the completion of the National Integrated Power Projects (NIPPs), originally planned by the previous administration of Olusegun Obasanjo to be jointly owned and operated by three tiers of government, namely federal, state and local, until their eventual privatization as well. The NIPPs constitute 10 fast-tracked projects, which were intended to boost power and reduce gas-flaring, with a total of 4775 MW planned.

Table 3: National Integrated Power Projects

Project name (technology)	Location	Designed capacity (MW)
Calabar	Calabar, Cross Rivers State	563
Egbema	Egbema, Imo State	338
Ihovbor	Ihovbor, Edo State	451
Gbarain	Gbarain, Bayelsa State	225
Sapele	Sapele, Delta State	451
Omoku	Omoku, Rivers State	225
Alaoji	Alaoji, Abia State	961
Olorunsogo-Phase 2	Olorunsogo, Ogun State	676
Omotosho-Phase 2	Omotosho, Ondo State	451
Geregu	Geregu, Kogi State	434

Excerpted from BPE (2011a: 9)

By 2013, according to some reports, the nearly 5 GW in power is anticipated, however, only three of the ten plants currently hold licenses with the Nigerian Regulator (NERC per com 2012). Presently, over 500 MW of NIPP capacity has been completed, however, gas supply issues are hindering projects, and therefore of that total only 112.5 is actually online (Nigerian Bulk Electricity Trader per com, 2011b; NERC per com, 2011b).[20]

A third layer of new grid supply is expected from existing plants, presently supplying commercial and industrial users. NERC has identified possible capacity at Notore Power Ltd (50MW, with this figure representing total supply of which only a portion will be evacuated to the grid), Paras Energy & Natural Resources Development (96MW), DIL Power (135MW) and Eleme Petrochemical Company Limited (135 MW).[21] Of these plants, however, it is only Notore that appears to be in the advanced stage of negotiations with the Bulk Trader. At present, discussions hinge on the payment security arrangement, with the Federal Government resisting the pressure to provide a sovereign

[20] It is estimated that approximately US$5 billion has been invested by the FGN in the NIPP program, which, to date, has not yet yielded significant returns. The project does, however, comprise 10 power generation projects, approximately 100 transmission and reinforcement and extension projects, and associated sub-stations to ensure increased capacity for stability in anticipation of the increased grid power, as well as 11 gas pipeline and flow station projects. "Arguably this is the largest ongoing integrated electricity project in the world. This investment will only be appreciated when the various projects come on-stream and complement each other," (IPPAN 2012).

[21] Excess capacity is expected to be directed to the grid, with potentially 90 MW identified from Eleme and 86 from DIL.

guarantee. A Partial Risk Guarantee from the World Bank has been discussed, however, is associated with lead times of up to 6 months.

New greenfield IPP capacity is the last on the list to boost supply. Numerous stakeholders involved in the power sector reform program all indicated that such new IPP supply would only come at a later date, given the priority of the divestiture program and the saturation of debt markets.[22] In the short-term (namely 2012), the only project expected to come online is 50 MW from Aba Integrated's total of 140 MW. Aba Integrated, a 100 percent Nigerian owned project, is however, not strictly an IPP following this report's definition, as ownership extends to the off-taker and the project has followed construction financing and not typical project finance. A range of other projects, including barge-mounted solutions, which could be fast-tracked, have been tabled, however, there is insufficient data for these projects to be part of the Bulk Trader's 'realistic' projection at present. Varying reports indicate that between 2013 and 2015, up to 1000 MW of additional capacity may be provided by between three to six different producers, with a "snowball effect" after 2015 (Bulk Trader per com, 2011b; BPE consultant per com 2011; World Bank per com 2011b).

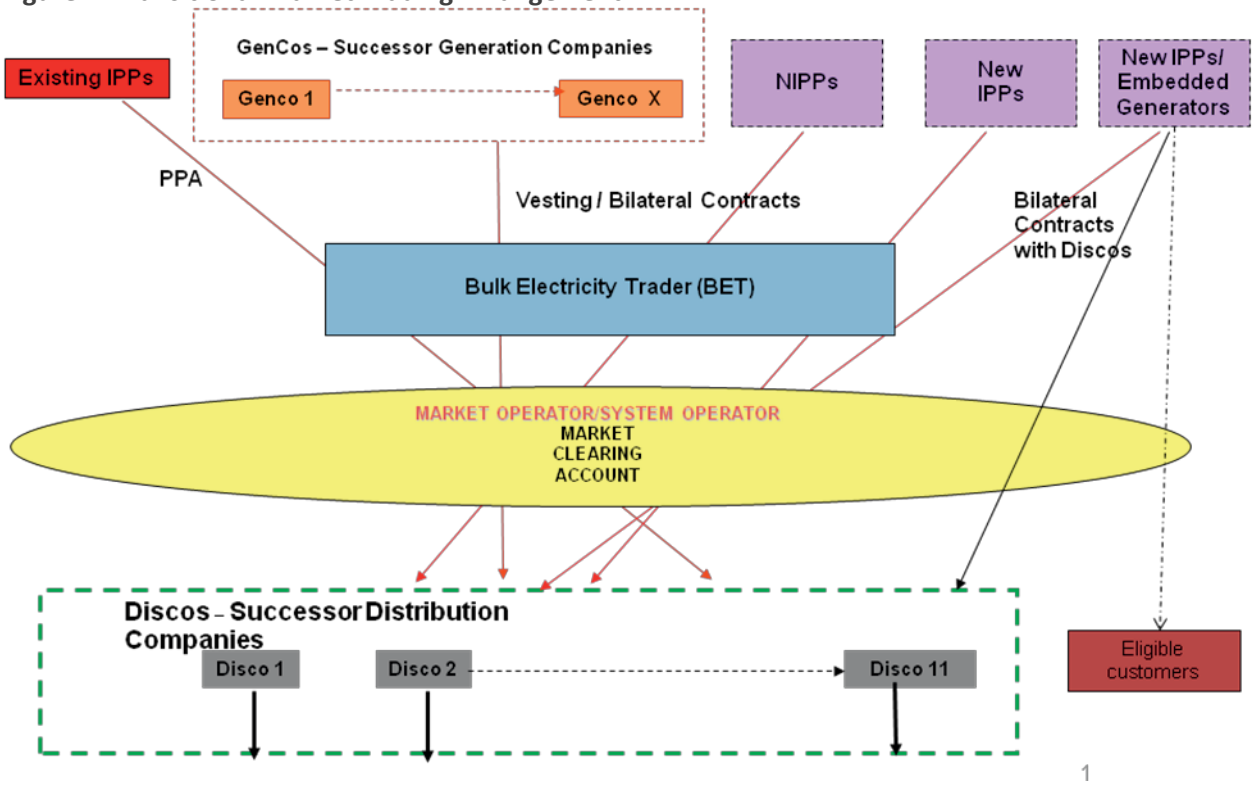
B. Key features of the trading arrangements

