

Uganda: brave reforms and new growth

For decades Uganda has suffered from inadequate power supply. A disruptive civil war (from 1971 to 1986) and decreasing water levels in Lake Victoria, the main reservoir for the country's hydro dominated electric power system, exacerbated this problem and led to a 60 per cent decrease in the country's available generating capacity. It is therefore not surprising that as at 2009, overall access to electricity in Uganda was a low 11 per cent (41% urban, 4% rural),¹ resulting in one of the lowest per capita electricity consumption rates in Africa. Another feature of the supply crisis is the high level of distribution losses which were measured at 40 per cent in 1988, and has remained above 30 per cent ever since.

To deal with the crisis, the government in 1999 embarked upon the most extensive power-sector reform programme ever witnessed on the African continent. The state-owned and vertically integrated Uganda Electricity Board (UEB) was unbundled, and generation and distribution were subsequently privatised through 20-year concession agreements. An independent regulator, the Electricity Regulatory Authority, was established, together with the Electricity Disputes Tribunal and the Rural Electrification Fund. In the meantime, the country's main hydropower station was rehabilitated, and an additional one was built nearby, bringing installed capacity to 380MW. Overall productivity increased with a leaner and more professional workforce.

With generation liberalised, negotiations for the development of the first independent power producer (IPP), the 250MW Bujagali hydroproject, began. Financial closure on the Bujagali Project proved elusive however, and the negotiations became lengthy and controversial. Meanwhile generating output at the two main power stations was increasingly limited by the low level of Lake Victoria, and the supply crisis deepened. In 2006, the government resorted to emergency thermal generation. Inevitably, there was a rapid increase in electricity tariffs and soon retail electricity tariffs in Uganda were among the highest in Africa. Meanwhile, following the Enron debacle, and allegations of impropriety, the sponsors of the Bujagali project pulled out. The reforms were not yielding the desired effect.

Government remained committed to the reform process, however, and soon new developers were identified for the Bujagali project. Given the long lead times required for this huge project, additional emergency generation had to be procured, but with regulatory and licensing frameworks now established, the first thermal IPP, run on cheaper heavy-fuel-oil, was licensed in 2007 and entered service the following year, thus displacing some of the need for emergency power. Other smaller plants also began to be licensed, and by 2010, approximately 30 per cent of available generation capacity was supplied by IPPs. Inroads into the power-supply deficit are now steadily being made, and the commissioning of Bujagali that is scheduled for 2011 should see the worst of the crisis over. Retail electricity prices, the level of distribution losses and access to electricity are likely to remain challenging in Uganda, however.

In this chapter we detail the story of power sector reform in Uganda, examine the elements of the regulatory system that have facilitated the process, and highlight aspects of the system that could assist the electricity sector to overcome its remaining challenges.

Uganda's electricity sector

From a policymaking and regulatory perspective, Uganda's electricity sector has elements in common with all the countries covered in this volume – government through the Ministry of Energy and Minerals Development (MEMD) is primarily responsible for policy and the independent Electricity Regulatory Authority (ERA) provides regulatory oversight. There is also a Rural Electrification Agency, and an Electricity Disputes Tribunal – but the impact and extent of the reform process is very evident at industry level.

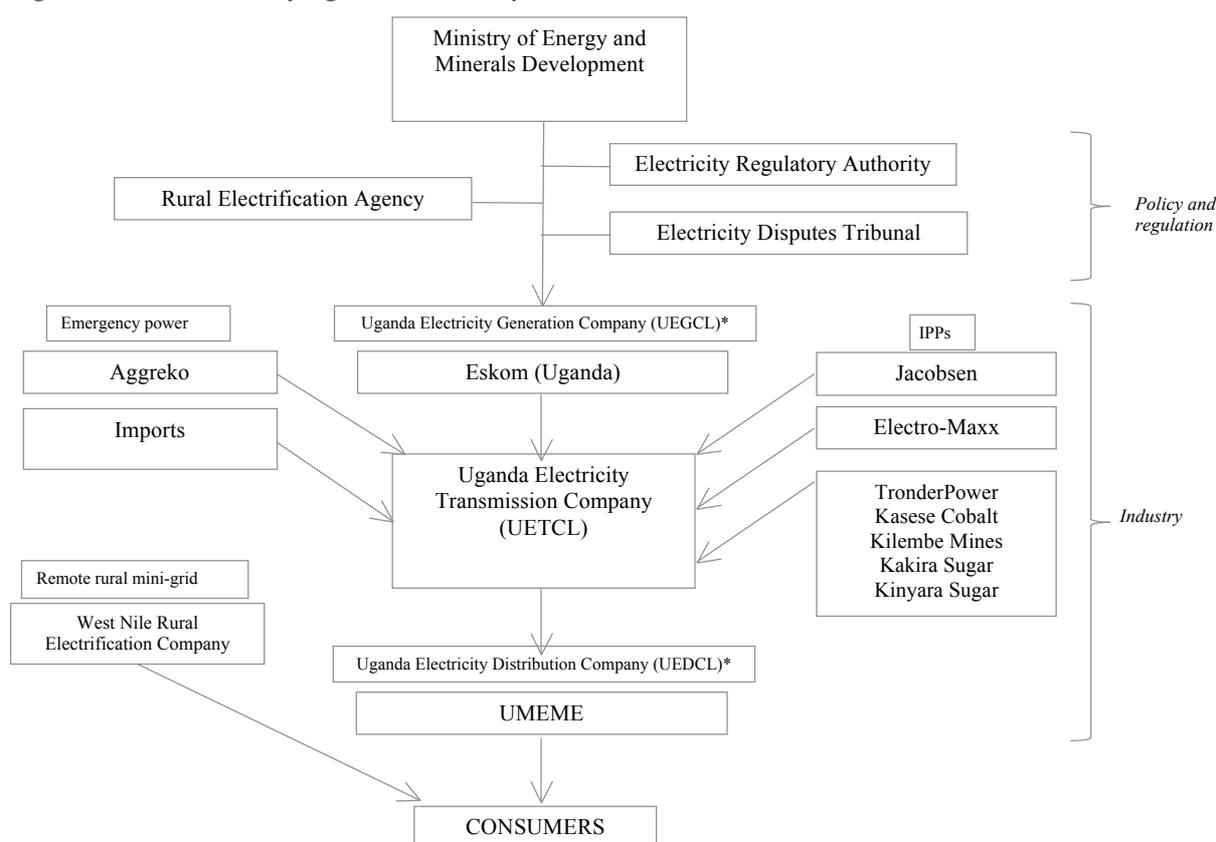
Most striking is that, although government has retained varied degrees of involvement in generation, transmission and distribution, the formerly wholly state-owned and vertically integrated power utility has been completely unbundled, and private-sector involvement has increased significantly. Thus while, the state-owned Uganda Electricity Generation Company Limited (UEGCL) has retained ownership of the assets at the Kiira and Nalubaale power stations,² operations at both plants are managed by Eskom Uganda under a concession agreement.

The state's only *operational* involvement in the sector is through the Uganda Electricity Transmission Company (UETCL), which owns and operates the transmission grid. UETCL is still wholly state owned, and carries out the single-buyer and system-operator functions

The country's electricity distribution assets are again owned by government, through the wholly state-owned Uganda Electricity Distribution Company Limited (UEDCL), but distribution and consumer services are managed by Umeme Ltd, a private firm which, like Eskom Uganda, operates under the terms of a concession agreement.³

Additional generating capacity is provided by Jacobsen Elektro's heavy-fuel-oil fired facility, Namanve Power Station, located on the outskirts of Kampala; Aggreko provides emergency diesel-fired generation capacity, and a number of small IPPs also play a role, some of which are co-generation plants fuelled by bagasse from Uganda's sugar mills. Some even smaller licensed generation and distribution companies supply rural concession areas, the largest of which is the West Nile Rural Electrification Company.

Figure 3.1: An overview of Uganda's electricity sector, 2010



Generation capacity and load forecast

In 2009, installed generation capacity stood at 574.5MW (see Table 3.1). Of this, approximately 70 per cent was from the Eskom-operated 380MW Nalubaale and Kiira hydropower stations.⁴

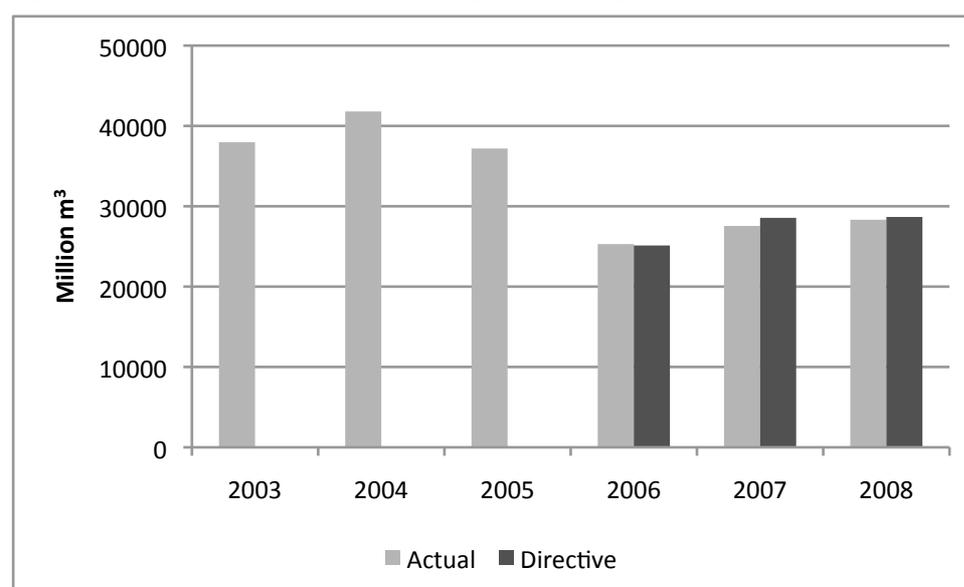
Table 3.1: Installed generation capacity, Uganda, 2009

Ownership	Plant	Installed MW	Type
Eskom ^a	Kiira	200.0	Hydro
	Nalubaale	180.0	
Aggreko	Emergency diesel	100.0	Emergency thermal (diesel and heavy fuel oil)
IPPs			
Jacobsen	Namanve	50.0	Thermal (heavy fuel oil)
Electro-Maxx	Tororo	20.0	
TronderPower Ltd	Bugoye	13.0	Small hydro
Kasese Cobalt Co. Ltd	Mubuku III	9.5	
Kilembe Mines	Kilembe	5.0	
Kakira Sugar Works	Kakira	12.0	Co-generation (bagasse)
Kinyara Sugar Ltd	Kinyara	5.0	

Note: a. Due to water constraints, the combined available capacity at the two Eskom-managed plants in 2009 amounted to 175MW.

Understandably, therefore, hydrological conditions are an important factor in the operations of the sector. From 1998 to 2008, the average water level in Lake Victoria, the main reservoir for the Nalubaale and Kiira power stations (the Jinja Complex), dropped by a significant 1.5m (Minakawa et al. 2008) and at the end of 2005, reached its lowest level since 1951 (Kull 2006). This was attributed to the extended drought that occurred from 2003 to 2006, and to the ‘over abstraction of water for power generation’ (World Bank 2006b) due to non-adherence to the Agreed Curve treaty between Uganda and Egypt, under which the water from the lake is managed.⁵ Consequently in 2006, a directive was issued ensuring that the amount of water available for power generation was cut (see Figure 3.2). This reduced power output to approximately 135MW at the time, although strict adherence to the Agreed Curve treaty would have meant reducing it still further to 91MW (World Bank 2006a). Hydrological conditions improved towards the end of 2006 however, and as at 2009, firm power output from the Jinja Complex had risen to 175MW, taking total available capacity in the Ugandan system (including emergency thermal power) up to 369.5MW.⁶

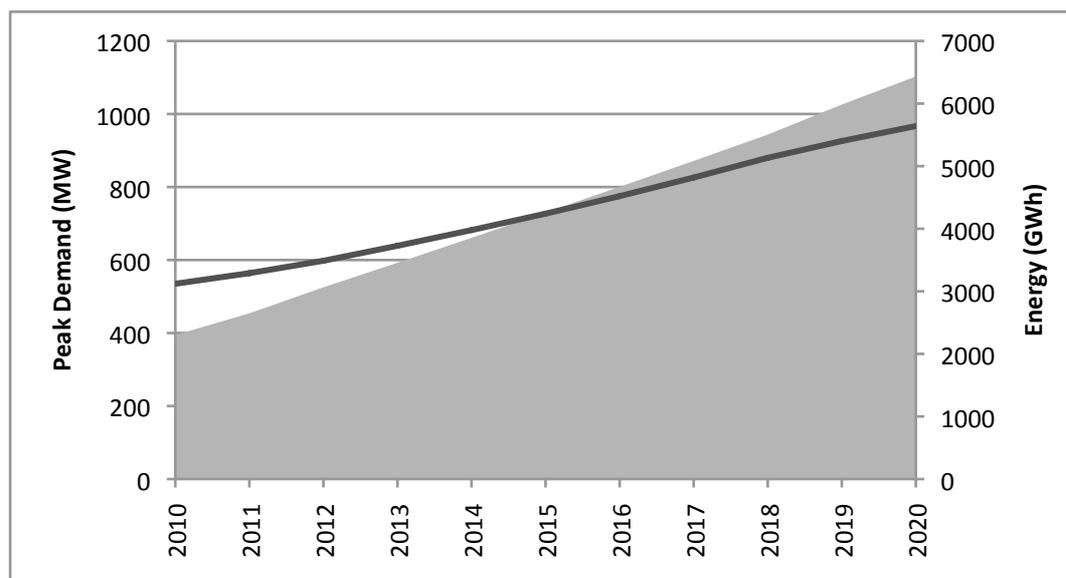
Figure 3.2: Water available for electricity generation, Uganda 2003–2008



Source: Eskom Uganda, personal communication, 2009

The load forecast for the period 2010 to 2020 is shown in Figure 3.3. As in the other countries discussed in this volume, demand and consumption growth are both expected to be strong, averaging 6 per cent and 10 per cent per annum respectively.

