

Tanzania: learning the hard way

Almost every day there are one or two power failures.

– An official from the Confederation of Tanzania Industries¹

Despite Tanzania opening its electricity sector to IPPs more than a decade ago, failures in the planning and implementation of generation-expansion projects have created two main power-supply problems. First, in a country where less than 20 per cent of the population have access to electricity, installed generation capacity is insufficient to meet existing demand, let alone carry the reserves required for prudent system operations. Second, over 50 per cent of installed generation capacity is hydro-based and the country is increasingly drought prone. Significant droughts in 1992, 1994, 1997, 2000, 2003 to 2005, and in late 2009, have made power cuts of up to 14 hours at a time a frequent fact of life for Tanzanians (Keeler 2010).

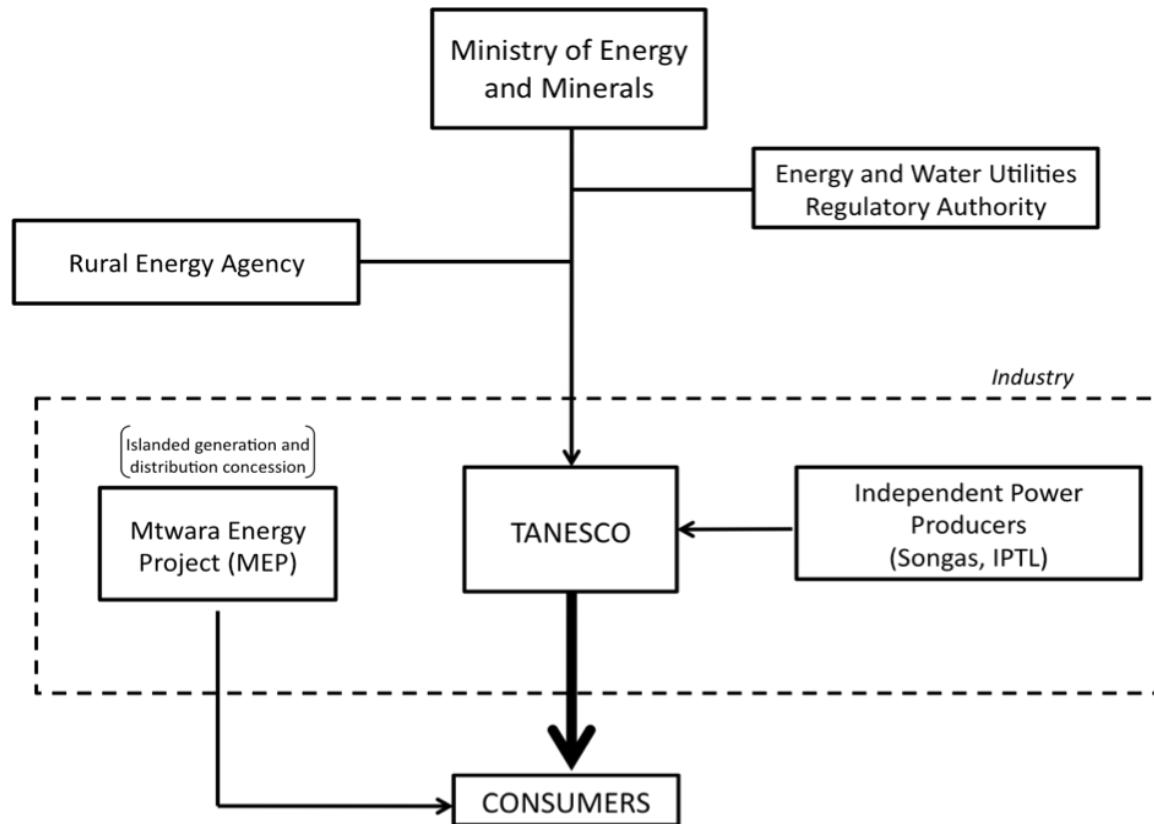
The Tanzanian government, and the country's state-owned power utility, the Tanzania Electric Supply Company Ltd (TANESCO), have tried to remedy the situation in various ways. Ongoing reforms in the sector, including the outsourcing of the management of TANESCO for some years, have had limited impact so far. TANESCO's fortunes have continued to dwindle, and efforts to augment state intervention with private-sector investments have been dogged by inefficiencies or mired in controversy. Lessons from the procurement of Tanzania's first two IPPs have not been learned in subsequent projects. Probably the most dramatic example is the 100MW Richmond/Dowans emergency power plant, which has been described as 'the biggest corruption and political scandal in the country's history',² and which led to the 2008 resignation of the prime minister and a Cabinet minister.