For the near-term (i.e. anticipated to be the next 5 plus years), the Bulk Electricity Trader is intended to "execute long term power purchase agreements with IPPs and generating companies and resell the power, via vesting contracts, to Discos as well as large scale consumers (a.k.a. 'eligible customers')," (Bulk Trader per com 2011a).[23] Unlike past PPAs, however, a standard contract is being developed.

[22] As mentioned in footnote 9, it is anticipated that Rivers State has two IPPs that may come on-line in 2012, which could contribute over 250 MW to the grid--independent but not private (IPPAN 2012).

[23] Important to note is that the roles of the Bulk Electricity Trader and the Market Operator, are still, as of December 2011, being clarified (Bulk Trader per com 2011b), however, the market operator is expected to oversee the "implementation and administration of market rules, drafting and implementation the market procedures, namely: administration of the commercial metering system; ensuring that each trading point has adequate metering systems; administration of the market settlement system; administration of the payment system and commercial arrangement of the energy market, including ancillary services; periodic reporting on the implementation of the market rules; training of participants on the market rules and procedures and trading arrangements; and supervising participants' compliance with and enforcing the market rules and the grid code," (Market Operator 2011:13).

Figure 1: Transitional Market Trading Arrangement



Based on Market Operator (2011: 10)

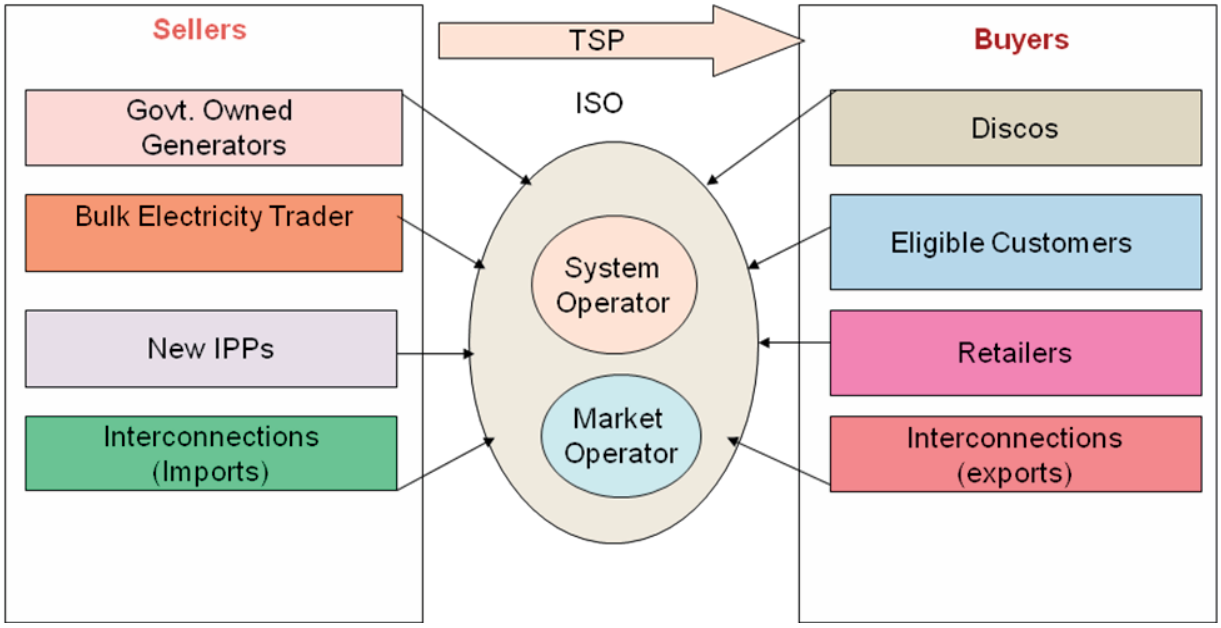
As stipulated by EPSRA (2005), the BET is not endowed with monopoly status, which means that creditworthy Discos and eligible customers may negotiate PPAs directly with IPPs and Gencos. Furthermore, as spelled out by EPSRA, once the Minister of Power declares that the electricity market has "developed to a more competitive stage by reference to certain indicators, the Bulk Trader will no longer execute PPAs, and will begin to novate its existing PPAs to Discos and eligible customers," (Bulk Trader per com 2011a). The contracts that cannot be novated will be managed by BET to term.