Figure 3.3: Electricity load forecast, Uganda 2010–2020



Source: ERA, personal communication, 2010

The projected demand over the period exceeds the 2009 installed capacity, but the commissioning of the 250MW Bujagali hydropower project, scheduled for 2011,⁷ coupled with other, smaller, planned capacity additions, including those arising from oil and gas discoveries in 2009,⁸ could enable Uganda overcome its power supply shortfall for the first time in over two decades.

Power sector reform

Before outlining key aspects of the reforms in Uganda's electricity sector since 1999, it is useful to briefly review the history of the sector. In 1936, the Kenyan-based East African Power and Lighting Company (EAP&L) was granted a licence to generate and distribute electricity in Uganda. Two thermal (diesel) generating stations were installed in Kampala and Entebbe in 1938, marking the start of commercial electricity supply in Uganda. Later, a third thermal generating station was commissioned by EAP&L at Jinja east of Kampala. EAP&L's presence in Uganda lasted only until 1948, when the state-owned Uganda Electricity Board (UEB) was formed, and took over its operations (Gore 2009).

With demand for electricity projected to rise, the government decided to build a large hydropower plant at Nalubaale (Jinja) on the White Nile. Construction commenced in 1950, and in 1954, the first two generators were commissioned, each with a capacity of 15MW (Engurait 2005). Over time additional units of similar rating were added until the tenth and last one, installed in 1968, brought total capacity at the plant to 150MW (Engurait 2005). At the time, this was sufficient to meet the country's demand and to provide a surplus for export.

The 1971 *coup d'état*, that saw the emergence of Idi Amin as leader and the start of civil war, marked the beginning of a period of decline for the power sector. By 1986, when political stability was restored (see Khadiagala 1993), the UEB was in serious operational and financial difficulty, and available generation capacity at Nalubaale had fallen to a paltry 60MW (Engurait 2005). A technical audit run by the World Bank's Energy Sector Management Assistance Programme (ESMAP) in 1988 found that:

- the system had deteriorated due to inadequate preventive maintenance and the lack of foreign exchange to replace equipment;
- losses were running at 40 per cent of net generation, and the significant proportion of these were non-technical;
- numerous outages had significantly diminished system reliability;
- staff motivation and productivity was low; and
- underlying UEB's financial difficulties was the fact that tariffs were 'unrealistically' low. (ESMAP 1988)

As Uganda's economy began to grow again in the late 1980s, demand for power quickly outstripped supply, and by 1988 load-shedding had to be introduced (Engurait 2005). Rehabilitation, upgrading and expansion of the power system were initiated, and when the first of several World Bank-funded projects was completed in 1996,⁹ the installed generating capacity of the Nalubaale plant was increased to 180MW. Realising that this would still be insufficient to meet demand however (Engurait 2005), another project partially funded by the World Bank, the 200MW Kiira (Owen Falls Extension) project, consisting of five 40MW units was embarked upon.¹⁰ The first two units were commissioned in 2001, the third in 2002 and the last two in 2007 (World Bank 2009). These additions reduced the need for load shedding to a degree, but not entirely.

By 1993, almost a decade after the end of civil war, UEB's performance continued to be poor. Most of the issues that had been highlighted in the 1988 ESMAP audit continued to plague the utility. System losses remained high at over 30 per cent, and from 1991 to 1993, the number of employees increased by over 50 per cent¹¹ (World Bank 2002a). Electricity tariffs that had not been adjusted for many years were increased to an average of US\$7.3/kWh in 1993.¹² But, in what Gore (2009) describes as the 'most glaring illustration' of UEB's poor financial performance, the collections rate was just 58 per cent in 1997, and dropped even further to 50 per cent in 1998, largely on account of non-payment of electricity bills by government (Government of Uganda 1999). Given the UEB's financial and operational difficulties, it is not surprising that poor quality and inadequacy of supply were highlighted as the most binding constraints on private-sector investment Uganda's economy (World Bank 2000). It has been estimated that, as the economy began to pick up, firms lost an average of 90 operating days per annum due to power cuts – in fact, so many businesses installed standby power generators that their combined capacity at the time was approximately one third of that of the UEB (Engurait 2005).

The World Bank argued that the 'major cause for the poor state of the power sector was the lack of management and financial autonomy of UEB from the government' (World Bank 2000). But interestingly, although the World Bank was instrumental, it was the government itself that in 1998 'became the driving force behind the implementation of a comprehensive power sector reform program' (World Bank, 2002a: 10). Had government not 'owned the process', it seems unlikely that the reforms would have been as extensive as they were.

The strategic plan of 1998

In what was described as an 'unprecedented step to rectify UEB's poor management performance' (World Bank, 2002a:10), the government replaced the managing director, and made other sweeping changes to the management of the utility in 1998. This signalled a paradigm shift in government policy and in June 1999, the government released the *Uganda Power Sector Restructuring and Privatisation: New Strategy Plan and Implementation Plan* (Government of Uganda, 1999).¹³

The new strategic plan was developed to enable government to:

- make the power sector financially viable without subsidies;
- increase efficiency;
- improve commercial performance;
- meet the growing demand for electricity and increase the coverage area;
- improve the reliability and quality of supply;
- attract private capital; and
- take advantage of opportunities to export electricity (Government of Uganda 1999).

The poor performance of the power sector was acknowledged in the plan; in particular, the UEB's:

- poor financial position, which made it unable to provide a reasonable return on investment, service debts or finance necessary investment and made it dependent on government support;
- poor commercial performance, evident in its low collections rate (approximately 50 per cent of sales), high losses (in excess of 30 per cent) and high accounts receivable that in 1998 were in excess of nine months; and
- low rate of coverage, with only 5 per cent of the population having access to electricity from the grid (Government of Uganda 1999).

In order to turn the fortunes of the sector around, the strategic plan outlined a series of proposals related to generation, transmission, distribution, rural electrification and regulation as outlined below.

Generation: the development of new generation facilities would be facilitated through international competitive bidding by the private sector on an independent power provider (IPP) basis. The facilities at the Nalubaale and Kiira power stations would continue to be owned by the public sector, but they would be let out to the private sector through concession agreements. Co-generation would be encouraged.

Transmission: a separate transmission company would be established, and be responsible for network maintenance, system operations and dispatch, planning and bulk purchase, and the supply of electricity. Bulk purchase and supply (the single-buyer function) would be undertaken by a ring-fenced business unit operating within the transmission company, that would purchase capacity from competing providers under long-term power purchase agreements (PPAs). It was envisaged that the transmission company would initially be state-owned and run, and that it would be let out to the private sector under a concession arrangement, in the medium term. This entity would also:

- assess potential generating projects against a least-cost expansion plan, taking the costs of associated transmission developments into account;
- suggest the location and magnitude of likely generating shortfalls to potential generators;
- consider both solicited and unsolicited proposals for the development of new generating capacity;
- carry out demand forecasting and publish the outcomes; and
- undertake financial settlements and market clearing.

Distribution: the restructuring of the distribution system to make it financially viable and to improve its commercial performance was seen as the key to the success of the reform programme. It was proposed that a number of financially viable distribution companies be created out of the UEB's existing distribution structures. While it was recognised that this could result in some loss of economies of scale given the small size of the Ugandan market, the government was swayed by the view that any losses would be outweighed by the benefits of 'benchmark competition' that would arise.¹⁴

Rural electrification: when the new strategy was published, only one per cent of the population in rural areas had access to electricity. The government intended to increase this level through a focus on private sector participation with the aim that rural communities would have access to electricity either from the national grid or isolated power networks. To achieve this it was proposed that:

- a simple and non-bureaucratic licensing framework be developed to encourage small, independent electricity service providers;
- retail tariffs be set at the levels required to ensure the financial viability of the local electricity service providers;
- a mechanism be developed to ensure that rural electrification schemes were appropriately engineered and their costs minimised; and that
- a legal framework be developed in light of the new policy.

Regulation: this was identified as a key component of the reform strategy in helping to rebuild confidence of the private sector and consumers in the electricity sector. It was proposed that an authority be established to carry out the regulatory function independent of political influence. The stated objectives of regulation were to protect consumers, ensure the financial viability of companies operating in the electricity sector, promote competition, and collect and disseminate information.

The strategic plan was approved by the Ugandan Cabinet in 1999, paving the way for its implementation, and three years later, in 2002, the government released its *Energy Policy for Uganda* (Government of Uganda, 2002) which largely reconfirmed the measures contained in the plan.

Implementation of the strategy

Given that the reforms proposed in the strategic plan were far reaching, the swiftness with which they were implemented was remarkable – it may have reflected the extent of public dissatisfaction with the level of electricity service provision that had built up over time.

In late 1999, soon after Cabinet’s approval of the strategic plan, a new Electricity Act was passed. The Act enabled private participation in the power sector, established the Electricity Regulatory Authority (ERA), permitted the privatisation of the UEB, and provided guidelines and an institutional/policy framework for rural electrification. The ERA became operational in 2000, and the following year, the UEB was unbundled and three new companies were formed to own and operate ex-UEB assets, these were the Uganda Electricity Generation Company Limited (UEGCL), the Uganda Electricity Transmission Company Limited (UETCL), and the Uganda Electricity Distribution Company Limited (Engurait 2005).

In 2003, while UEGCL retained the assets of both utilities, the responsibility for operations at Nalubaale and Kiira was handed over to Eskom Uganda under a 20-year concession agreement. Eskom Uganda was wholly owned by the South African state’s electricity giant, Eskom Holdings (World Bank, 2009). Then, after protracted negotiations lasting over two years,¹⁵ a joint-venture agreement was signed by Eskom Holdings (44 per cent) and Globeleq¹⁶ (56 per cent) to establish Umeme.¹⁷ Umeme then signed a 20-year concession agreement with the government for the distribution of electricity in Uganda,¹⁸ and assumed UEDCL’s operations in 2005 (World Bank 2009). As at 2010, responsibility for transmission of electricity was still held by UETCL which has remained a publicly owned and operated company, and this seems likely to continue for the foreseeable future.

The 1999 Electricity Act also established the Rural Electrification Fund (REF) with the aim of expanding rural electrification. In order to provide a mechanism to manage the REF, the minister of energy in 2001 published Statutory Instrument No. 75 by which the Rural Electrification Board (REB) was formed and served by a secretariat, the Rural Electrification Agency (REA). The REA became operational in 2003.

Increasing the role of independent power producers

A remarkable feature of the strategic plan was the assertion that all future electricity generation would be developed by IPPs. Although at the time of writing Uganda still experiences a power-supply deficit, it is noteworthy that since the launch of the strategic plan, seven new IPPs have been commissioned, representing 115MW¹⁹ (see Table 3.1) which as at 2010 was equivalent to 30 per cent of available generation capacity. Additional projects are in the pipeline, some of which are already under construction. The most significant of these is the 250MW Bujagali project. Given its sheer size and the fact that it has had a controversial history, it is instructive to delve into this in some detail.

The Bujagali Hydro Power Project

In 2001, two years after the approval of the strategic plan, the US-based AES Corporation announced that the Ugandan government had granted final approval to its subsidiary, AES Nile Power (AESNP), and its local partner, Madhvani International, for the 200MW US\$550 million Bujagali project on the White Nile, 10 kilometres north of Lake Victoria.²⁰ The announcement, which coincided with the World Bank’s approval of a US\$215 million funding package for the project (World Bank 2001), followed lengthy negotiations that had taken place following the 1994 signing of a memorandum of understanding between AESNP and the government (World Rain Forest Movement 2002). The Bujagali project faced significant resistance however from non-governmental organisations and environmentalists. These included the International Rivers Network, which launched a global campaign against the project, arguing that Bujagali was environmentally and socially harmful, and would produce power that would be too expensive for most Ugandans.²¹ So intense was this opposition that a few months before AESNP and Madhvani’s December announcement, the National Association of Professional Environmentalists, the Save Bujagali Crusade and other organisations wrote to the World Bank’s Inspection Panel seeking a review of the project in order that funding could be withheld.²² While the review took place, funding was not withheld. Instead, in June 2002,

the Executive Board of the World Bank approved measures proposed by its management in response to the Inspection Panel's report (World Bank, 2002b).

The Bujagali project was also subject to allegations of impropriety and corruption, and the fact that it was never competitively bid helped to stoke this sentiment. Suspicion about the manner in which the project had been structured extended even into the Ugandan parliament, and for nine months parliamentarians repeatedly refused to approve the power-purchase agreement. Approval was only granted on 8 November 1999, after the original tariff had been reduced, and the attendant hydrological risk reallocated between government and AESNP.²³ But the power-purchase agreement remained a confidential document, to the dismay of NGOs that suspected that it was skewed in AESNP's favour.²⁴ The NGOs decided to take the issue to court and eventually in late 2002 the high court ruled that the power-purchase and the implementation agreements be made public.²⁵ The International Rivers Network then commissioned an independent review of the power-purchase agreement that found that the project was excessively priced (International Rivers Network 2002).²⁶

The project continued but the claims of corruption that had dogged the project from the start became serious enough for the president of the World Bank to make a statement in April 2002 that there was no evidence to support the allegations.²⁷ Interestingly however, it was following concerns raised by the World Bank itself, that the US Department of Justice launched an investigation into possible corruption on the project ostensibly because AES is registered in the US.²⁸ This led to the astonishing discovery that a government minister had in 1999 received a payment from the subsidiary of the project's main contractor, Norwegian based Veidekke. With this damning revelation, the World Bank suspended its support to the project in July 2002,²⁹ and Veidekke announced that it was pulling out of the project citing an 'increased workload' in its overseas projects.³⁰ The following year, Swedish-based electrical contractor Skanska, also pulled out.³¹ The project was beginning to unravel and it was with an air of inevitability that AESNP, still the lead sponsors of the project, announced in August 2003 that they too were walking away after spending US\$75 million.³²

The government did not give up, however, with the energy minister stating that the project would proceed, even in the absence of AES.³³ Also significant was a statement by the World Bank, made soon after the AES pull out, indicating that it remained committed to Bujagali in view of its potential benefits for Uganda.³⁴ In efforts to find a new developer, the government, departed from the single-sourcing process used in the AES deal, and instead opted to follow a competitive-bidding process. Bids were invited in 2004 and, after prequalification, three bids were successfully submitted.³⁵ The following year, a consortium, Bujagali Energy Ltd, led by Nairobi-based Industrial Promotion Services,³⁶ was announced as the winning bidder.³⁷ There remains a level of disquiet with respect to the environmental and social aspects of the project, and in fact the National Association of Professional Environmentalists again requested that the World Bank's Inspection Panel review the project in an attempt to prevent it from going ahead. This goal was however not achieved (World Bank, 2008). The winning consortium believes that through transparency and greater engagement with all stakeholders, they have been able to limit negative perceptions of the project.³⁸ Financial closure on the US\$860 million project was reached in 2007 (Eberhard and Gratwick, 2010), with the World Bank providing US\$360 million in loans and guarantees (World Bank, 2007a). Commissioning is expected to commence in late 2011.