It is interesting to note that most of the reform measures, and attempts to involve the private sector, were initiated before a statutory regulating authority had been established. The Energy and Water Utilities Regulatory Authority (EWURA) came into being in 2006. Since then, EWURA has ridden on a wave of goodwill. The principle legislation is innovative in granting EWURA powers that are not common in other regulatory institutions such as the initiation of the procurement of new capacity. The legislation also presents a unique mechanism that allows for more transparent but formal engagement with government and consumer groups. Most stakeholders are positive about EWURA's potential impact, but the regulator clearly faces monumental challenges if it is to turn the fortunes of Tanzania's electricity sector around.

An overview of Tanzania's electricity sector

The structure of Tanzania's power sector is depicted in [Figure 2.1](#). As per all the countries in this volume, the government, through the Ministry of Energy and Minerals is responsible for formulating energy policy. Regulation of the sector is the preserve of the independent Energy and Water Utilities Regulatory Authority (EWURA) and, as is increasingly the case across Africa, an autonomous body, the Rural Energy Agency (REA), has been charged with scaling up rural electrification.

At industry level, all the defining features of a hybrid electricity market are visible. State-owned and vertically integrated TANESCO dominates the sector, while IPPs (Songas and Independent Power Tanzania Ltd [IPTL]) provide additional generation capacity on the margins of the industry, while the Mtwara Energy Project (MEP) is a remote rural gas-to-electricity generation and distribution concession planned for the south of the country, the agreement for which is yet to be formalised.

Figure 2.1: An overview of Tanzania's electricity industry, 2010

Generation capacity and demand forecast

At the time of writing, Tanzania's total installed generation capacity was 1 040MW, of which 55 per cent was hydropower. Shortages in hydropower have been exacerbated by the diversion of water for irrigation (IMF 2006), and the steadily increasing demand for electricity. The contribution of thermal power to Tanzania's total generation, which was just 7 per cent in 2002, averaged 37 per cent over the period 2002 to 2009 and peaked at 58 per cent in 2007. Thermal power is generated by TANESCO, the IPPs and, between 2006 and 2008, by short-term emergency power generators. Table 2.1 lists installed power generation plants and their capacities.

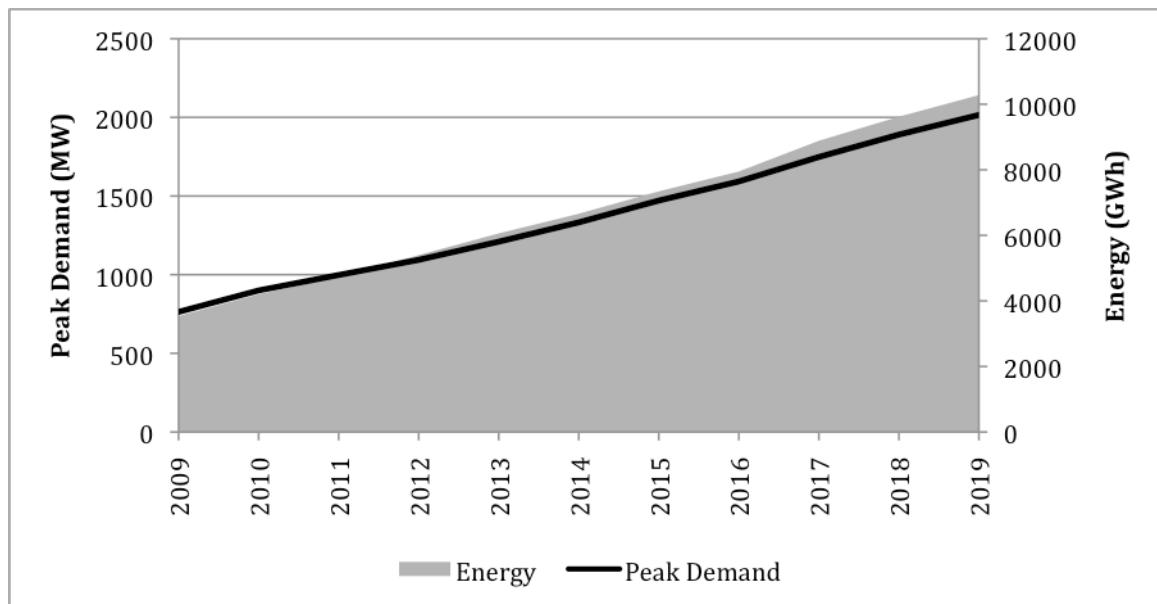
Table 2.1: Installed generation capacity, by plant, Tanzania, 2009