Thus, the myriad new and old plants are anticipated to operate in a transitional market trading arrangement for the foreseeable future. Three phases have been envisioned (approximately 1-5 years, 5-10 years, and beyond), although this timeline is not cast in stone; tentatively, the goal for the next 5 years is regulated prices, based on "life cycle costs of an efficient new entrant," (NERC 2011:19). In the 5-10 year period, NERC plans to incorporate part regulated tariffs (based on wholesale contracts) and part unregulated (based on bilateral contracts). It is only in the 10 year/beyond period, that unregulated wholesale tariffs are specified, based on bilateral contracts, considering the timeline required to make the Discos economically viable (BPE consultant per com, 2011). Tariff deliberations and plans, including with regard to retail tariffs, are happening within the

framework of Nigeria's Multi-Year Tariff Order (MYTO), which is guided by ten principles, including: cost recovery, appropriate investment signals, stability, efficient use of the network, correct risk allocation, simplicity, incentives for improving performance, transparency, flexibility and social objectives (Amadi 2011:3-4).

The wholesale market is then expected to look as follows.

Figure 2: Wholesale market envisioned for Nigeria



Based on Market Operator (2011:6). Transmission Service Provider (TSP), Independent System Operator (ISO)

Sub-markets to this wholesale market are expected to comprise: a day ahead energy and capacity market, spot (balancing) market, and ancillary services market (Market Operator 2011:7).

Although an in depth analysis of the proposed wholesale market is beyond the scope of this report, it is important to note that it has not yet been tried in Nigeria, and there are many who would question the appropriateness of such a market given the actual state of affairs in the country. In their article The 'Demise of the standard model for power sector reform', Gratwick and Eberhard (2008) cite the following, "Competition at the wholesale level is a policy issue that does not rank high on the agenda for power sector reforms in LDCs [Least Developed Countries]. In most countries, the efficient structure and size of the power industry leaves little or no room for market forces to guide the use of generation capacity. Furthermore, the concept of wholesale competition in itself is a questionable approach since the market forces it intends to stimulate may merely replicate the

existing industry structure on the basis of contracts," (Teplitz-Sembitzky 1990:81). Time, namely the 10 year time horizon to make this happen, will surely reveal its feasibility.

C. Reform delays and challenges: what is at stake?

Although reforms are progressing, and it is safe to say that all key stakeholders consulted by the authors believe that privatization will occur, delays have been encountered. Initially, divestiture was to be completed by May 2011. This was not achieved, and the BPE has recently re-set the date when generation bids are to be submitted to April 2012. Furthermore, it is anticipated by stakeholders closely involved in the process that these dates could slip further, and the bid conclusion will extend together with other reform deliverables. The cause of these delays are multi-fold, including the fact that tariff reform remains un-finalized, the PPA and other key legal documents were not ready in the initial bidding documents, and key data was missing and/or subsequently updated; for example, the valuation of Discos was reduced; in addition, bidders for Discos still do not know the minimum amount of power they will receive (World Bank per com 2011b).

Willing to pay

In addressing the retail tariff issue specifically, which is of utmost importance to all stakeholders, the intention of NERC is to move to cost reflective tariffs in the near-term, i.e. as early as 2012. Depending on consumer class, there is approximately a 50 percent subsidy involved, i.e. current prices are set at about 10 Naira cents per kWh, rather than a cost reflective price of at least 20 Naira per kWh, with the vast majority of residential consumers presently highly subsidized (World Bank per com 2011a; Amadi 2011:9). Although efforts were underway to move to a uniform tariff, the discussion has evolved. Presently, "each Disco will have a separate tariff schedule reflecting its respective distribution costs, energy consumption and customer numbers. Only the "lifeline tariff" a.k.a. the "R1" residential tariff (associated with low-consumption and low-income customers) will remain equal across Discos," (NERC per com 2011b). Although tariff hikes have faced resistance in the past, Nigerians have demonstrated their willingness to pay for reliable service, as seen by the ubiquity of back-up generators across the country. Thus if rate hikes are presented with an improvement in service then there is a greater possibility for acceptance (CNBC 2011).

The reform process is therefore not without error or weakness, but, while some investors have grown weary, reform delays are also being portrayed as positive insofar as they are ensuring that central documents such as the PPA and tariff changes are being more thoroughly vetted, which it is anticipated will save time and trouble at a later date. In this respect, there are marked

differences with Nigeria's first IPP which was sped through, only later to be reconsidered, including through a lengthy and costly arbitration proceeding. According to one independent consultant, "it would have been madness" to maintain the May 2011 timeframe, at the expense of data and process integrity.

In terms of assigning responsibility to the delays, human resource capacity is often identified as the root of stalled or ineffective reforms as well as government's political will to carry the reforms through. In the case of Nigeria's power sector reform, fleets of professionals have been engaged, within the country, as well as from the large Nigerian diaspora. Considerable numbers of non-Nigerian nationals have also been involved. The man and woman-power is therefore significant, however, it is also the largest such electricity reform program ever attempted in Africa. As such, although not a view shared by all parties, there is a belief that capacity is lacking. In a recent development, additional capacity building efforts may be targeted at the Bulk Electricity Trader, including a 2 to 3-year advisory package, via a concessionary loan. The main goal with this and related capacity building efforts is to ensure that "government gets a fair deal," according to a key stakeholder.