Other IPPs

As of 2010, the largest IPP in operation in Uganda was the 50MW heavy-fuel-oil fired Namanve Power Station that is situated on the outskirts of Kampala. Like Bujagali it also attracted some controversy, albeit for a much shorter period. The ERA invited bids for the power station in 2006. Bids were received from Norway's Jacobsen Elektro, and two local firms, Electro-Maxx and African Power Initiative. Following the bid evaluation process, the project was awarded to Jacobsen Elektro, which was expected to commission the plant in June 2007. However Electro-Maxx disputed the outcome of the bid evaluation and approached the inspector-general of government³⁹ who halted the issuing of a licence to Jacobsen Elektro on the grounds that the process was fraught with illegalities and irregularities. A re-evaluation of the bids was ordered, which reconfirmed Jacobsen as the best bidder. Electro-Maxx was still not satisfied though, and took the matter to the high court, which

issued an order that again restrained the ERA from proceeding with the licence. Jacobsen Elektro was finally licensed in mid 2007 after months of legal wrangling, which pushed the planned commissioning of the plant back by a year.⁴⁰ The US\$93 million power station began operating in 2008, on a six-year build-own-operate-and-transfer basis, and displaced 50MW of more expensive emergency thermal generation. The ERA was later cleared of any wrongdoing by the government inspector-general.⁴¹

There are six other IPPs in operation in Uganda all of which have arguably been less contentious. Two of these were set up by state-owned mining companies, Kasese Cobalt and Kilembe Mines, and have been generating electricity in Uganda's Kasese District for their own use, and both feed surplus electricity into to the national grid. Kasese District is also home to the 13MW Bugoye Power Station owned by TronderPower Ltd⁴² and commissioned in 2009 at a cost of US\$55 million (NORAD 2010). Also in 2009, Electro-Maxx built a 20MW heavy-fuel-oil-fired plant, Tororo Power Station, at a cost of over US\$32 million.⁴³ The other two IPPs are Kakira Sugar Works and Kinyara Sugar Ltd. Both are co-generation plants, fired by bagasse, the residue from sugar-cane processing. The capacity of the Kakira plant is in excess of 20MW but only 12MW is sold on to the power grid with the remainder reserved for their own use.⁴⁴ Similarly, at state-owned Kinyara, installed capacity is 7.5MW of which 5MW is sold on to the grid (ERA 2008). Kakira began supplying the grid in 2008, and Kinyara in 2009. Power sector reform in Uganda has therefore not only opened up the sector for standard IPPs, but also for co-generators that provide useful capacity additions for overcoming the power supply deficit.

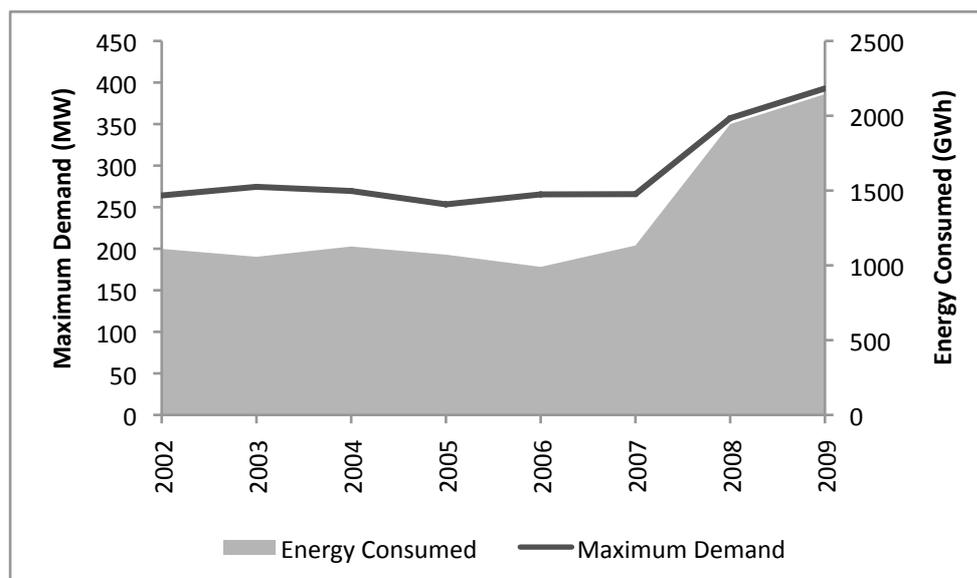
Emergency power

In 2005, faced with reduced available generating capacity from the Jinja Complex, and rapidly increasing demand estimated at 8 per cent per annum (World Bank 2006), the government, through a competitive bidding process, procured 50MW of emergency diesel-fired generation from Scotland-based Aggreko, which was installed at Lugogo (Ministry of Energy and Mineral Development, 2006). The following year, government extended Aggreko's contract and the company increased its capacity by 50MW, installing an additional emergency diesel plant at Kiira (Ministry of Energy and Mineral Development, 2007). Under a separate contract, financed by the World Bank, another 50MW emergency diesel facility was established at Mutundwe in 2008 (World Bank 2007c). The introduction of emergency thermal generation put upward pressure on electricity tariffs in Uganda. Tariffs increased by an average of 37.5 per cent in June 2006, and 41 per cent in November 2006, bringing the average tariff level to US\$17.2/kWh, an amount that was high by both regional and global standards (World Bank 2007b). When the Namanve Power Station began operations in 2008, and was able to supply electricity more cheaply, the Lugogo plant was decommissioned (Ministry of Energy and Mineral Development 2009).

Post-reform performance

Having examined the backgrounds of some of the key players in Uganda's electricity sector, it is interesting to look at the sector's performance over the last decade or so. In general, the performance of the Ugandan power system has improved since the onset of reforms, with the most significant manifestation of this being the reduction in the extent of load-shedding. Maximum demand and energy consumption via the interconnected Ugandan power grid for the period 2002 to 2009 are shown in Figure 3.4. It is evident that from 2002 to 2007 growth in both demand and consumption was flat. This related to the limited water availability at the Jinja Complex, and the lack of alternative generating capacity. But with increased water supply, and the entry into service of additional plants, maximum demand and energy consumption leaped by 34 per cent and 71 per cent respectively between 2007 and 2008, reflecting the extent to which load-shedding had suppressed demand. And in 2009, growth in both demand and energy supply continued to be strong, averaging around 10 per cent.

Figure 3.4: Maximum demand and energy consumed, Uganda 2002–2009

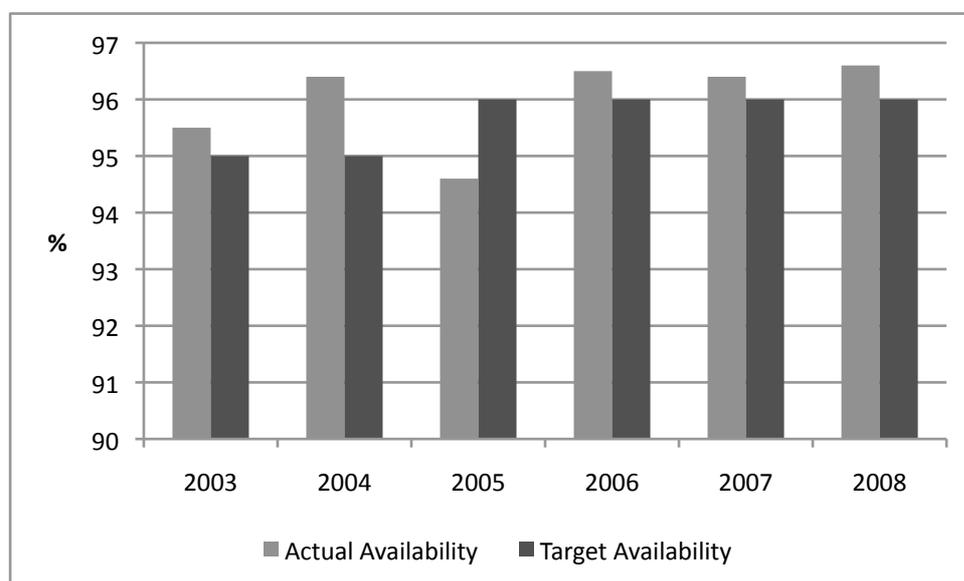


Source: ERA, personal communication. 2010

Generation

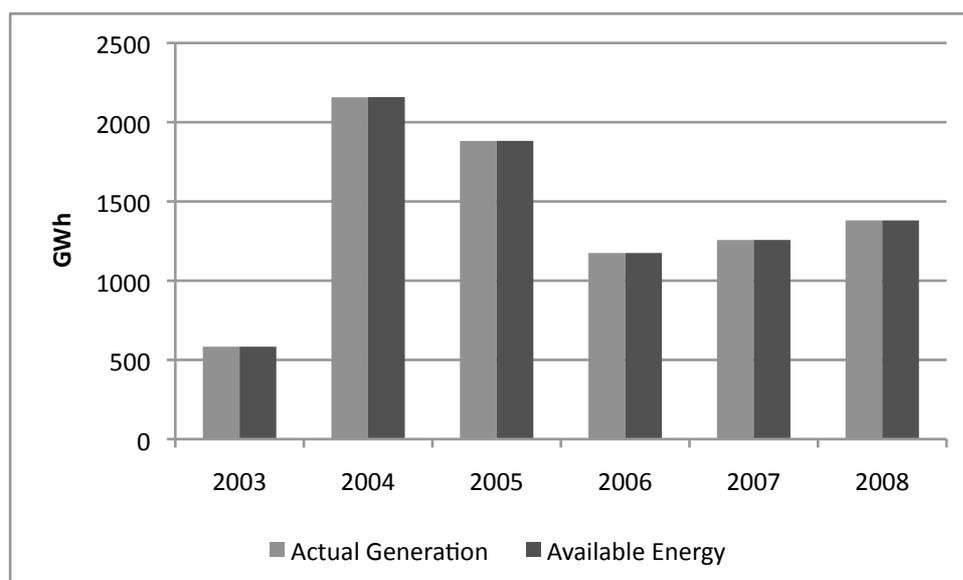
Other than in 2005, Uganda’s major electricity generating company, Eskom Uganda, managed to keep the availability of electricity from the Jinja Complex in excess of target levels from 2003 to 2008 (see Figure 3.5) and actual generation output matched the calculated target level from the available water (see Figure 3.6).

Figure 3.5: Jinja Complex, actual versus target availability, 2003–2008



Source: Eskom Uganda, personal communication, 2009

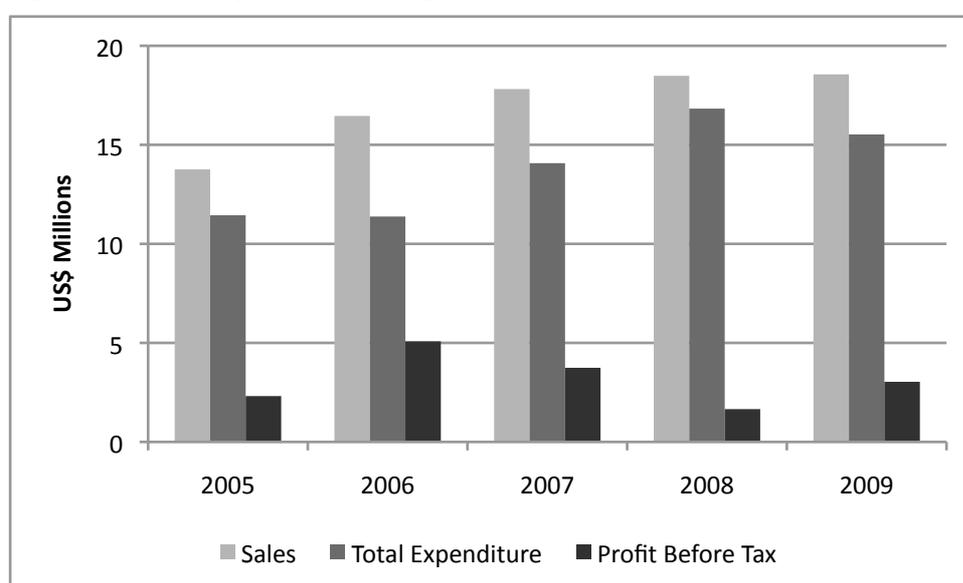
Figure 3.6: Actual generation versus available energy, Uganda, 2003–2008



Source: Eskom Uganda, personal communication, 2009

Despite the reduction in the water available for generation that occurred in 2006, Eskom Uganda's revenues continued to grow and the company remained profitable as shown in Figure 3.7. This was due mainly to the 'take-or-pay' structure of the power-purchase agreement between Eskom Uganda and UETCL, which effectively guarantees payment to Eskom Uganda for its fixed costs, but also to improvements in operational efficiency. Investments were also made in maintenance and refurbishment of equipment.

Figure 3.7: Eskom Uganda's financial performance, 2005–2009



Source: Eskom Uganda, personal communication, 2009

Note: The 2009 figures are based on projections.