Ownership	Plant	Installed capacity (MW)	Type
TANESCO	Kidatu	204.0	Hydro (54%)
	Kihansi	180.0	
	Mtera	80.0	
	New Pangani Falls	68.0	
	Hale	21.0	
	Nyumba Ya Mungu	8.0	
	Uwemba	0.8	
	Ubungo Gas	102.0	Thermal (gas) (14%)
	Tegeta Gas	45.0	
IPPs	Other (small, stand-alone diesel generators)	30.0	Diesel (3%)
	Songas	189.0	Thermal (gas) (29%)
	IPTL	100.0	
Total	Artumas	12.0	
		1039.8	

Given the regularity of drought and the availability of natural gas reserves, the long-term and least-cost security of power supply for Tanzania seems likely to require a more optimised mix between hydro and thermal generation.

The load forecast for the period 2010 to 2019 is shown in [Figure 2.2](#). It is estimated that future growth in both demand and consumption will be strong, averaging approximately 10 per cent per annum. If this forecast actualises, serving the resulting demand will require a doubling of Tanzania's existing generation capacity in the next nine years, that is, an additional 1 000MW. Given that only about 300MW of additional capacity has been realised over the period 2000 to 2010, TANESCO's ability to invest its own funds and to attract private-sector investors requires a significant scaling up to meet the projected demand.

Figure 2.2: Load forecast, Tanzania 2010–2019



Source: Ridgeway Capital Projects (2010)

Power-sector reform

Electricity was first introduced to Tanzania (then Tanganyika) in 1908 when the colonial authorities installed electric power to run the railway workshops in Dar es Salaam, but by 1931, the colonial government decided to withdraw from the provision of electricity services. The Dar es Salaam and District Electric Supply Company (DARESCO) and the Tanganyika Electric Supply Company (TANESCO) were then established.³ Both utilities grew, and when Tanganyika achieved independence in 1961⁴ TANESCO was exporting power to Mombasa in Kenya.⁵

At independence the government expressed its desire to acquire both of these electricity utilities, and a protracted nationalisation process took place from 1964 to 1975. During that time, the two utilities merged to form the Tanzania Electric Supply Company (also known as TANESCO). TANESCO performed adequately in the 1960s and 1970s, the two decades after independence, but from the 1980's 'electricity-sector services deteriorated' (Ghanadan and Eberhard 2007: 6) and performance since then has generally been poor.

Acting on the advice of the World Bank and the International Monetary Fund (IMF), the government initiated a macro-economic structural adjustment programme in the early 1990s. This, combined with the drought of 1992, prompted a wave of electricity sector specific reforms.

The structure of the industry has changed little in recent years, despite a series of reforms that began in 1992 with the publication of a new energy policy (Ministry of Water, Energy and Minerals 1992). It is useful, therefore, to examine the reforms in some detail before we briefly describe the major players in the industry.

The focus of the 1992 reform policy was on the development and use of indigenous energy sources, and on increasing per capita electricity consumption. To achieve these broad objectives, the policy states that 'while TANESCO is the major producer of electricity, the Government has given a mandate to other organisations to exploit the hydropower resources and to install thermal-based generation. In all cases the Ministry responsible for Energy regulates the development through the powers vested in it by the Electricity Ordinance' (Ministry of Water Energy and Minerals 1992: 26). With this statement, electricity generation in Tanzania was liberalised, and the following year bids were invited for the country's first two IPPs.

The policy also stated that 'where TANESCO has not established a public power supply system, private electricity generation and distribution will be encouraged. The tariffs applicable to such schemes will be reviewed by the government' (Ministry of Water, Energy and Minerals 1992: 27). This made it possible for the private sector to invest in remote rural power systems (such as the Mtwara Energy Project discussed later). Tanzania was also amongst the first to attract IPPs in the form of IPTL and Songas (also discussed later in this chapter).