Even with such significant capacity injection, at present and for the foreseeable future, and with the present delays considered a boon for ensuring proper completion of processes, there are still some issues of note. Increasingly, dedicated Public-Private Partnership (PPP) units or taskforces are being created across Sub-Saharan African countries to handle reforms. These special units have the potential to help, but also, at times, hinder delivery of reform, due to policies and politicking. In the case specifically of Nigeria, Nigerian President Umaru Yar'Adua (2007-2010) is cited as stalling many of the reforms started under the previous Obasanjo administration; during Yar'Adua's brief reign, the Bureau of Public Enterprises (which had been created as a special privatization unit, under Nigeria's Privatization and Commercialization Act of 2000) was largely disempowered. Meanwhile, the Infrastructure Concession Regulatory Commission (ICRC) was established to implement (but not prepare) greenfield concessions, with preparation identified as a task to be continued by BPE. During this time, multi-lateral and bilateral funding, which was initially to be targeted to the BPE (for concession preparatory work) was ultimately redirected to ICRC, due to the political prominence of the new agency. Following the election of President Jonathan, the BPE once again came into favour, and was identified as the primary vehicle for privatizations, as it had originally been intended. With considerable IFI funding directed to ICRC, however, BPE has largely managed with limited donor

support. Thus there is, due to politics, an unintended exclusion of donors from part of the reform process which ultimately they sought to address.[24]

[24] This section is based on personal correspondence, dating to December 2011 and January 2012, with consultants to multilateral institutions, operating in Nigeria, as well as input from other key personnel operating in the sector.

IV. Conclusion: the future, and lessons of the past?

Everyone has a say

On September 30, 2011, President Jonathan wrote the following: "My priority is to ease the burden of the masses by improving on our infrastructure most notably power and though this is far from being enough, I am nonetheless gratified that we are now generating 4242.7 MW of electricity which is the highest this nation has ever generated. We will improve on this. Today, however, I need your feedback. Has the power situation in your area improved, remained the same or deteriorated? Please let me know so I can take your views into consideration in making policy decisions. GEJ."

The President posted this query on his official Facebook page. Although this social media outlet may at times be dismissed, given the majority of content showcased, the response rate to President Jonathan's question was significant. Within 24 hours, he received approximately 7,500 responses. Several days later, although new issues had been posted, additional responses to his power query continued to pour in.[25] No issue that he has raised since his May 2011 inauguration has received the same level of attention (i.e. there were on average three times as many responses than to any other issue). Furthermore, many of the respondents wrote in depth, with the majority commenting on the need for urgent change. Important to note for the purpose of this report is that there was little to no attention paid to IPPs per se, however, the issue of privatizing generation assets came up repeatedly with the majority demanding a change in the status quo (of primarily, public ownership). Nevertheless, what the retail consumer ultimately sees at the end of the day is not AES, Agip or Shell, what they see is the kWh and the associated price. One comment that was articulated in various ways was as follows: "we are willing to accommodate a tariff [increase] for the service enjoyed, not a service not enjoyed," (Madandola Akeem Olalekan, October 5).

[25] As of the completion of this report, responses were still forthcoming, numbering 8348, as of December 15, 2011.

Confusion and clarity

Earlier, in September 2011, a stakeholder, close to the reform process, was approached and queried about how many operational IPPs there are presently in Nigeria; the answer was 21. Subsequently, another stakeholder, also integrally involved in reform, was queried on the same subject and the response was three. In 2010, when the question was raised, to officials at NERC, the number given was four. Additional research ultimately confirmed that there are: 24 operating IPPs, of which 6 are presently feeding power into the national grid. Of these six, however, while categorized by NERC as IPPs, three are actually owned by the Rivers and Akwa Ibom State Governments, respectively—independent but not 'private' per se. Adding to the potential confusion, there are a further four large-scale IPPs, which all have additional power to contribute to the grid (they are presently supplying one customer) and are awaiting negotiations with the Bulk Trader.[26] Thus, everyone is almost all right, and the disconnect may be explained largely by how plants are characterized (along with the fact that one IPP (Aba Integrated) which had previously signaled financial close (and was expected to be operational by end-2010) was actually not fully closed).[27]

Just as there is a variety of opinion in terms of the number of IPPs, summing up the overall IPP experience yields a range of responses. The AES Barge project has attracted considerable attention due to its ongoing contractual disputes. Issues related to security of gas supply have also influenced its performance. Still it has run with relative success and provided vital power over the past decade. While less controversial, Okpai has not been flawless due to the escalation of costs. Afam VI seems to enjoy the best reputation, however, even then, monetization of flared gas has not been fully realized.

In summarizing the experience, the IPP Association of Nigeria has indicated that the disconnect between the 34 IPP licenses issued and the limited actual development on the ground may be attributed to: implementation of domestic gas utilization policy and gas infrastructural development to ensure security of fuel supply to IPPs; execution of Gas Sale & Purchase Agreements (GSPA) with gas producers; means for back-stopping the financial exposure of the Bulk Trader to IPPs; execution/finalization of PPAs to enable IPPs to raise finance for equipment

[26] Important to note is that the Bulk Trader indicated the near-term inclusion of only one such project, namely, Notore (per com 2011b).