Eskom Uganda's performance has been augmented by the generating capacity provided by IPPs and emergency thermal generation. In the short to medium term, as new IPP plants enter into service, most notably Bujagali, the fleet of emergency generation will be retired providing much needed relief for electricity prices in Uganda.

Transmission

Following the unbundling of the power sector, UETCL has performed well and was able to build up a strong financial position due to allowances that the new bulk-supply tariff regime provided for depreciation and return on equity, intended to fund capital investments. By avoiding new investment, UETCL built up its cash surpluses. And, between 2003 and 2005, provisions were made for a tariff-stabilisation fund and an escrow account for the Bujagali liquidity fund. These two funds accumulated US\$27.1 million and US\$5.4 million respectively (World Bank 2009). However, with the advent of high thermal-power costs in June 2005, these funds and UETCL's cash surplus were depleted in an attempt to shield consumers from increased electricity tariffs. Table 3.2 shows UETCL's accumulated surplus over the period 2006 to 2008. Since 2006, UETCL's power purchases have been supported by government subsidies and, for the emergency plant at Mutundwe, a World Bank facility (World Bank 2009).

Table 3.2: UETCL's accumulated surplus/deficit, 2006–2008

	2006	2007	2008
Surplus (deficit)	16 909 213	18 272 200	(14 838 961)

Source: Office of the Auditor General (2010)

Distribution

Umeme inherited a very high level of distribution losses from the UEB and this still presents a significant challenge for the company and indeed for Uganda's electricity sector as a whole. Estimates made in 2009 put total losses at 35 per cent, of which 12 to 15 per cent were technical and the remainder non-technical and largely linked to electricity theft through illegal connections (World Bank 2009). These loss levels are similar to those that prevailed prior to the reform process. At 2009 tariff levels, the monetary value of non-technical losses was a staggering US\$20 million per annum. Although this has a direct impact on Umeme's revenues, the company's underlying costs are largely shielded within the framework of its concession agreement with government as shown later in the tariffs section of this chapter. Umeme's return on its own invested capital was 7 per cent in 2007 and 14.1 per cent in 2006 (World Bank 2009). Table 3.3 provides an overview of Umeme's performance for 2007 to 2009.

Table 3.3: Indicators of Umeme's financial performance, 2007–2009

Financial indicator	2007	2008	2009
Electricity purchases (GWh)	1 759	1 941	2 084
Sales (GWh)	1 137	1 278	1 353
Average retail tariff (Usc/kWh)	18	18	18
Collections (%)	93	88	93
Losses (%)	35	34	30
Operating costs (US\$)	30.7	39	32
Earnings before interest, taxes, depreciation and amortisation (US\$)	29.8	32.5	35.1
Capex (US\$)	17.7	22.8	25.8
Cash generation (US\$)	3	-2	16.8

Source: Umeme, personal communication, 2009

Note: Figures for 2009 are forecasts.

Regulatory governance

We now attempt to explore the role of Uganda's Electricity Regulatory Authority (ERA) by looking first at issues of regulatory governance, second at regulatory substance, and third, at regulatory impact.

Uganda has a clear legislative framework for electricity regulation that is anchored by the Electricity Act of 1999. The Act established the ERA, set out its functions and powers and provided for key elements of its administration. The Act also provided the legal basis for the liberalisation of the electricity sector and the unbundling of the vertically integrated and state-owned UEB.

The ERA became operational in 2000, and its functions as set out in Clause 11 of the Electricity Act are as follows:

- To issue licences for the generation, transmission, distribution or sale of electricity, and for the ownership or operation of transmission systems;
- To receive and process applications for licenses;
- To prescribe conditions and terms of licences issued under the Act;
- To modify licences issued under the Act;
- To make and enforce directions to ensure compliance with licences issued under the Act;
- To establish a tariff structure and to investigate tariff charges, whether or not a specific complaint has been made for a tariff adjustment;
- To approve rates of charges, and terms and conditions, of electricity services provided by transmission and distribution companies;
- To review the organisation of generation, transmission and distribution of electricity to the extent that the organisation affects or is likely to affect the operation of the electricity sector and the efficient supply of electricity;
- To develop and enforce performance standards for the generation, transmission and distribution of electricity;
- To encourage the development of uniform electricity industry standards and codes of conduct;
- To establish a uniform system of accounts for licensees;
- To advise the minister regarding the need for electricity sector projects;
- To prepare industry reports and to gather information from generation, transmission and distribution companies;
- To prescribe and collect licence fees;
- To provide for the procedure for investment programmes by transmission and distribution companies;
- To approve standards for the quality of electricity supply services provided;
- To approve codes of conduct in respect of the operation of transmission and distribution systems;
- To acquire information and carry out investigations relating to any of its functions; and
- To perform any other function that is incidental or consequential to its functions.

From this list, it is clear that Uganda's regulatory authority, follows established best practice, and, with the exception of dispute resolution, which falls under the jurisdiction of the Electricity Disputes Tribunal, is empowered to facilitate market access through licensing, set tariffs at economically efficient levels, and to develop, promulgate and monitor technical standards.

The issue of independence versus accountability is an issue for all regulatory organisations. As in other countries the legal, financial and administrative independence of the ERA has to be delicately balanced with issues of transparency, public accountability and the fact that ultimately it reports to the government.

Legal independence and accountability

Clause 2 of the Electricity Act states that the ERA is a body corporate, with perpetual succession and a common seal that may acquire, hold and dispose of moveable and immoveable property, sue and be sued in its corporate name, and do all the other things that a body corporate may do. This, in essence, makes the ERA independent of government, but there are a number of ways in which the ERA remains accountable and subject to government via the Ministry of Energy and Minerals Development. For example, the five members the ERA's board of directors, known as the Authority,

are appointed by the Minister of Energy and Minerals Development, and their appointments are approved by Cabinet. And while in other countries, Tanzania for example, the process of determining the short-list of potential appointees to the Authority is laid out in the legislation, this is not the case in Uganda where there a degree of secrecy prevades the process.⁴⁵ Clause 6(1) of the Electricity Act specifies that Authority appointees should be of ‘high moral character and proven integrity and competence’. They should also have proven experience in engineering, law, administration, management, finance, economics, the energy industry or in environmental matters. From among the five, the energy minister designates a chairperson.

Members of the Authority are appointed on five-year terms, that are renewable once. No specific provision was made to allow for sequential appointments to the Authority (a device that helps to preserve institutional memory and practice). But as only three appointments were made to the Authority when it was initially set up in 2000, and the two remaining vacancies were only filled in 2008, an informal sequencing did take place. However, when the first three members of the Authority retired in 2010 (after reaching their two-term limit) one of the newer members also resigned,⁴⁶ leaving the Authority with only one experienced member.

Consistent with international best practice, the conditions under which the appointment of a member of the Authority can be terminated are laid out in the Electricity Act. These are: bankruptcy; becoming a public officer, a member of Parliament or a member of a local government council; being convicted of an offence and sentenced to a term of six months or more; being absent for three consecutive Authority meetings; being incapable of performing duties; information that could have led to the vetting of a member during the appointment process being brought to the attention of the minister; neglecting the duties of being a member or conducting oneself in a way that is unbecoming of a member. By late 2010, no appointments of had ever been terminated.

Clause 18 of the Act provides further evidence of the government’s commitment to the overall independence of the ERA by requiring that any policy directive issued by the energy minister to the ERA must be done in writing and gazetted. This relevant clauses state:

- (1) The Minister may, from time to time, give directions in writing to the Authority with respect to the policy to be observed and implemented by the Authority; except that the policy shall not adversely affect or interfere with the performance of the functions and exercise of powers of the Authority under this Act.
- (2) The Minister shall cause a copy of any direction given to the Authority under subsection (1) to be published in the Gazette.

In practice however, this commitment has at times been questionable. For example, on 25 June 2009 the police raided the offices of the ERA, UETCL, Umeme and several government officials. Following these raids, a local newspaper quoted a police spokesperson as the follows: ‘The Government lost a lot of money in the power sector through mismanagement. I cannot go into details because we have opened an enquiry... The Government has invested a lot of money in the power sector but it has lost almost the whole of that money.’⁴⁷ The same report also quoted an anonymous source as saying: ‘Somebody thinks that the tariffs are not competitive. Therefore they want to compute for themselves and establish the true price.’

Subsequently, on 14 July 2009, the Minister of Energy and Mineral Development instituted a special committee to investigate tariff levels in Uganda with a view to reducing them. Undoubtedly the police are best placed to handle issues of fraud. But, issues relating to electricity tariffs and tariff structures lie at the core of the ERA’s mandate, and a high level of specialised skill is required to adequately analyse these issues. Using avenues that fall outside of the existing legal and regulatory framework to investigate and possibly determine tariffs, is likely to undermine the credibility and independence of the ERA.

Another important aspect of accountability is that ERA can and has been summoned before committees of parliament from time to time to report on its activities and present its views on key issues affecting the sector.

Financial independence and accountability

To further secure their independence from government, regulators require an assured source of income. Clause 23 of the Electricity Act provides for a range of possible sources of funding for the ERA:

- Money allocated by parliament to the Authority;
- Fees including those prescribed for the processing of licence applications and annual fees payable by licensees as prescribed by the Electricity Act;
- A levy not exceeding 0.3 per cent on the revenue received from generated electric energy;
- Loans from financial institutions; and
- Grants from government and grants, gifts or donations from other sources acceptable to the energy minister and the minister responsible for finance.

Of the above sources, licence fees account for the greatest portion of total revenue followed by the levy on generated electricity (see Table 3.4). In the 2008/09 financial year, these two sources accounted for 97 per cent of ERA's total revenue, typical of the funding trend for most of the regulatory institutions covered in this volume.

Table 3.4 ERA's revenue by funding source, 2002–2009 (US\$ '000)

Funding source	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
License fees	796	825	922	926	1 018	1 257	1 350
Levy	234	265	299	393	505	799	711
Application fees	10	8	7	20	20	15	24
Wire permits	-	4	7	7	5	9	9
Rental income	-	-	13	13	16	21	20
Interest income	-	-	-	7	15	10	17
Donor grants	665	265	209	-	-	-	-
Total revenue	1 705	1 367	1 457	1 366	1 579	2 111	2 131

Source: ERA, personal communication, 2009

Notes: Exchange rate conversions based on Bank of Uganda official rates.

The Electricity Act requires that after taking contingencies into account, any surpluses should be declared to the finance minister and then accrued to the Rural Electrification Fund. By 2009, no surpluses had yet been declared.

The ERA's annual budget process is another area in which the energy minister has oversight. Under Clause 24 of the Electricity Act, the CEO is required to submit the budget for the following year to the Authority for approval two months prior to the end of the financial year. Once approved internally, the budget is submitted to the energy minister who, in consultation with the finance minister, grants final approval.

In addition, under Clause 29 of the Act, the ERA is required to submit its annual accounts no later than four months after financial year end to the auditor general's office or to their appointee. Thereafter an audit has to be completed within two months and the audited accounts submitted to the energy minister who presents them to Parliament as soon as possible. Furthermore, Clause 116(1) of the Electricity Act stipulates that the ERA submit an annual report to the minister within four months of each financial year-end. As at 2009, these reports were not readily available to the public, but a report spanning the years 2004 to 2008 had been published and is available on the ERA's website.

Administrative independence and accountability

The Electricity Act specifies that a CEO, should be appointed by the Authority for a five-year term that can be renewed once. The CEO should be a person of a high standards of integrity and maturity, who has substantial qualifications or experience in administration, economics, finance, law, management, environment or technical knowledge relating to the electricity industry. The Act also requires the Authority to appoint a secretary. Beyond these two positions, the Authority has the

freedom to determine the ERA's organisational structure. In addition to the Authority, the ERA has a secretariat that handles most of the day-to-work of regulation and, by 2009, it had a CEO and approximately 30 staff members.

One of the greatest challenges facing regulators is their ability to retain highly skilled and competent staff. In this regard, Clause 22(2) of the Electricity Act states that 'the Authority shall, with the approval of the Minister, make regulations governing the terms and conditions of employment of the staff of the Authority.'

While this might be seen as ceding some of the ERA's independence to the minister, in practice, it has not proven problematic as approvals for proposed terms and conditions for staff have always gained ministerial approval.⁴⁸ It is worth noting however, that while conditions of service at the ERA were initially viewed as competitive, which might explain ERA's relatively low staff turnover (ten since 2000), over time this advantage seems to have been eroded to some extent.⁴⁹

Code of ethics

Since regulatory authorities are funded by the public and ultimately serve in the public's interest, they have to ascribe to the highest standards of accountability and corporate governance in order to establish and preserve their credibility. In order to ensure that the highest standards of personal integrity are maintained, the Authority and senior members of ERA staff subscribe to the *Code of Conduct and Ethics for Uganda Public Service* (Government of Uganda 2005) which is applicable to the entire public service. The code deals with matters such as attendance to duty, time management, absence from duty, sexual harassment, customer care, conflicts of interest and accountability.

To augment this, we suggest that it would be useful for the ERA to develop a code that deals with matters specific to the regulatory arena, such as the manner and conduct of the relationship between the regulator and regulated entities. This could be subscribed to by ERA's entire staff compliment, not just by its senior officials.

The Electricity Disputes Tribunal

As in all the east African countries covered in this volume, Uganda has a specialised court, the Electricity Disputes Tribunal, with the powers of a high court. This is where ERA decisions can be appealed, and disputes arising in the sector are adjudicated. The jurisdiction of the Tribunal is defined by Clause 110 of the Electricity Act that states:

- (1) The Tribunal shall have jurisdiction to hear and determine all matters referred to it, relating to the electricity sector.
- (2) For the avoidance of doubt, the jurisdiction of the Tribunal does not include the trial of any criminal offence or the hearing of any dispute that a licensee and any other party may have agreed to settle in accordance with their agreement.