Interestingly, the policy did not envisage the establishment of an independent regulator (EWURA was set up in 2006). And despite the policy changes and various private-sector initiatives, the performance of the electricity sector remained poor. A 1999 IMF paper on Tanzania stated that:

In recent years, the economy has suffered from power shortages and blackouts, owing to load shedding by the electricity parastatal, TANESCO, during the dry season. These interruptions have a high cost in terms of foregone output and incomes. The current drive to address these problems will require further investments by TANESCO. To this end, concerted efforts will be made to solve the problems of long lags [delays] in electricity billings, customers' non-payment for services, and delays in adjusting tariffs by the government (IMF, 1999: para. 39).

As a result, and under pressure from the both the IMF and the World Bank, the Tanzanian government committed itself to further and more explicit reform measures:

The government has decided, as part of an action plan to improve the security, reliability, and efficiency of power supply, to...rationalise TANESCO's operations and introduce private operation and ownership into these operations, beginning with power distribution. Other measures include developing a power sector regulatory policy and plan, which is expected to be in place in June 1999. Under this plan, foremost priority will be given to promoting private sector entry based on competitive bidding and autonomous regulatory arrangements. The power system under TANESCO will be unbundled into generation, transmission and distribution segments, and privatised distribution will be in place by end-2000, followed by the generation and transmission segments. A simple but effective regulatory framework will be put in place by December 1999 (IMF, 1999: para. 40).

Thus activities to restructure TANESCO and prepare it for eventual privatisation began to take place. Progress was slow however, to the frustration of the World Bank, which believed that both government and TANESCO management were not doing all in their power to turn the company around. This was in spite of power tariffs having increased by over 100 per cent in nominal terms over the period 1988 to 2000 (see *Table 2.2*) reaching USc9/kWh which was amongst the highest in Africa at the time (World Bank 2003). Mounting operational losses were compounded by significant unpaid electricity accounts by government and state-owned enterprises (IMF 2001a). Furthermore, in 2001, the outcome of an arbitration case on the costs of the IPTL power plant added to TANESCO's financial burdens (IMF, 2001b).

Table 2.2 Electricity tariffs in Tanzania, 1988–2000

Year	Tariff (USc/kWh)	Year	Tariff (USc/kWh)
1988	3.99	1993	8.00
1989	4.34	1994	8.43
1990	5.38	1995	8.73
1991	6.15	1999	9.00
1992	6.17	2000	9.00

Source: (Marandu 2002)

With electricity costs high, quality and reliability of supplies poor, and the financial standing of the state utility still weak, attention focused increasingly on TANESCO's management. In 2001, the government reconstituted TANESCO's Board and initiated procurement of a firm to manage the company (IMF 2001a).

An experiment in outsourcing utility management

In 2002, the government of Tanzania retained the services of a South African-based company, NETGroup Solutions to manage TANESCO.⁶ Originally the contract was for a period of two years but it was later extended and, in the end, ran until December 2006. Broadly, the objective of the contract was to achieve TANESCO's commercial turnaround in readiness for privatisation. When the contract came up for extension in 2004 its scope was widened to include improvements in technical performance.

Private sector involvement in Tanzania's electricity industry has tended to raise controversy and the NetGroup management contract was no exception. The tendering process was shrouded in allegations of impropriety. TANESCO's board of directors expressed reservations about the transparency of the negotiations and the Minister of Energy and Minerals questioned the selection process. Workers threatened industrial action, and even sabotage, if they were not paid retrenchment packages before the start of the contract.⁷ And there was also criticism of the 'high' salaries paid to the NetGroup managers⁸ (Hall, 2007).

The results achieved by NETGroup were mixed. The most positive outcome was the increase in TANESCO's revenues which, in Phase I of the contract (May 2002 to July 2004), 'increased from US\$10–12 million per month in 2001, to US\$16 million per month by mid-2004' (Ghanadan and Eberhard, 2007: 19).⁹ The World Bank hailed this as an 'immediate improvement in the utility's financial and operational performance' (World Bank, 2003) and by mid-2004 revenue collection had reached US\$22–24 million per month (Ghanadan and Eberhard, 2007). Improvements in technical performance were elusive however. System losses, quality and reliability of supply, and the rate of new electricity connections, did not improve.