[27] As noted earlier, Aba Integrated, a 100% Nigerian owned/led project, has followed construction financing and not typical project finance.

procurement; failure to attain cost reflective tariffs; and the lack of capacity within government and its agencies to develop a conducive road map for the industry (per com 2012).

It is important to note that retail consumers of power have consistently shown dissatisfaction with how they see the country's power (for which IPPs contribute almost 30%). The 331 EOIs (albeit for brownfields) would seem to signal that the country is ripe for change and that private power could provide part of the answer. The role that the private power predecessors (viz. IPPs) played should not be underestimated. Being able to point to the functioning AES Barge, Okpai and Afam VI may in fact have helped to facilitate this process of reform. It may have also played a role in helping to highlight key shortcomings of the past.

Will the power come?

The main question now in terms of IPPs is will new investors come? Will the present and near-term risk-reward profile be attractive to any new entrants? The recent past points to a level of skepticism, as no new IPPs have materialized since Afam VI, despite reforms taking center stage. Voices of caution and concern abound, including those who have invested in government agencies which have come in and out of favor, as seen with the recent experience with selected IFIs, ICRC and BPE. Furthermore, the recently published World Economic Forum's Financial Development Report describes the following scenario:

> After falling three spots, Nigeria ranks at the very bottom of this year's Index. Although the number of positive developments is limited, Nigeria does possess a relative strength in terms of financial sector liberalization (29th). Conversely, its business environment (58th) re-mains highly underdeveloped. The quality of Nigeria's overall infrastructure (57th) is quite poor and the costs associated with starting a business (60th) and registering property (60th) in the country are extraordinarily high. As such, Nigeria lacks many of the foundational elements necessary for successful financial development. Moreover, financial intermediation is lacking across its banking financial services (56th), non-banking financial services (58th), and financial markets (55th). Finally, overall financial access remains low (58th), despite Nigeria's advantages in foreign direct investment (20th) and loan accounts at microfinance institutions (21st), (World Economic Forum 2011:27).

There are, however, voices of optimism. Citigroup Global Markets projects that "Nigeria, India and Vietnam are expected to experience the highest real per capita GDP growth rates until 2050," (2011:45). They characterize Nigeria among 11 developing countries noted for their young populations and present poverty, with overwhelming growth prospects, across all sectors. According to the Bulk Electricity Trader, responsible for power purchases for the mid-term, the evolving market conditions will be attractive to new IPPs, provided the multi-year tariff order strikes the right balance, and sends the right signal to investors while simultaneously looking out for consumers. Other key stakeholders nod their heads in agreement: IPPs will present themselves as the existing

reform environment settles. Nigeria is unique, according to some experts, in the African context, due to the strong willingness to pay, as noted earlier, together with the abysmal present power situation which hinders public and private sectors in virtually every activity. Bottom line, there is real, latent demand. In addition, as aforementioned, there are indications that between 2013 and 2015, up to 1000 MW of additional capacity may be provided by between three to six different IPPs, with a "snowball effect" after 2015. That said, to meet the 2020 goal of 40 000 MW, new investment will need to multiply exponentially, and Nigeria will need to address the real impediments to doing business, as identified by the World Economic Survey cited above.

Certain strategies are being adopted to enhance the investment environment, including the critical PRG being extended to the Bulk Trader, which counters the default risk of the Discos, thus reducing risks for potential new Gencos. Although the planning process has been interrupted by different political administrations and the involvement of different government agencies, the present approach with strong executive oversight may help bring about more coherency. Also in the works is an overhaul of the gas sector which should move the country towards more dependable fuel supply for its power projects, something that has been a severe hindrance, particularly for AES Barge over the past decade. In sum, there is a way forward, and the voices of optimism, together with the requisite planning and prudent procurement strategies will hopefully lead to continuous light inside and out for Nigeria. Meanwhile, with the most extensive power sector reforms undertaken by any African country to date, Nigeria has the potential to offer countless lessons and case studies for other countries. The possibilities are endless.

Recommendations

Intended to be a quick fix to power shortages, the Enron/AES Barge IPP revealed that there are no true quick fixes in electric power procurement. Instead, it is with thorough planning and transparent procurement that projects ultimately benefit all parties. The reform process, while bounded, should not be rushed, keeping in mind that many of the parameters of the standard model for reform were ultimately based on very different market conditions than those that exist in Nigeria. A holistic approach must be adopted, as is presently underway. An IPP without simultaneous tariff reform is ultimately not sustainable, as experience has revealed. In addition, although touted as among the key reformers, it is important to note that "Kenya is still learning how to procure and contract more efficiently: the important point is the commitment to learning and improving," (Castalia, 2011). Immediately below, is a list of key factors, organized at the country-level and project-level, respectively, intended to serve as recommendations, to assist specifically in the development of IPPs.

Country-level factors

Striking a balance between development and investment outcomes is among the main means to ensuring long-term sustainability for IPPs. How do we achieve such a balance? In our opinion, there are two different levels at which stakeholders need to address issues: the country level and project level. At the country level, there are five major areas that help to facilitate balanced outcomes, namely: 1) a favourable investment climate; 2) a clear policy framework; 3) clear, consistent and fair regulatory oversight; 4) coherent power sector planning linked to procurement and contracting; 5) abundant low cost fuel and secure fuel contracts. Each of these areas is detailed below.