In most countries when an appeal on a regulatory decision is heard by a court of law, rulings are made only on matters of procedural fairness, ostensibly because of the specialised nature of regulation. The wide jurisdiction accorded to the Ugandan Tribunal implies that it can rule on both process and substance, namely, tariff levels, licence awards and other such regulatory matters, and it remains to be seen what precedents will be set in this regard.

The Tribunal is headed by a chairperson and vice-chairperson who are qualified at the level of high court judges. They are appointed by the energy minister, in consultation with the Judicial Service Commission. The minister also appoints the other Tribunal members, but this time in consultation with the Public Service Commission. These members should have high moral character, proven integrity and proven experience in at least one of the following: generation, transmission or distribution of electricity; law or administration; finance or economics; the energy industry; or environmental affairs. The minister, in consultation with the Judicial Service Commission may remove members on grounds similar to those for members of the Authority.

Surprisingly the Electricity Act does not specify how many ordinary members can be appointed to the Tribunal. The Act does however state that in order for proceedings to take place, at least three members must be present. Members of the Tribunal are appointed on full or part-time basis. The

Tribunal can also seek technical advice from persons with specialised knowledge or experience. The Tribunal is funded through parliamentary appropriations and grants, or donations from sources acceptable to the finance minister. Its day-to-day administration is the responsibility of its registrar. At the time of writing in 2010, the Tribunal had dealt with only few cases since its inception. One of the reasons for this seems to be an apparent lack of resources evidenced by the fact that the Tribunal is located within the Ministry of Energy and Mineral Development, and has only a part-time registrar working on secondment from the Ministry of Justice. As a result, the ERA has tended to play an informal dispute-resolution role within the sector.

Clause 111 of the Electricity Act sets out the process to be followed by any person aggrieved by a decision of the Tribunal. This includes asking the Tribunal to review its judgements and orders or appealing to the High Court within thirty days from the date of the Tribunal's decision or order. If the person is then aggrieved by the decision of the High Court they may, within thirty days of the decision of the appeal, take the matter to Uganda's Court of Appeal.

Transparency and public participation

The public can play an important role in building regulatory accountability if they gain sufficient understanding of regulatory processes and mechanisms, and have evidence that their views are taken into account when decisions are made. The internet provides a useful and efficient means through which the public can be kept abreast of the workings of the regulator. As in all the countries covered in this volume, the ERA has a website (www.era.org.ug), from which key documents such as Uganda's energy policy, relevant legislation and technical reports can be accessed, as well as information about technical standards and approved tariffs. The ERA also undertook to publish all major decisions of the Authority on its website. Some stakeholders indicated that they believed the ERA could do more in the area of information dissemination.⁵⁰ It would therefore be prudent for the ERA to ensure that the website remains regularly updated and that other channels of communication are maintained. For example, the ERA's annual workshops with the media could be augmented by making publications on various ERA activities readily available, and in addition to public hearings held for tariff reviews, public meetings could be held on key issues that affect the sector.

The ERA follows a more deliberate strategy of engagement with the public when it comes to licence applications and proposals for tariff reviews. These are published in local newspapers with requests for comments and objections. In the case of tariff reviews, public meetings are also held where consumers are afforded an opportunity to air their views. By opening its meetings to the public, Namibia's regulatory authority provides an interesting option that the ERA could consider. Although public attendance is woefully low in Namibia, the fact that the public are free to attend has helped to dissipate suspicion regarding regulatory decisions, particularly those pertaining to licensing and tariffs.

Regulatory substance

As noted in the other chapters, regulatory substance is concerned with licensing, planning, the setting of tariffs and technical standards, and addressing the issue of electricity access in poor communities.

Licensing

When electricity generation and distribution were privatised, the government negotiated concession and other agreements with Eskom Uganda and Umeme, the concessionaires.⁵¹ These agreements were concluded prior to the issuance of licences by the ERA. The licence conditions have therefore generally been made consistent with the provisions of the concession agreements. As a result, the ERA's regulatory discretion has been curtailed, and a significant degree of regulation in Uganda occurs by contract.

This is not to say that the ERA is totally handicapped in the regulation of Eskom Uganda and Umeme, as existing provisions in the law and the important monitoring roles that the concession agreements assign to the regulator (and to the asset-holding companies, UEDCL and UEGCL), for asset renewal and investment, provide avenues for incentivising good performance. For future transactions of this nature, the ERA has drafted a model concession agreement that takes into account its ideal licensing requirements. But as of late 2010, this was yet to be applied.

Within this context, the Electricity Act requires that a licence be held in order that the following activities can be carried out: generation, transmission and distribution. In addition, the holder of the transmission licence, namely UETCL, is also licensed as the system operator. The Act also makes provision for a bulk-supply licence (for the bulk sale of electricity to distribution and supply companies), a sale of electricity licence (for the supply of electricity), and export and import licences. The extent to which each step of the licensing process has been elaborated in the legislation is notable and serves as an excellent guide for prospective investors. It is clearly set out in Part V of the Electricity Act and is summarised below.

Project brief: firstly, the prospective licensee (applicant) should submit a project brief to the ERA that contains:

- the financial and legal status of the applicant, their experience and their technical and industrial competence;
- a description of the project and the time-line for its implementation;
- a review of the land use involved in the project and its relation to local authorities;
- a review of public and private measures necessary to carry out the project;
- Information relating to permissions required from public authorities;
- a description of the impact of the project on electricity supply, socio-economics, cultural heritage, the environment, natural resources and wildlife; and
- any other relevant information that the ERA may request.

Upon receipt of the project brief, the ERA is required to publish it in the national press and solicit comments from the public and all directly affected parties.

Permit award: after the project brief has been published and comment solicited, the ERA issues a permit to the prospective licensee. The permit enables relevant studies and other activities necessary for the preparation of a licence application to be conducted.⁵²

Licence application: these are required to contain:

- the legal and financial status of the applicant;
- a technical and economic description of the project;
- a description of how the projects fit in with the existing and planned power-supply system;
- the planned time of commencement and completion of the construction of the project;
- a view of the project's adaptation to the landscape, including necessary maps and drawings;
- the impact of the project on public interest and possible mitigation;
- the results and reports of assessments, including environmental impact assessments, and any other studies carried out;
- the potential impacts of the project on private interests, including the interests of affected landowners and other rights holders; and
- all relevant consents and permits required under any other law.

The licence application should also include an evaluation of all the comments received at the permit stage.

If the licence application is deemed complete by the ERA, the applicant may be required to execute some form of security for the performance and observance of the conditions to which the licence may be subject, or take out insurance cover against liabilities that may occur. Thereafter the ERA publishes a notice of the licence application in the government gazette. The application can then be objected to by affected parties and the public.

Consideration of applications and awarding of licences: the ERA then makes a decision on whether to grant the licence a not. In making the decision the following issues are taken into consideration:

- The energy needs of the country, region or community;
- The impact of the operation of the undertaking on the social, cultural and recreational life of the community;
- The need to protect the environment and to conserve natural resources;
- Land use and the siting or route of the project;
- The costs of the project;

- The ability of the applicant to operate in a manner designed to protect the health and safety of users of the service for which the licence is required and other members of the public who would be affected by the operations of the prospective licensee;
- The technical, economic and financial capacity of the applicant to render the service for which the licence is required;
- Energy efficiency;
- Any representations and objections from the public;
- Other public and private interests affected by the operation for which the licence is required; and
- The price or tariff offered.

Licenses are granted for a duration determined by the ERA. Within three years prior to expiry, a licensee may apply for renewal. This does not apply to hydropower facilities of capacity greater than 10MW. These revert to government on expiry of the licence. Licenses are also transferable although the ERA has to satisfy itself of the legal, technical and financial competence of the party that the licence is to be transferred to. The licence transfer provision is also applicable when there is change in the control of a company, such as changes in share ownership.

In the event that a licence is not granted, the ERA must give the applicant a statement of its reasons for the refusal. If the prospective licensee is aggrieved by the refusal an appeal may be lodged with the Electricity Disputes Tribunal. There is no limitation on the number of licences that can be held by one party except where this could harm efficiency and fair competition.

Licence modification: either the ERA or the licensee can initiate a process whereby an aspect of an existing licence is modified. For the ERA to do this, the Electricity Act states that ‘the benefits of public interest’ should ‘significantly exceed the disadvantages of the licensee’. As for the licensee, in the event that ‘a condition of its licence has become unduly onerous and is impacting on its ability to fulfil its obligations under the licence’, it may apply to the ERA for a modification. In both cases if the licensee is aggrieved by the decision of the ERA, an appeal may be lodged with the Electricity Disputes Tribunal.

Licence revocation: If a licensee is not operating in accordance with the terms and conditions of their licence, the ERA may revoke the licence. In doing so, the licensee would first be notified, and the notice would be published in the government gazette and in a national newspaper, and the licensee would be given an opportunity to respond. The ERA would then make a decision after considering all the facts. The licensee may appeal the decision at the Electricity Disputes Tribunal. When a licence is revoked, the ERA is required to take all necessary action that ensures supply of service to consumers is not unduly interrupted.

Licensed projects

One of the greatest achievements of power sector reform in Uganda has been the number of relatively small private developers that have been attracted into the market to provide additional generating capacity. The numbers are significant – as at 2010 the seven IPPs accounted for 114.5MW, which was equivalent to 30 per cent of available⁵³ generating capacity. In addition, a further 100MW⁵⁴ had been licensed, as shown in Table 3.5 and was at various stages of development. As at 2010, the ERA had also issued permits, the combined generation capacity of which was in excess of 200MW.

Table 3.5: New generation projects licensed but not yet commissioned, Uganda 2010

Developer	Project	Technology	Capacity (MW)
Hydromax	Buseruka	Mini hydro	9.0
Kikagati Power Company	Kikagati		10.0
West Nile Rural Electrification Company	Nyagak		3.4
Eco Power	Ishasa		7.0
Africa EMS Mpanga	Mpanga		18.0
Invespro	Jinja	Heavy fuel oil	50.0

Source: <http://www.era.or.ug/Pdf/Status%20of%20Electricity%20Projects%20under%20Development.pdf>

Clearly the power supply deficit has been a major factor in attracting new investors into the sector but it is also a testament to the track record and credibility established by the ERA.

Power-sector planning and investment procurement

To keep the existing systems running, all the players in the industry carry out operational planning as a matter of course. But longer-term system development planning is crucial for ensuring sustained power supply and will be key to the success of the government's development agenda for Uganda. In theory, long term planning is the responsibility of UETCL.

In practice however, several industry stakeholders revealed that there tends to be a lack of clarity in terms of where actual responsibilities and oversight lies.⁵⁵ UETCL does carry out transmission planning and is in charge of the demand forecast. Nevertheless, as of 2009 the power-system master plan for Uganda was outdated. What seems to be required, therefore is a more formal allocation of the planning role to UETCL, perhaps by the inclusion of a long-term system-planning function in UETCL's system-operator licence. With the significance that this function has for ensuring the adequacy of Uganda's electricity system, the ERA could also set-up an oversight committee of key stakeholders.

It is also crucial that system-development plans are strongly linked to the procurement process. Although there are guidelines on the procedures for new investors relating to concession agreements, PPAs and licensing, there is no formal mechanism to initiate a bid, based on the output of planning processes. Uganda seems poised to emerge from its decades-long power-supply deficit, and such a mechanism could ensure that this turnaround is sustained.

Uganda's own experience and that of other countries discussed in this volume, clearly exposes the potential pitfalls of unsolicited bids. Mechanisms should therefore be developed to ensure that the outcome would be a close proxy to a competitive one if single sourcing becomes unavoidable.

There are two final points to make on the issue of planning and both relate valuable lessons learned from the Bujagali project. The first is that a governmental stakeholder committee can be a useful means through which requisite approvals from various agencies can be facilitated in the case of large power projects. The second is that there is great merit in the regulator having observer status in negotiations relating to power-purchase agreements, an issue that we have stressed several times in this book.

Pricing and tariffs

As a basis for determining tariffs, the ERA published the Electricity (Tariff Code) Regulations in 2003.⁵⁶ These contain the following set of objectives:

- To provide consumers with fair and reasonable price structures consistent with the maintenance of a financially and operationally secure electricity supply system;
- To structure the costs reflected in the tariff in such a way as to encourage consumers to make efficient use of generating, transmission and distribution assets;
- To encourage operators towards efficient use of electrical plant and increased operational effectiveness based on financial benefits and penalties;
- To provide all licensed participants in the public electricity industry with a fair and reasonable return for their service and production, including a reasonable profit;
- To encourage consumers towards efficient and economical use of energy based on price signals;
- To provide a structure that accommodates future progress towards a commercially competitive market system;
- To provide for a tariff structure and regulatory environment that gives confidence to current and prospective investors in the Uganda electricity industry; and
- To separate components of costs and tariffs that relate to natural monopolies from those components that could eventually become market based.

The Tariff Code also sets out guiding principles that should be applied in order to achieve the above objectives:

- Tariffs shall be based on accurate cost information provided by operators and a transparent formulation and review process;
- Tariffs shall reflect short-term variations in costs to reflect the fact that electricity as a commodity cannot be stored;
- Tariffs shall be structured and developed in such a way as to reflect variations in costs imposed on the system by the time of use, seasonal factors, consumer load profile, voltage levels and similar factors; and
- Tariffs shall reflect the true cost of service and provide clear price signals to the consumers on the economic and efficient use of energy.

With the generation, transmission and distribution aspects of electricity delivery are separated out in Uganda, different formulae are required to calculate the costs and relevant tariffs for each step of the process. It is interesting, therefore to delve into these formulae in some detail.