Policy revisions since 2003

Almost a year after NETGroup's management contract began, the government published *The National Energy Policy* (Ministry of Energy and Minerals, 2003). The new policy acknowledged the structural changes that had taken place in Tanzania's transition from a centrally planned economy to one that was market driven and, in comparison to the 1992 policy, it was more explicit on government's power-sector reform agenda. It took into consideration the need to 'reform the market for energy services and establish an adequate institutional framework, which facilitates investment, expansion of services, efficient pricing mechanisms and other financial incentives' (Ministry of Energy and Minerals, 2003: 5). The key aspects of the policy are as follows:

- Competition was acknowledged to be a fundamental operating principle for the sector in an attempt to improve efficiency.
- Open access to the grid was guaranteed in order to facilitate competition.
- Generation of electric power was fully opened to private and public investors as well as independent power producers. (It is envisaged that investment will be based on economic and financial criteria considering access to regional networks, balanced domestic supply and environmental impacts.)
- Regional co-operation and integration are given priority in investment to ensure reliable supply, the exploitation of low-cost energy sources for regional trade and a balancing of the erratic availability of hydropower;
- Priority is given to developing domestic power generation capacity based on indigenous resources in order to meet increases in demand – a common theme in national energy policies.
- A commitment is made to participating in national and international research, development and application of commercially viable, large-scale technologies for renewable sources of electricity generation (Ministry of Energy and Minerals, 2003).

In 2005, a general election was held and the incoming government reversed its earlier decision on TANESCO and delisted it from privatisation. This fundamentally altered an underlying objective of the management contract. In 2006, the government announced that NETGroup's management contract would not be extended. Widespread public acrimony was a factor in this decision and the Minister of Energy and Minerals was quoted as saying that 'Tanzania was dissatisfied with the quality of management provided by NETGroup Solutions...government was obliged to listen to the views of the public following complaints about the quality of service being offered by TANESCO'.¹⁰

Then, in 2008, the Electricity Act was passed. Prior to this, the sector had been regulated in accordance with the provisions of the Electricity Ordinance Amendment of 1957. Clause 4 (1) of the 2008 Act states that

The Minister shall provide supervis[ion] and oversight in the electricity supply industry and shall in that respect...(c) take all measures necessary to reorganise and restructure the electricity supply industry with a view to attracting private sector and other participation, in such parts of the industry, [in] phases or time frames as he deems proper.

Tanzania has experienced nearly two decades of reforms with shifting commitments to private sector participation. However the Electricity Act of 2008 appears to signal a renewal of government's commitment to ongoing reforms in the sector.

Independent power producers

Independent power producers (IPPs) in Tanzania have had a chequered history. In 1993, the government first invited bids for the exploitation of the Songo Songo gas reserves. The project concept was extensive and included the development of infrastructure for the extraction, processing and pipeline transportation of gas, as well as the construction of a gas-to-power facility at the Ubungo power plant in Dar es Salaam. Negotiations with, Songas shareholders commenced in 1994, just as the country entered another year of drought.¹¹

Also in 1994, the Tanzanian government signed a memorandum of understanding with Independent Power Tanzania Ltd (IPTL) to provide electricity as a 'fast-track measure', and by mid 1995, a 20-year 100MW power purchase agreement between IPTL and TANESCO was signed (Cooksey 2006). The IPTL plant was initially to be run on heavy fuel oil and, like the Ubungo turbines, was expected to be able to process natural gas once this was available. The contract with IPTL was finalised in 1997, but soon became shrouded in allegations of impropriety, negligence and corruption (Cooksey 2006), exacerbated by the fact that it had never been openly tendered. The plant had been planned to run on expensive slow-speed engines, but cheaper, medium-speed engines were actually installed – a change that TANESCO contended it had not been properly advised of or benefitted from. As a result, and with the support of the World Bank, TANESCO served a notice of default on IPTL with the intention of terminating their agreement.¹² This culminated in a request for arbitration on behalf of TANESCO at the World Bank's International Centre for Settlement of Investment Disputes (ICSID) (Gratwick, Ghanadan et al. 2007). A decision on the matter was reached in 2000, with the ICSID ruling that the power-purchase agreement should not be terminated, but that a portion of the power tariff (capacity charge) should be lowered to match actual costs. The plant was eventually commissioned late in 2000 and although capacity charges did come down,¹³ a survey by Gratwick et al (2007) found that power from the IPTL plant was the most expensive in Sub-Saharan Africa at the time.