A favourable investment climate is characterized largely by the following: stable macro-economic policies; a legal and political system that allows contracts to be enforced and laws to be upheld; good repayment record and investment grade rating; less (costly) risk mitigation techniques to be employed which translates into lower cost of capital and hence lower project costs and more competitive prices; potentially more than one investment opportunity.

Another key ingredient at the country level is a **clear policy framework**, which involves: a policy framework enshrined in legislation, that clearly specifies market structure and roles as well as terms for private and public sector investments (generally for single buyer model, not, yet, wholesale competition in the African context); in addition, reform-minded 'champions', concerned with long-run, lead and implement framework.

Clear, consistent and fair regulatory oversight is pivotal for balanced outcomes as it improves general performance of private and public sector assets. Important components include: the perceived independence of the regulator; transparent and predictable licensing and tariff framework, which improves investor confidence; cost-reflective tariffs to ensure revenue sufficiency, where possible, as well as targeted subsidies, where necessary; and finally the general 'protection' of consumers.

Often overlooked but among the most critical areas is **coherent power sector planning linked to procurement and contracting**. Specifically, an energy security standard is in place, and planning roles and functions are clarified; power planning is vested with lead, appropriate (skilled, resourced and empowered) agency, and 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. In addition, 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; pre-tender technical and environmental due-diligence on the proposed site is also essential, and the procurement process is transparent and, provided numerous bids received, competition ultimately drives down prices. Finally, capacity is built to contract, tender and evaluate effectively.

A final area at the country level which may make or break the long-term sustainability of projects is: **abundant, low cost fuel and secure contracts**. For this to make sense, chosen fuel must be cost-competitive with other fuels, and contracts safeguard affordable and reliable fuel supply for the duration of the project.

Project-level factors

In addition to the abovementioned areas, there are a suite of factors relevant directly to the project that may help facilitate more balanced outcomes, namely: 1) favourable equity partners; 2) favourable debt arrangements; 3) a secure and adequate revenue stream; 4) credit enhancements and security arrangements; 5) positive technical performance and finally, 6) strategic management and relationship building. Each of these factors are elaborated below.

Favourable equity partners is defined as follows: where possible, the involvement of local partners and equity as well as firms with development origins; appetite for the actual project risk and specific experience with developing country project risk; the involvement of a DFI partner

and/or a host country government; a return on equity that is generally perceived by parties as a reasonable and fair.

Favourable debt arrangements are paramount for the long-term sustainability of projects and may be characterized as follows: competitively priced financing, including possibly the involvement of DFIs; local capital markets, which have the potential to mitigate foreign exchange risk; some flexibility in terms and conditions (including possible refinancing).

Of utmost importance is **a secure and adequate revenue stream**, which is generally made possible via the following conditions: commercially sound metering, billing and collections by the utility (including the ability to disconnect customers who default on payments, be they Government ministries/departments or parastatals); it should be noted that investors/financiers prefer markets where the off-taker is not a vertically integrated utility with own generation stations; the revenue stream should be safeguarded in a robust PPA, which 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.

Taking various forms, **credit enhancements and security arrangements** are part of the muscle that attracts and sustains IPPs, specifically: sovereign guarantees, partial risk guarantees; political risk insurance and cash, namely escrow accounts, letters of credit and liquidity facilities--all of which should be made clear at the time of the tender, especially the sovereign guarantees which are cited as among the most effective instrument when coupled with a PRG.

Positive technical performance is an area where most IPPs have a clear advantage, however, it should not be taken for granted; this encompasses high technical performance, including availability, and also that sponsors anticipate potential conflicts (especially related to O&M, and budgeting) and mitigate them.

Strategic management and relationship building is grease for the wheels and an integral part of the balancing of development and investment outcomes. Sponsors should work to create a positive image through political relationships, development funds, and effective communications. Ongoing, strategic management of their contracts, especially in the face of exogenous stresses, is critical.

Appendix A: Nigerian IPPs

The table immediately below depicts all 47 Nigerian IPPs, as noted by NERC, as of October 2011. Plants highlighted in green represent state-sponsored projects. The three projects currently connected to the grid, covered in detail in this report, are highlighted in yellow for emphasis. Finally, there are a further four large-scale projects (Notore, Paras, DIL and Eleme), that are currently operational (supplying individual industrial consumers) and are expected to contribute power to the grid, once they conclude negotiations with the as of yet finalized Bulk Trader. However, according to the Bulk Trader, only one such project is close to this stage, viz. Notore (per com 2011b).

Plant	Status	Size (MW)	Grid connected
ContourGlobal Solutions (Nig.) Ltd	Construction	4	No
Wedotebary Nigeria Ltd	Construction	5	No
Income Electrix Limited	Construction	6	No
ContourGlobal Solutions (Nig.) Ltd	Construction	7	No
ContourGlobal Solutions (Nig.) Ltd	Construction	10	No
Tower Power Abeokuta Limited	Construction	20	No
Kaduna Power Supply Company Limited	Construction	84	No
Geometric	Construction	140	No
First Independent Power Co. Ltd (Eleme)	Construction	95	Yes
Westcom Tech & Energy Services Ltd.	Expired license	50	No
Notore Power Ltd	Operational	50	Forthcoming[28]
Paras Energy & Natural Resources Dlpmt	Operational	96	Forthcoming
DIL Power Plc	Operational	135	Forthcoming
Eleme Petrochemical Company Limited	Operational	135	Forthcoming
Ilupeju Power Limited	Operational	2	No
Energy Company of Nigeria Limited	Operational	3	No
CET Power Projects Ltd (Iganmu)	Operational	5	No
CET Power Projects (Ewekoro)	Operational	6	No
Unipower Agbara Limited	Operational	6	No
CET Power Projects (Sagamu)	Operational	7	No
Shoreline Power Company Limited	Operational	9	No
Akute Power Limited	Operational	13	No
Ewekoro	Operational	13	No
CET Power Project Ltd (Tinapa)	Operational	20	No
Coronation (Power & Gas) Ltd	Operational	20	No
Tower Power Utility Ltd	Operational	20	No
Nigerian Electricity Supply Corporation	Operational	30	No