Generation tariffs

Eskom Uganda: as already noted, a significant portion of regulation in Uganda occurs as a result of existing concession agreements, and methods for the determination of tariffs are set out in those contracts. The power purchase agreement between Eskom Uganda and UETCL provides for a capacity-only, take-or-pay tariff, the capacity price. The core components of this are: an allowance for a return on capital investment that Eskom Uganda puts into the plant, which is allowed to earn a return of 12 per cent; operations and maintenance (O&M) costs as originally bid for; and the concession fee. The O&M component is adjusted quarterly for the US Dollar/Uganda Shilling exchange rate and inflation. The effective capacity payment is inversely proportional to the target availability for the plant, which is set by the ERA, and was at 96.5 per cent in 2009. The capacity-payment derivation is described below and in Figure 3.8.

$$PMT = CP \times AC$$

Where:

PMT = Capacity payment in Uganda Shillings

CP = Capacity price in Uganda Shillings per kW

AC = Available capacity in kW

The capacity price for each hour is determined as follows:

$$\frac{IN + OM + CF}{TC \times 8760 \times TA}$$

Where:

IN = Investment component

OM = O&M component

CF = Concession fee component

TC = Tested capacity in kW

TA = Target availability

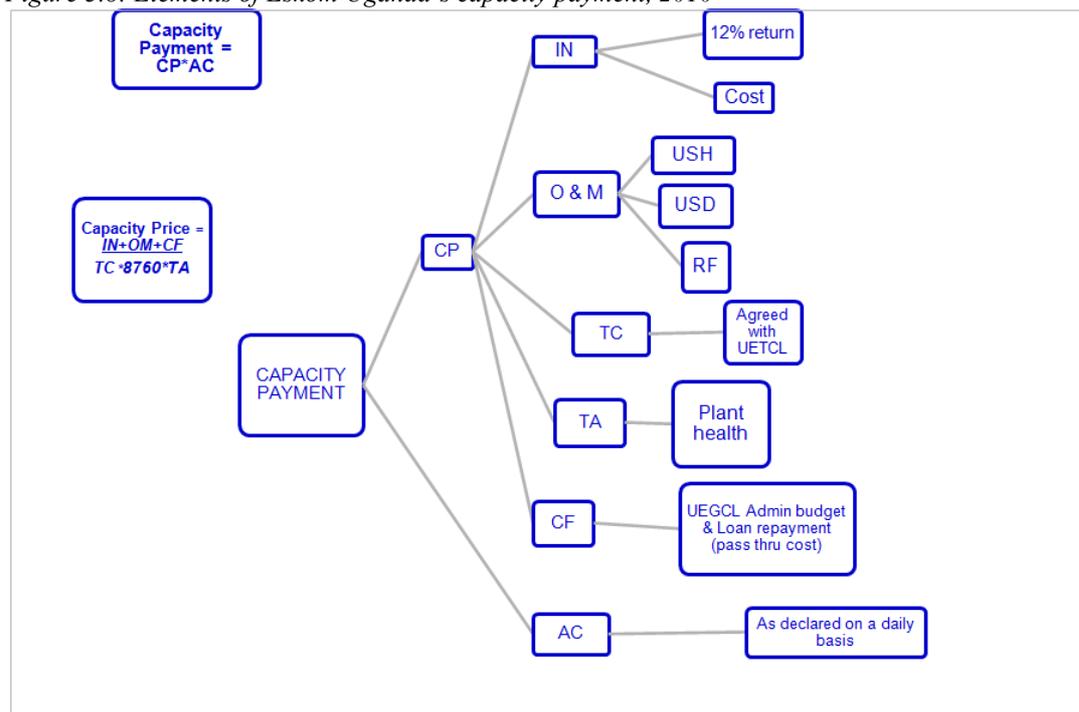
The *investment component* is the costs associated Eskom's capital investments. These are calculated in US Dollars and converted to Uganda Shillings for pricing purposes quarterly. A rate of return of 12 per cent is earned on these investments.

The *O&M component* is the operating and maintenance costs as bid at the time of procurement plus the regulatory fees due to the ERA. The nominal costs are fixed but adjusted quarterly for inflation and the US Dollar / Uganda Shilling exchange rate.

The *concession fee* is set out in the concession agreement.

The *target availability* is set annually by the ERA at between 94 per cent and 97 per cent. As at 2009 it was set at 96.5 per cent.

Figure 3.8: Elements of Eskom Uganda's capacity payment, 2010



Source: Eskom Uganda, personal communication. 2010

A salient feature of the power purchase agreement is that UETCL assumes responsibility for the hydrological risk, and Eskom Uganda is therefore guaranteed its capacity payment, regardless of the amount of water discharged from Lake Victoria. It should be noted that such provisions are not uncommon in this type of agreement. In certain respects, they are a response to funders' requirements and can in fact help to lower the cost of financing such projects. Eskom Uganda's generation tariff was due for renegotiation in 2009 with revised charges being applicable from 2010.

Thermal power plants: the cost of thermal power is a significant factor in Uganda's energy mix. According to one news report, 'it contributes about 49 per cent of power generated and almost 90 per cent of the money collected (from consumers) goes back to finance the operations of the thermal plants.'⁵⁷ For these plants, a two-part tariff is in force. The tariff comprises a capacity charge to cover fixed costs, and an energy charge that covers variable costs (including O&M and primary fuel such as diesel or heavy fuel oil). As is Eskom Uganda's case, quarterly adjustments take into account inflation, exchange rate movements and, in this case, the cost of primary fuel.

Bulk-supply tariffs

In the absence of any concession contract that binds UETCL's bulk-supply tariff, this is where the ERA has some freedom to regulating tariffs. The ERA applies the revenue-requirement method⁵⁸ in determining the bulk-supply tariff. However in its application of the method, the ERA does not include a rate of return on UETCL's asset base, nor does it provide for depreciation. Ordinarily, only grant or government-funded assets would be excluded from earning a return, but even these would be included in the depreciation account to ensure their replacement. It seems that the reason for this anomaly is the pressure on ERA not to increase already high prices. In support of this, the ERA argues that UETCL's expansion and re-investment programme would always be funded by the government. Furthermore, there was some unease as to whether the increased revenue that would accrue to UETCL, should these factors be included in the determination, would be appropriately utilised.⁵⁹ As mentioned earlier, however, there is evidence that UETCL did build up healthy cash reserves in the initial years of reform. Regardless of these concerns, it would be beneficial for the ERA to understand the true cost of providing the bulk-supply service as this would, in any case, provide government with a robust basis for its continued funding of UETCL.

In effect therefore, UETCL's revenue requirement comprises only the allowed O&M plus tax. Determining the prudence of this expense presents a challenge to many regulators. In 2010, the ERA was planning to undertake some form of international benchmarking in this regard,⁶⁰ which should provide an objective means of addressing this challenge.

Distribution tariffs

The retail tariff as charged by Umeme is as contained in its concession agreement with the government. In discussing the Umeme tariff it is important to note that the drought and subsequent reduction of energy generated at the Jinja Falls Complex in 2006 meant a drop in the energy supply available to Umeme of about 20 per cent (World Bank 2007b). As a result Umeme had less energy to sell, and its ability to recover fixed costs was undermined to the extent that its ongoing viability became questionable. For this reason, in December 2006, the government restructured the distribution concession in order to provide some compensation to Umeme (World Bank 2007b).

The retail tariff is derived as follows for each customer class:

$$\text{Retail tariff} = (\text{PSP} + \text{DP}) / (1 - \text{TUCF})$$

Where:

PSP = power supply price

DP = distribution price

TUCF = target uncollected debt factor, currently 7.5 per cent

The power supply tariff is the bulk-supply tariff from UETCL, plus any amounts outstanding from the previous period, plus an allowance for distribution losses.

$$\text{PSP} = (\text{BST} + \text{R}) / (1 - \text{LF})$$

Where:

PSP = power supply tariff

BST = bulk-supply tariff

R = reconciling amount

LF = target distribution losses

The distribution price is the distribution costs allocated to each customer class based on assumed usage.

$$\text{DS} = \text{OPN} + \text{IN} + \text{LP}$$

Where:

DS = distribution costs

OPN = operating costs

IN = costs related to capital investments

LP = lease repayments

$$\text{OPN} = \text{DOMC}_{\text{adj}} + \text{RF} - \text{OR}$$

Where:

DOMC_{adj} = as bid operating costs in US\$, split into local and foreign components and then adjusted accordingly for foreign exchange and inflation movements

RF = regulatory fees

OR = other revenues e.g. connection charges as billed in the previous year

$$\text{IN} = \text{CR} + \text{RI} + \text{TX}$$

Where:

CR = the amount equivalent to the annual depreciation charge on the current allowable capital investments

TX = income taxes payable with respect to the return on capital investments

$$\text{RI} = (\text{NI} + \text{WC}) \times \text{ROI}$$

Where:

NI = net un-depreciated allowable capital investments

WC = working capital on a target days lag

ROI = return on investment at 20 per cent on a reducing balance basis,⁶¹ the as bid return on capital investment

Three features that are embedded in the retail tariff are notable. Firstly the calculation includes an allowance, set by the ERA for uncollected revenue, the target uncollected debt factor (TUCF). This compensates Umeme for unpaid electricity bills, and, in 2009, this was set at 7.5 per cent. Secondly, the distribution loss factor (LF) provides Umeme with a shield from distribution losses in the various consumer categories. In 2009, this was set between 9 and 36 per cent depending on customer class. Allowance is also made for quarterly adjustments to reflect exchange rate, inflation and bulk-supply tariff fluctuations.

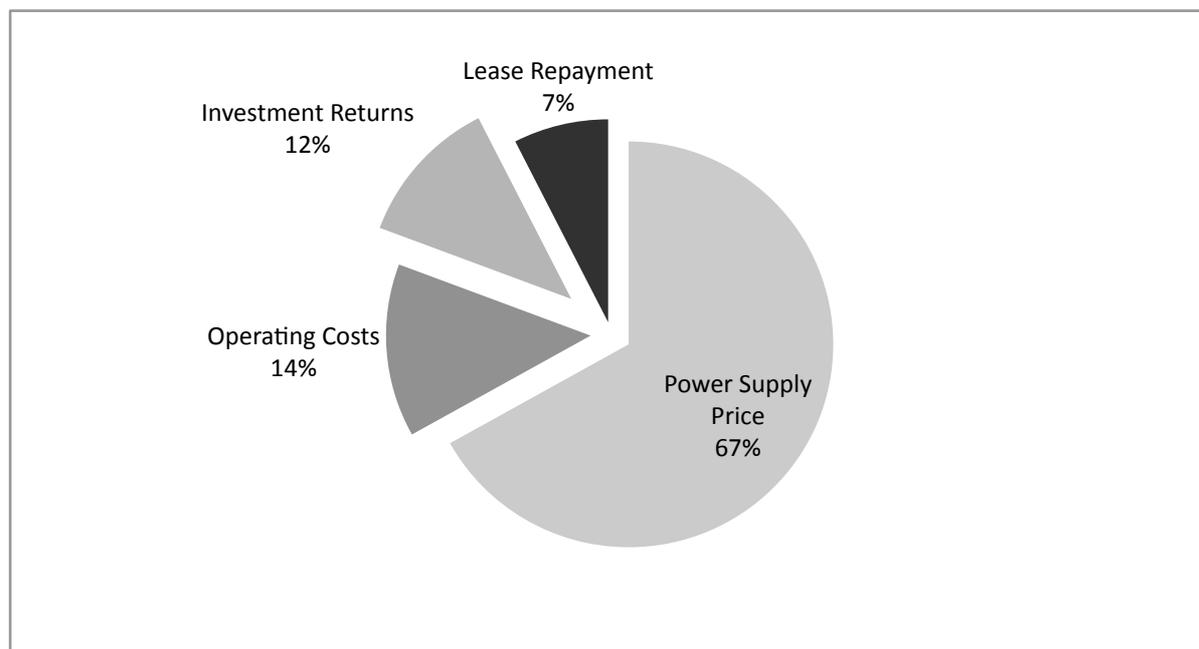
Umeme pays a form of rental for using the government's distribution assets through a lease payment. This covers the following items:

- debt servicing on UEDCL's current loans from the International Development Association and the African Development Bank;
- debt servicing on UEDCL's arrears, dating from before the concession;
- an administrative fee, for the UEDCL's operating budget;
- a return on UEDCL's equity invested in the distribution network as allowed by the ERA; and
- an amount equivalent to the depreciation UEDCL incurs on assets it acquired prior to the start of the concession.

The lease payment, which is similar in structure to that applicable to Eskom Uganda in relation to UEGCL's debt servicing and other expenses, accrues to an escrow account with a ceiling of US\$20million. Umeme can draw on this account if government defaults on the payment of its electricity bills.

The proportions of the key components in the tariff as at 2009, are shown in Figure 3.9.

Figure 3.9: Key components of Umeme's retail tariff, 2009



Over the period 2006 to 2009, tariffs to consumers did not change. This was made possible by government and World Bank subsidies, which were estimated at US\$129 million for the 2007/08 fiscal year (World Bank 2007b). In December 2009, the ERA announced a 10 per cent average reduction in retail tariffs⁶² but the subsidies remained in place. To effect this, the following variables in Umeme's tariff derivations were adjusted: targetted distribution losses were reduced from an average of 31.6 per cent in 2009 to 28 per cent; the collection target was increased to 95 per cent from 93 per cent; and the working-capital allowance was reduced to 30 days from 60 days. Increased generation as a result of IPPs and the strengthening of the Ugandan Shilling against the US Dollar also drove the reduction in tariffs. For domestic consumers the tariff changed from USh426.1/kWh to

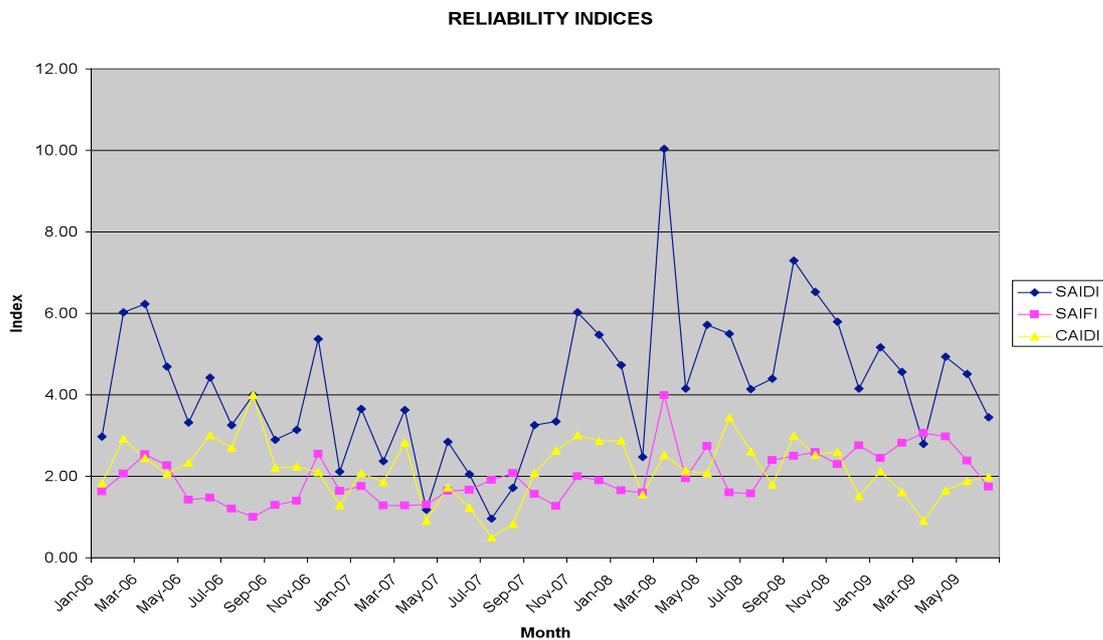
US\$385.6/kWh, which as of October 2010 was equivalent to US\$18/kWh – a figure that was still high by regional and international standards.