IPTL began commercial operations early in 2003, two years after their plant was commissioned. Four years later, in 2007, IPTL was embroiled in another dispute, this time between its local and foreign project sponsors,¹⁴ with accusations of misappropriation of the proceeds from power sales.¹⁵ At the time of writing, this conflict was still unresolved, IPTL was under administration, and the plant had hardly been operational since 2007.¹⁶ To complicate matters further, in 2008 IPTL sued TANESCO in a New York court demanding US\$70 million in unpaid capacity charges.¹⁷

While the electricity-supply industry was immersed in the ICSID process, the Songas project was put on hold for the three years. The project was, however, incurring interest charges on funds that Songas equity holders had provided for start-up activities (known as the allowance for funds used during construction).¹⁸ Eventually in 2001, the Songas power-purchase agreement was finalised, and in 2004,

commercial operations commenced with the conversion of the jet-fuel plants at Ubungo to natural-gas processing plants, ownership of which was transferred to Songas. The following year, two additional 36MW LM6000 units were commissioned and the capacity of the Songas plant increased to 189MW.

Emergency power suppliers

Both Songas and IPTL eventually began to contribute significantly to Tanzania's generation capacity, but this was insufficient to prevent load shedding when yet another drought occurred in 2006. Consumers were subjected to power outages for up to 18 hours at a time (Gratwick et al., 2007), and TANESCO resorted to renting emergency power plants from multinational companies, Aggreko, Alstom and the Richmond Development Corporation. Aggreko provided 40MW of gas-fired power from October 2006 to October 2008, and APR Energy provided an additional 20MW from March 2007 to March 2008 by. But it was the contract for the provision of 100MW by the Richmond Corporation that caused a major scandal.

Under TANESCO's contract with Richmond, which was allegedly signed in controversial circumstances,¹⁹ the company was expected to supply 100MW of emergency power fuelled by Songo Songo gas for two years, starting with 20MW in September 2006 and adding an additional 80MW in February 2007. It turned out that Richmond had neither the technical expertise nor the capacity to undertake the project. The initial 20MW was deployed a month behind schedule and only after government had advanced funds to Richmond (Gratwick et al., 2007). In late 2006, Dowans Holdings took over the contract in an arrangement that has been described as 'a desperate attempt by Richmond to hang on to the...contract'.²⁰ Eventually Dowans provided the full 100MW, but by then the drought was over and the emergency capacity was no longer needed. Nonetheless, in terms of the contract, TANESCO was obliged to pay daily 'take-or-pay' capacity charges. This led to a public outcry.²¹ Following a parliamentary probe into the contract, the prime minister and two Cabinet ministers resigned in 2008.

Mtwara Energy Project

The remote rural Mtwara Energy Project (MEP) is a unique feature of the Tanzanian electricity industry. The project was initiated in 1994 when the UK-based oil and gas exploration and development firm, Tullow Oil, was selected by the Tanzanian government to exploit the Mnazi Bay gasfield located on the south eastern tip of the country, close to the Mozambique border. The project lay dormant for some time however, and eventually Tullow Oil pulled out. In 2004, the Artumas Group²² signed a gas-production agreement with the government (Ghanadan and Eberhard 2007). Following the development of three wells, MEP became commercially operational in 2006.

MEP is an integrated gas-to-power project with an installed generation capacity of 18MW, to supply a distribution network leased from TANESCO for a period of 20 years.²³ Electricity demand in the area served has been estimated as 24MW, and the possibility of setting up a 300MW electricity generation facility, for export into TANESCO's main grid, has been mooted (Anthony 2007). As things stand, the project supplies electricity to the towns of Mtwara and Lindi and the surrounding districts, which were previously served by TANESCO using diesel-fired generators. Via an interim power purchase agreement, the project sells bulk power to TANESCO, which still owns the distribution network in the area. Negotiations are in progress on MEP taking a 20-year lease on the distribution network.