[28] The figure of 50MW capacity for Notore, together with that of Paras, DIL and Eleme (indicated as 'forthcoming' above), represents the total available capacity and not the excess capacity that will be made available to the grid.

Ikorodu Industrial. Power Ltd	Operational	39	No
First Independent Power (Trans Amadi)	Operational	136	Yes
First Independent Power (Omoku)	Operational	150	Yes
Ibom Power Ltd	Operational	190	Yes
AES	Operational	270	Yes
Nigerian Agip Oil. Co. Ltd	Operational	480	Yes
Shell Petroleum Development Co. Ltd	Operational	624	Yes
Mabon Ltd	Planned	39	Yes
Lotus & Bresson Nig. Ltd	Planned	60	Yes
Anita Energy Ltd	Planned	90	Yes
Agbara Shoreline Power Company Ltd	Planned	100	Yes
Minaj Holding Ltd	Planned	115	Yes
Energy Company of Nigeria (ENCON) Ltd	Planned	140	Yes
Farm Electric Supply Ltd.	Planned	150	Yes
Hudson Power Station Ltd	Planned	150	Yes
Ibafo Power Station Ltd.	Planned	200	Yes
ICS Power	Planned	624	Yes
Supertek Nig. Ltd	Planned	1000	Yes
Westcom Tech & Energy Services Ltd	Planned	1000	Yes
Ethiope Energy Ltd	Planned	2800	Yes

Appendix B: Project Profiles

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Project	**AES Barge Limited**
Size	270 MW
Cost	US$240 million
$ per kW	US$888
Fuel/Technology	Natural gas/open cycle (barge mounted)
ICB	None
Contract	BOO, 13 years
Debt/Equity	NA
DFI in equity and debt	None
Local participation in equity and debt	Yes (equity)
Equity partners (country of origin & % of each shareholder)	Enron (USA, 100%) sold to AES (95%) and YFP (Nigeria, 5%) in 2000
Lenders	NA
Credit enhancements and security arrangements	OPIC political risk insurance Sovereign guarantee, US$60 million Letter of Credit from Ministry of Finance
Project tender, COD	1999, 2001
Contract change	Yes, initial plant size increased from 90 MW to 270 MW (9 units of 30 MW each) and change in the fuel from liquid fuel to natural gas, both of which had the effect of reducing the capacity charge; recent arbitration (lasting 5 years) concluded, involving among other things the availability deficiency payment, meanwhile tax exemption certificate has been withheld by government for the duration of the project
Fuel arrangement	Utility arranges fuel

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Project	**Okpai**
Size	480 MW
Cost	US$ 462[29]
Fuel/Technology	Natural gas/combined cycle
ICB	None
Contract	BOO, 20 years
Debt/Equity	100% equity financed
DFI in equity and debt	None
Local participation in equity and debt	Yes (equity and debt)
Equity partners (country of origin & % of each shareholder)	Nigerian National Petroleum Corporation (Nigeria, 60%), Nigerian Agip Oil Company (Italy, 20%), and Phillips Oil Company (USA, 20%) maintained equity since 2001
Lenders	Provided by equity partners
Credit enhancements and security arrangements	PPA backed by Nigerian Petroleum Development Company's oil revenues
Project tender, COD	2001, 2005
Contract change	Ongoing negotiations related to investment costs which rose by US$150 million, to US$462 million; although plant is producing power, due to the dispute, full payment is not being made by utility
Fuel arrangement	Project company provides fuel

[29] Project costs include the gas infrastructure.

Project	**Afam VI**
Size	624MW
Cost	NA
$ per kW	NA
Fuel/Technology	CCGT
ICB	No
Contract	BOO, 20 years
Debt/Equity	100% equity
DFI in equity and debt	None
Local participation in equity and debt	Yes, NNPC
Equity partners (country of origin & % of each shareholder)	NNPC (Nigeria, 55%), Shell (UK/Netherlands, 30%), Elf (Total) (France, 10%), Agip (Italy, 5%)
Lenders	
Credit enhancements and security arrangements	PPA backed by Nigerian Petroleum Development Company's oil revenues
Project tender, COD	2000, 2008
Contract change	No
Fuel arrangement	Project company provides fuel

REFERENCES

Amadi, S (2011). “MYTO II.” Transaction and Industry Review Conference, Abuja, Nov 28-29.

BBC (2002). “Enron timeline: 2001 Bankrupt.” http://news.bbc.co.uk/hi/english/static/in_depth/business/2002/enron/timeline/12.stm. Accessed on September 30, 2011.

BPE consultant per com (2011). “Personal communication wrt Nigerian Power Sector Reform and IPPs,” October 14.

Bureau of Public Enterprises and Presidential Task Force on Power (2011). “Generation Presentation at Investor’s Forum.” Electric Power Sector Reform Workshop, Abuja, May 25.