Technical standards

The ERA draws its mandate for the regulation of technical standards from Clause 11 (i), (j), (p) and (q) of the Electricity Act,⁶³ and in 2003, the following statutory instruments were promulgated by the ERA: the Primary Grid Code, the Safety Code, the Quality of Service Code, and Installation Permits

In general the codes are detailed and clearly state the minimum standards that should be adhered to. However the quality and reliability of electricity supply in Uganda has remained poor and since Umeme was established in 2005, there has been no discernible improvement with the exception perhaps, of the time it takes to restore supply (see Figures 3.10 and 3.11).

Figure 3.10: Reliability indices, Uganda, January 2006–May 2009



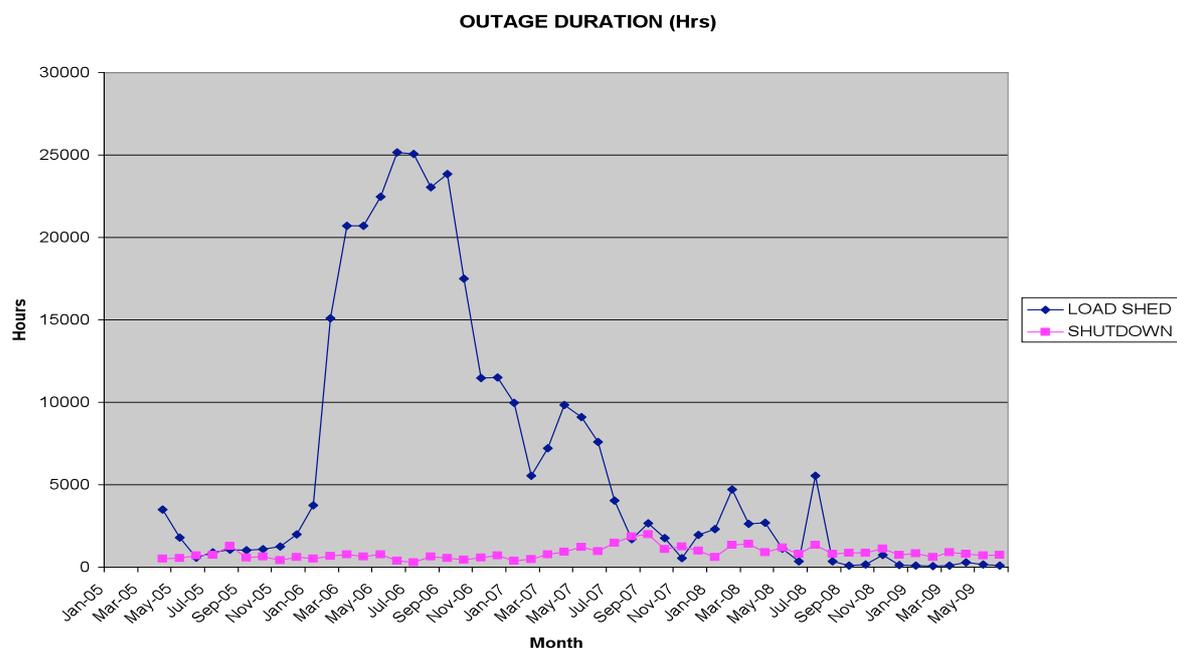
Source: Umeme, personal communication, 2009

Notes: SAIDI (system average interruption duration index) is designed to provide information about the average time the customers are interrupted, i.e. $SAIDI = \text{customer interruption durations} / \text{total number of customers served}$.

SAIFI (system average interruption frequency index) is designed to give information about the average frequency of sustained interruptions per customer over a predefined area, i.e., $SAIFI = \text{total number of customer interruptions} / \text{total number of customers served}$.

CAIDI (customer average interruption duration index) represents the average time required to restore service to the average customer per sustained interruption, i.e. $CAIDI = \text{customer interruption durations} / \text{total number of customer interruptions}$.

The drought of 2006, and the subsequent power crisis, impacted heavily on available capacity. This and the poor state of power networks, especially for distribution, have adversely affected the reliability and quality of supply. But the ERA could still enhance its oversight effort in this regard. For example, the technical codes, issued by the ERA, require that licensees report on their technical performance to the regulator on a regular basis. Compliance with this provision is however generally poor with some reports up to six months late.⁶⁴ There should be sanctions for this. Notwithstanding the ‘power crisis’ the ERA should consider re-examining the overall regime for monitoring and enforcing compliance to quality and reliability standards. This would be consistent with the wishes of some stakeholders who prefer more visibility on the part of the ERA in this area.⁶⁵

Figure 3.11: Outage duration, Uganda, January 2005–May 2009

Source: Umeme, personal communication, 2009

Pro-poor initiatives

Various initiatives within Uganda's power sector are specifically targeted at the unique needs of the poor. For example, all domestic consumers benefit from a lifeline tariff at the rate of USc4.6/kWh⁶⁶ for the first 15kWh of consumption per month. This is assumed to be sufficient to power three energy saver bulbs and a radio.⁶⁷ Additional consumption is charged at the full rate of USc18/kWh.⁶⁸ And in 2007, the government launched an initiative whereby 800 000 subsidised energy-efficient CFLs were exchanged for incandescent bulbs at a rate of three per household. This resulted in a reduction of 28MW in the country's peak demand and electricity bills were cut significantly. Unfortunately not all consumers benefited from the exchange, and there are now concerns about the safe disposal of the CFLs.

Further, and in accordance with the Electricity Act, a levy of 5 per cent is applied on all bulk electricity sales and the money accrues to the Rural Electrification Fund (REF). The REF, which is administered by the Rural Electrification Agency, is also financed from parliamentary appropriations, surpluses from the operations of the ERA, grants from donors and loans. For rural electrification projects, the REF subsidises 100 per cent of the cost of transformer installations and 15 per cent of the cost of a new connection. This enables rural households to be connected at a reduced rate of US\$25/connection.⁶⁹

In some remote rural concessions, pre-payment metering has been installed, and as at 2010, Umeme had commissioned a feasibility study into the countrywide deployment of this technology.

Extending electrification

In 2001, under World Bank led assistance, the Energy for Rural Transformation (ERT) project was commissioned. The project aims to developing the energy and ICT sectors in rural areas in order that they can more meaningfully contribute to the quality of life of households. A key objective of this project was to increase the electrification rate in rural areas from 1 per cent (as of 2001) to 10 per cent over ten years. An electrification masterplan was developed and provides a basis for donors to fund projects. The more ad-hoc projects are funded exclusively by the government. Since its inception 30 000 new connections have been made and the project has recently been extended and will now span fifteen years.

Unique to the ERT project are its rural concessions. Originally it was intended that these be bid for on a turnkey basis. This failed however and the REA now engages its own contractors to build the network and thereafter issues a tender for the concession. Bids are assessed based on the proposed tariff, O&M costs, lease fees, new connection costs and the expected number of new connections. The concessions are granted for a period of 10 years and are subject to an annual ERA tariff review. By 2010, 11 such rural concessions had been set up. Small generation projects of capacity less than 20MW are also funded under the ERT programme.

In terms of extending the grid and increasing access to electricity, Umeme is permitted to expand its network by up to 1km from where the grid was when the concession agreement was put in place, and in rural areas, the REF subsidises Umeme's expansion. Over the period 2005 to 2008, approximately 93 000 new connections were made.⁷⁰ This was beyond the target of 60 000 included in Umeme's concession agreement, but was insufficient to stifle the demand for new connections given the low access rate that prevails in Uganda. A further 75 000 new connections are expected to be made from 2010 to 2013.⁷¹

Conclusion

The extensive power-sector reform that has taken place in Uganda presents useful lessons for the rest of the continent, not least by revealing the importance of long-term government commitment if such an undertaking is to yield positive outcomes. The Ugandan government remained true to its initial reform agenda, even when faced with the controversies that surrounded the Bujagali and Namanve projects, and the need to install expensive emergency generation. However, the 2009 police searches at the offices of the ERA, and the institution of an ad-hoc committee to investigate electricity tariffs, run the risk of undermining not only the credibility of the regulator but the entire reform process.

A decade after the reforms began, there is a flurry of interest in investment in the power sector, and this is increasingly coming from local entrepreneurs. By 2012, capacity additions from IPPs will eclipse pre-reform installed generating capacity, a feat that no other country in featured this volume is likely to attain in the short term. The initial difficulties encountered with the first two IPPs seems to have set the Ugandan authorities on a steep learning curve, and they have since increased their competencies and established a good track record in the areas of tendering, licensing and contracting.

Uganda's electricity sector remain small, and the literature questions the merits of unbundling smaller power systems, where the benefits of economies of scale are less evident. But restructuring in Uganda has improved levels of professionalism and financial transparency in the sector. Cost drivers such as the emergency thermal generators and high distribution losses are clearly evident, as are the performance levels of the various industry players. Privatisation has also seen an increase in productivity as the industry-wide staffing level has decreased as at 2009 to approximately 2 000 from 3 000⁷² in 1999. And an additional outcome of privatisation has been the progressive liquidation of the legacy of debt incurred by UEB for its capital-expansion programmes.

This is not to say that the sector has overcome all of its challenges. The quality and reliability of power supply remain unsatisfactory, while technical and commercial losses remain high. These are areas that require the ERA to improve upon its incentives, and the 2010 reduction in the allowance for losses in Umeme's tariff is a significant first step. High electricity tariffs are also a major issue in Uganda and all options for a sustained reduction need to be explored. Granted that the commissioning of Bujagali is likely to bring about long-desired tariff relief, all options for sustaining this tariff reduction should be explored. One such avenue could be a restructuring of the debt repayments on the UEB's debt, which is factored into Eskom Uganda and Umeme's lease agreements and accrue to government. In the event that these lease payments could be waived, there would be room to provide additional relief to electricity consumers.

Increasing access to electricity also presents a considerable challenge for Uganda. The rural concessions being supported by the Energy for Rural Transformation Project and the Rural Energy Fund provide important avenues for meeting this challenge. They should be augmented by placing onerous but achievable connection targets on Umeme, with appropriate incentive structures and adequate monitoring by the ERA and UEDCL.

The Ugandan power sector continues to face sizeable challenges but its power crisis looks poised to be consigned to history.

Notes

- 1 http://www.eac.int/energy/index.php?option=com_docman&task=doc_download&gid=62&Itemid=70
- 2 This gives the government a 70 per cent stake in the Uganda's generation capacity, but it plays no operational role in running the plants.
- 3 Umeme is a Swahili term that means lightning or electricity.
- 4 Nalubaale and Kiira were previously known as Owen Falls and Owen Falls Extension respectively, and are now referred to collectively as the Jinja Complex since Jinja is now the nearest town.
- 5 The discharge of water from Lake Victoria is regulated by the two dams at Nalubaale and Kiira in accordance with the 'Agreed Curve' treaty, an agreement between Uganda and Egypt that is over 50 years old and is intended to simulate the natural discharge of the lake in the absence of the dam infrastructure. Discharges in 2004 and 2005 were however found to be higher than the Agreed Curve level (Kull 2006). It has been argued that the Kiira dam and power station are over-sized, and do not adequately take into account the long-term average water level in the lake, including droughts that have occurred over the last 100 years.
- 6 ERA official, personal communication, 2009.
- 7 IM Ladu and ML Oketch, 'Bujagali Power Project on Course', *Daily Monitor*, 31 August 2010. Available at: <http://www.monitor.co.ug/Business/Business%20Power/-/688616/999862/-/lccij/-/index.html>.
- 8 R Pagnamenta (2009) 'Fresh Uganda Oil Find "Africa's Biggest"', *The Times*, 14 January 2010. Available at: http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article5512531.ece.
- 9 These included Power II (US\$28.8 million), Power III (US\$125 million) and the Power IV (US\$62 million) projects among others.
- 10 Other funders of the Kiira project were the Norwegian Agency for Development Assistance (NORAD) and the Swedish International Development Agency (SIDA).
- 11 In 2001, staffing was reduced again to a level lower than that of 1991 (World Bank 2002a).
- 12 The government was required to raise tariffs by an amount equivalent to 5 per cent per annum in US\$ terms from 1993 onwards in accordance with a World Bank agreement. However, no tariff increases took place until 2001, due to, among other factors, an appreciation in the value of the Uganda Shilling and public discontent with increased load-shedding (World Bank 2002a).
- 13 This plan updated a previous plan that had been drafted in 1997.
- 14 In other words, while distributors could not compete directly, they could be benchmarked against one another and this would provide a proxy for competition.
- 15 'Chadbourne Represented Globeleq, Eskom and Umeme in Uganda Electricity Distribution Deal.' 8 March 2005, <http://www.chadbourne.com/newsevents/NewsDetail.aspx?news=274>.
- 16 At the time Globeleq was owned by CDC Capital Ventures.
- 17 At the end of 2006 Eskom's interest in Umeme was taken over by Globeleq who became the 100 per cent shareholder, and after further ownership restructuring, private equity firm, Actis Capital, majority owned by CDC Capital Ventures, assumed Globeleq's interest in Umeme.
- 18 W Wakabi, 'Umeme to run Uganda's Power Supply' *East African*, 2 August 2004. Available at: <http://www.theeastafrican.co.ke/business/-/2560/243958/-/item/0/-/b55gwp/-/index.html>.
- 19 Excluding emergency generation.
- 20 'AES Completes Development of \$550 Million Bujagali Power Project in Uganda.' *Business Wire*, 20 December 2001. <http://www.allbusiness.com/energy-utilities/utilities-industry-electric-power/6196354-1.html>.
- 21 See 'Bujagali Bid Still On' *New Vision*, 19 December 2002. <http://allafrica.com/stories/200212190213.html>; and 'IRN Comments on Bujagali Large Hydro Project (Uganda).' 19 August 2002. <http://www.internationalrivers.org/node/1323>.
- 22 The Inspection Panel is an independent entity within the World Bank that reports directly to the Board of Executive Directors. Its mandate is to ascertain, in response to requests for inspection related to specific projects, whether the Bank has complied with all applicable policies and procedures with respect to project design, appraisal and supervision. See 'Notice of Registration: Request for Inspection, Uganda', <http://siteresources.worldbank.org/EXTINSPECTIONPANEL/Resources/UgandaNOR.pdf>.

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- 23 H Ochieng, 'AES Gets Go Ahead', *The Monitor*, 9 November 1999. Available at: <http://allafrica.com/stories/199911090082.html>.
 - 24 D Kaiza, 'Bujagali Dam: Make Agreement Public' *The East African*, 10 June 2002. Available at <http://allafrica.com/stories/200206100893.html>.
 - 25 I Angelo, 'Green Watch Wins Bujagali PPA Case' *The Monitor*, 12 November 2002. Available at <http://allafrica.com/stories/200211130598.html>.
 - 26 See 'World Bank Dam in Uganda Overpriced By \$280 Million.' 20 November 2002. Available at <http://www.internationalrivers.org/follow-money/world-bank/world-bank-dam-uganda-overpriced-by-280-million>.
 - 27 A Kamagara, 'Bujagali Project Clean So Far - World Bank' *The Monitor*, 17 April 2002. Available at <http://allafrica.com/stories/200204170218.html>.
 - 28 The Department of Justice investigation ended in 2003 without any charges being laid. See Y Abbey and J Namutebi, 'Bujagali Dam Gets Go-Ahead', *The New Vision*, 21 April 2003. Available at <http://allafrica.com/stories/200304210070.html>.
 - 29 D Pallister 'Africa Dam's Passage 'Eased by Bribes', *The Guardian*, 3 November 2003. available at <http://www.guardian.co.uk/uk/2003/nov/03/davidpallister>.
BD Mulumba, 'Norwegian Firm Pulls out of Bujagali Dam' *The Monitor*, 5 September 2002. Available at <http://allafrica.com/stories/200209050390.html>.
 - 31 Y Abbey, 'Contractors Pull Out of Bujagali Project' *The New Vision*, 4 June 2003. Available at <http://allafrica.com/stories/200306040290.html>.
 - 32 It should be noted that the negative sentiment that had been stirred up on the environmental and social aspects of the project and the allegations of impropriety notwithstanding, AESNP's withdrawal occurred at a time when its share price was low, Enron had collapsed and its CEO had been replaced (Esty and Sesia, 2005).
 - 33 BD Mulumba, 'Bujagali Power Dam Project Must Go On; Eskom Cited in Fresh Plans' *The Monitor*, 15 August 2003. Available at: <http://allafrica.com/stories/200308150075.html>.
 - 34 J Eremu, 'World Bank to Fund Buagali Power Project' *The New Vision*, 16 August 2003. Available at: <http://allafrica.com/stories/200308180191.html>.
 - 35 The three bids successfully submitted were from: Bujagali Energy Limited (a consortium led by Industrial Promotion Services), the Wakisi Consortium (led by Aldwych International), and Stucky Consulting Engineers Ltd.
 - 36 Bujagali Energy Limited (BEL) is owned by Industrial Promotion Services (Kenya) an affiliate of the Aga Khan Fund for Economic Development (AKFED) and SG Bujagali Holdings Ltd, an affiliate of Sithe Global Power, LLC (USA).
 - 37 'Uganda Gives IPS Group Bid the Green Light', *Daily Nation*, 10 May 2005. Available at: <http://allafrica.com/stories/200505091685.html>.
 - 38 Industrial Promotion Services, official, personal communication, 2010.
 - 39 The inspector-general of government investigates cases of corruption and abuses of office and authority within government.
 - 40 The disputes and court processes etc. are documented in various newsmedia including:
B Among, 'Country's Third Thermal Power Plant is Launched', *East African*, 10 October 2006;
I Kasita, 'Namanve Thermal Power Costs Rise to US\$145Bn' *New Vision*, 17 June 2007;
I Kasita, 'Court Stops Namanve Thermal Power Deal' *New Vision*, 10 May 2007;
I Kasita, 'Hearing of Thermal Power Award Starts on August 17', *New Vision*, 22 July 2007.
 - 41 ERA, personal communication 2010.
 - 42 TronderPower Limited is owned by TrøndeEnergi and Norfund both of Norway.
 - 43 See 'Tororo Thermal Plant to Be Commissioned in August' *New Vision*, 23 June 2009, and 'Power Cuts to Go - Museveni' *New Vision*, 24 June 2010.
 - 44 See <http://www.kakirasugar.com/>.
 - 45 ERA, personal communication, 2010.
 - 46 Citing increased responsibilities elsewhere.
 - 47 'Police Raid Power Companies' *Saturday Vision*, 26 June 2009. Available at: <http://www.newvision.co.ug/D/8/13/686017>.

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- 48 ERA, personal communication, 2009.
- 49 ERA, personal communication, 2009.
- 50 Personal communication, 2010.
- 51 For example, Umeme's agreements with government include: an Implementation (Concession) Agreement, a Special Provisions Period Agreement and a power-purchase agreement that sets out the terms on which it purchases electricity from UETCL.
- 52 The ERA may of its own volition also invite applications through a fair and open competitive process in accordance with prescribed procedures for any licence prescribed by the Electricity Act.
- 53 Takes into account the water constraints at the Jinja Complex that limits capacity to 175MW.
- 54 This figure excludes the Bujagali Project.
- 55 Various stakeholders, personal communication, 2009.
- 56 Available at: http://www.era.or.ug/Pdf/Electricity_Tariff_Code_Regulations,_2003.pdf.
- 57 I Kasita 'PS, Onek Make up.' *New Vision*, 12 November 2009. Available at: <http://www.newvision.co.ug/D/8/13/701007>.
- 58 Where RR = revenue requirement, RAB = regulatory asset base, RoR = rate of return, E = operations and maintenance expenses, D = depreciation, T = taxes.
- 59 ERA, personal communication, 2010.
- 60 ERA, personal communication, 2009.
- 61 The internal rate of return (IRR) is estimated at 6 per cent.
- 62 'Approved Tariffs for the Period January to March 2010'. Available at: <http://www.era.or.ug/Pdf/Approved%20tariffs%20for%20the%20period%20of%20January%20to%20March%202010%20NOTICE.pdf>.
- 63 See page 21 above for a summary of the provisions of Clause 11.
- 64 ERA, personal communication, 2009.
- 65 Various stakeholders, personal communication, 2009.
- 66 As at 2010, and based on the average Bank of Uganda exchange to October 2010.
- 67 ERA, personal communication, 2009.
- 68 As at 2010, and based on the average Bank of Uganda exchange to October 2010.
- 69 REA, personal communication, 2009.
- 70 Umeme, personal communication, 2009.
- 71 Umeme, personal communication, 2009.
- 72 Ministry of Energy and Mineral, Personal Comm. 2009.

References

- Eberhard, A and K Gratwick (2010). 'IPPs in Sub-Saharan Africa: Determinants of Success.' MIR Working Paper, Management Programme in Infrastructure Reform and Regulation, Graduate School of Business, University of Cape Town, South Africa.
- ERA (Electricity Regulatory Authority) (2008). Project Brief on the Licence Application by Kinyara Sugar Limited to Operate a 7.5MW Generation Plant. http://www.era.or.ug/Pdf/Kinyara_Sugar_Limited.PDF.
- ESMAP (Energy Sector Management Assistance Programme of the World Bank) (1988). *Uganda: Power System Efficiency Study*. World Bank. http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/08/15/000009265_3960928082940/Rendered/PDF/multi_page.pdf.
- Engurait SP (2005). 'Power Sector Reforms in Uganda: Status and Achievements.' *International Journal of Global Energy Issues* 23(2/3): 110–118.
- Esty BC & A Sesia (2005). *International Rivers Network and the Bujagali Dam Project (Case study)* Boston: Havard Business Review.
- Gore C (2009). 'Electricity and Privatisation in Uganda: The Origins of the Crisis and Problems with the Response.' In DA McDonald (ed.) *Electric Capitalism: Recolonising Africa on the Power Grid*. Cape Town: HSRC Press.

- Government of Uganda (1999). *Uganda Power Sector Restructuring and Privatisation: New Strategy Plan and Implementation Plan*. Kampala
- Government of Uganda (2002). *The Energy Policy for Uganda*. Kampala.
<http://www.rea.or.ug/userfiles/EnergyPolicy%5B1%5D.pdf>.
- Government of Uganda (2005). *The Code of Conduct and Ethics for Uganda Public Service*. Kampala.
- Khadiagala GM (1993). 'Uganda's Domestic and Regional Security Since the 1970s.' *Journal of Modern African Studies* 31(2): 231–255.
- Kull D (2006). 'Connections Between Recent Water Level Drops in Lake Victoria, Dam Operations and Drought.' <http://www.internationalrivers.org/files/060208vic.pdf>.
- Minakawa, N, Sonye G, O Dida G, Futami K and Kaneko S (2008). 'Recent Reduction in the Water Level of Lake Victoria has Created more Habitats for Anopheles Funestus.' *Malaria Journal* 7: 119.
- Ministry of Energy and Mineral Development, Uganda (2006). *Annual Report 2005*.
<http://www.energyandminerals.go.ug/pdf/AR2005.pdf>.
- Ministry of Energy and Mineral Development, Uganda (2007). *Annual Report 2006*.
<http://www.energyandminerals.go.ug/pdf/AR2006.pdf>.
- Ministry of Energy and Mineral Development, Uganda (2009). *Annual Report 2008*.
<http://www.energyandminerals.go.ug/pdf/Annual%20Report%202008%20.pdf>.
- NORAD (2010). 'Evaluation of Norwegian Business-related Assistance: Uganda Case Study.'
http://www.norad.no/en/_attachment/176091/binary/115005?download=true.
- Office of the Auditor General, Uganda (2010). 'Annual Report of the auditor General on the Financial Statements of Statutory Authorities and State Enterprises for the Year Ended 30th June 2009.'
http://www.oag.go.ug/uploaded_files/1271768253Vol4%202008-2009%20Statutory%20Corporations.pdf.
- World Bank (2000). Project Information Document: Uganda Fourth Power Project. http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2000/07/07/000094946_00062905314733/Rendered/PDF/multi0page.pdf.
- World Bank (2001). 'Uganda: World Bank's Board Responds To Uganda's Energy Needs Approves Support For Bujagali Hydropower Project.'
<http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20034412~menuPK:34463~pagePK:34370~piPK:34424~theSitePK:4607,00.html>.
- World Bank (2002a). *Implementation Completion Report: Third Power Project*. http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2002/08/09/000094946_02073004014523/Rendered/PDF/multi0page.pdf.
- World Bank (2002b). 'World Bank Board of Directors Approves Management's Response to Inspection Panel Report on Bujagali Project.'
<http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:20050566~menuPK:34463~pagePK:64003015~piPK:64003012~theSitePK:4607,00.html>.
- World Bank (2006a). Project Information Document: Uganda Thermal Power Generation. http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/09/14/000104615_20060914144354/Rendered/PDF/Project0Inform1cument1Concept0Stage.pdf.
- World Bank (2006b). 'World Bank Statement on Lake Victoria Water Level.'
<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/UGANDAEXTN/0,,contentMDK:20856182~menuPK:374956~pagePK:1497618~piPK:217854~theSitePK:374864,00.html>.
- World Bank. (2007a). 'World Bank Group Approves Support for Bujagali Hydropower Project That Will Address Uganda's Power Shortages.'
<http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21315008~enableDHL:TRUE~menuPK:34463~pagePK:34370~piPK:34424~theSitePK:4607,00.html>.
- World Bank (2007b). Program Document: Uganda Power Sector Development Operation, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/04/06/000020953_20070406101518/Rendered/PDF/366440UG0IDA1R20071007011.pdf.
- World Bank. (2007c). 'World Bank Board Approves \$300 Millions for Power Sector Development in Uganda.'
<http://web.worldbank.org/external/default/main?pagePK=34370&piPK=34424&theSitePK=4607&menuPK=34463&contentMDK=21314989>.

World Bank (2008). 'World Bank Board Discusses Investigation by the Independent Inspection Panel of Power Project in Uganda.'

<http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:22010397~pagePK:34370~piPK:34424~theSitePK:4607,00.html>.

World Bank (2009). Implementation Completion and Results Report: Fourth Power Project, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/05/07/000333038_20090507235505/Rendered/PDF/ICR7600P0029841IC0Disclosed05161091.pdf.

World Rain Forest Movement (2002). 'Uganda: Bujagali Dam Project Comes Back Under a New Disguise.' *WRM Bulletin* 64. <http://www.wrm.org.uy/bulletin/64/Uganda.html>.