Bureau of Public Enterprises (2011a). “Power Generation: Status and Outlook.” Electric Power Sector Reform Workshop, Abuja, May 25.

— . (2011b). www.bpeng.org/Electric_Power/Pages/default.aspx. Accessed on October 1, 2011.

— . (2011c). “Update on the Privatization of PHCN.” Transaction and Industry Review Conference, Abuja, November 28-29.

Castalia Strategic Advisors (2011). Field Trip Report: Tanzanian Delegation to Kenya on Power Planning and Procurement, Report to Representatives of the Tanzanian Government and Private Sector, August.

Citigroup Global Markets (2011). “Global Economics View.” London, February, 21.

CNBC (2011). “From Darkness to Light: Rebuilding Nigeria's Electric Power Sector,” (documentary). CNBC Africa/Spirit Creations. http://www.abndigital.com/page/multimedia/video/darkness-to-light/1038861-From-Darkness-to-Light-Part-1. Accessed on September 30 2011.

Eberhard, A and Gratwick, K.N. (2011). “When the power comes: an analysis of IPPs in Africa.” Report prepared for the Infrastructure Consortium on Africa.

Gratwick, K.N. and Eberhard, A (2008). "Demise of the standard model for power sector reform and the emergence of hybrid power markets." Energy Policy: 36: 3948-3960.

IPPAN per com (2012). “Personal communication wrt Nigerian Power Sector Reform.” January 10-12.

Kupolokun, F (2002). "Issues in Natural Gas Utilization in Nigeria." The Nigerian Natural Gas Strategy Stakeholders Workshop. Abuja, December 9.

Market Operator (2011). “Power Sector Reform and the Nigerian Electricity Sector Reform.” Transaction and Industry Review Conference, Abuja, November 28-29.

Mohiuddin, Arif (2011). “The Privatization Transaction Process and the Opportunities for Investments in the Nigerian Power Sector.” Electric Power Sector Reform Workshop, Abuja, May 25.

Ndiribe, O (2011). “PHCN Workers Back to Work,” AFNWS, 18 November.

NERC (2011). "Tariff Design and Regulation." Electric Power Investors Forum. Abuja, January, 2011.

NERC per com (2011a). “Personal communication wrt Nigerian Power Sector Reform.” December 21.

NERC per com (2011b). “Personal communication wrt Nigerian Power Sector Reform.” December 29.

NERC per com (2012). “Personal communication wrt Nigerian Power Sector Reform.” January 13.

Nigerian Bulk Electrcity Trading Plc per com (2011a). “Personal communication wrt Nigerian Power Sector Reform.” December 8.

—. (2011b). “Personal communication wrt Nigerian Power Sector Reform.” December 13.

Nigerian Ministry of Petroleum Resources (2006). "Ministerial Press Briefing."

Obayagona (2011). “1,080mw lost as Egbin power station shuts down, December 15, 2011.” Business Day: www.businessdayonline.com/NG/index.php/news/76-hot-topic/30903-1080mw-lost-as-egbin-power-station-shuts-down, accessed on December 15, 2011.

Okonji, Emma (2011). "Telecom Sector Has Impacted on the Country's GDP - NCC." *AFNWS*, April 12.

Onagoruwa, Bola (2011). “The Privatization of the Power Sector--the Journey So Far.” Electric Power Sector Reform Workshop, Abuja, May 25.

"Overview of Reform--Investor Forum," (2011). Electric Power Sector Reform Workshop, Abuja, May 25.

Presidential Task Force on Power (2011a). www.nigeriapowerreform.org/index.php/reform-institutions/overview. Accessed on September 30, 2011.

—. (2011b). “Nigeria's Power Crisis: Light at the End of the Tunnel.” Abuja: Federal Government of Nigeria.

RERA per com (2011). IPP developments in Nigeria, October 19.

Teplitz-Sembitzky, W (1990). "Regulation, Deregulation or reregulation—what is needed in the LDCs power sector." Industry and Energy Department Working Paper, no. 30. Washington D.C.: The World Bank.

Ugwuanyi, Emeka (2011). "Nigeria attains 4242 MW power generation." The Nation, September 20.

USAID per com (2011). “Personal communication wrt Nigerian IPPs.” Sept 16.

Van Meeteren, B (2005). “Financing of AES Nigeria Barges Ltd,” Power Generation World 2005, April 19.

World Bank, UK Department for International Development, Federal Government of Nigeria (2011). “2011 Investment Climate Assessment Key Findings in 26 States.”

World Bank per com (2011a). "Personal communication wrt Nigerian Power Supply." October 1.

World Bank per com (2011b). “Personal communication wrt Nigerian Power Sector Reform.” December 8.

World Economic Forum (2011). “The Financial Development Report.” Geneva.

Yusuf, Adeola. "Jonathan Sets to Recoup U.S.$10 Billion From Flared Gas." *AFNWS*, July 12, 2011.

ADDITIONAL RESOURCES

Presidential Taskforce on Power: www.nigeriapowerreform.org/index.php/reform-institutions/overview

Present IPP licensees: www.nercng.org/index.php?option=com_contact&catid=41&Itemid=67

'From Darkness to Light' Documentary, aired on CNBC Africa, September 2011: Part 1: www.abndigital.com/page/multimedia/video/darkness-to-light/1038861-From-Darkness-to-Light-Part-1

Part 2: www.abndigital.com/page/multimedia/video/darkness-to-light/1038860-From-Darkness-to-Light-Part-2