From the controversies outlined in this section it is easy to understand why government and others might view new private sector investment in Tanzania's electricity industry with suspicion. The provision of adequate, quality and reliable electricity supplies in Tanzania does however remain a sizeable undertaking. Given government's limited resources, the private sector can be an important partner in this endeavour. It is therefore crucial that lessons are drawn from the unsavoury experiences of the past and that private sector participation is not stifled. In our view, robust planning that initiates timely procurement, the use of international competitive bidding processes, and the development of high levels of competency in negotiation are key to more positive future outcomes.

Financial indicators and tariff structures

Key financial indicators for TANESCO over the period 2003 to 2009 are shown in [Table 2.3](#) and reveal a utility in crisis. It is striking that, over this seven-year period, TANESCO's total revenue from electricity sales was generally lower and, at best, just sufficient to cover its overall cost of sales (see [Figure 2.3](#)).²⁴ An important constituent of the cost of sales is the purchase of power from IPPs and emergency power suppliers, which in 2006 exceeded total electricity revenue. Given the significance of power-purchase costs, it is to be expected that the trend in this cost element would correlate to that of the overall cost of sales. This was however not the case: the cost of sales steadily increased over the period, whereas power-purchase costs receded after 2006. However, a spike in international petroleum prices (from 2006 to 2008) meant that the costs of TANESCO's own gas-fired and stand-alone diesel generation (used in rural areas) increased.

TANESCO's enduring financial difficulties weigh heavily against the need to refurbish and expand the system and increase access to electricity. While IPPs can play an important role in this regard, a more creditworthy utility would increase the chances of such a strategy being successful.

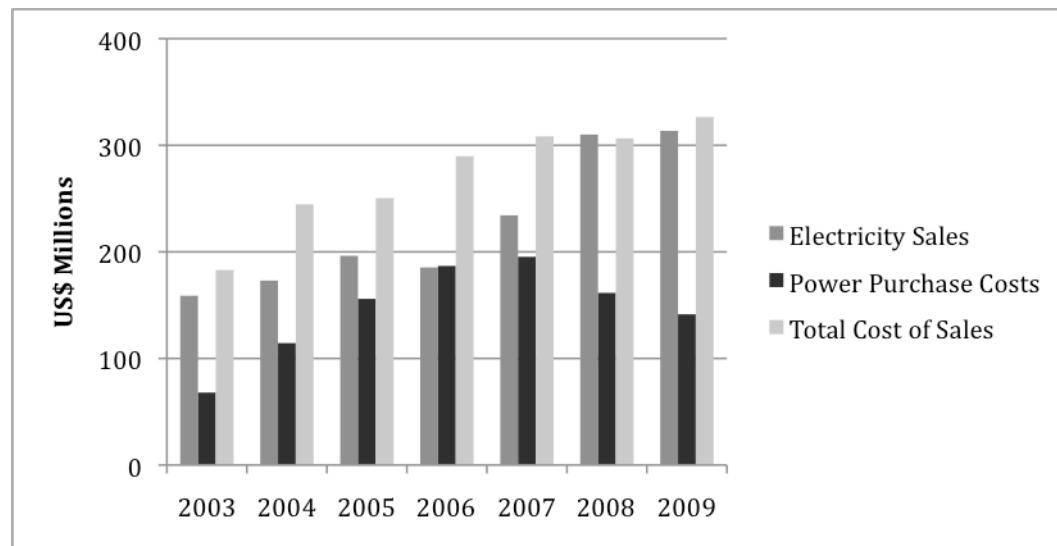
Table 2.3: TANESCO's financial performance indicators, 2003–2009 (US\$ million)

Indicator	2003	2004	2005	2006	2007	2008	2009
Electricity sales	158.85	173.03	196.26	185.38	234.27	310.04	313.47
Power purchase costs	68.03	114.44	155.94	186.85	195.36	161.54	141.45
Total cost of sales	182.88	244.42	250.34	289.73	308.33	306.50	326.31
Operating profit (loss)	(62.83)	(32.55)	(22.15)	(125.45)	(50.75)	2.26	(2.42)
Profit (loss) before tax	(214.05)	(104.13)	43.06	(125.45)	(53.94)	(18.04)	(36.14)
Average tariff (USc/kWh)	6.83	7.02	7.47	6.69	7.35	9.18	9.00

Source: TANESCO Annual Reports, 2003–2009

Note: TSh/US\$ exchange rates based on annual rates provided by EWURA.

Figure 2.3: TANESCO sales versus cost of sales and power purchase costs (US\$ million)

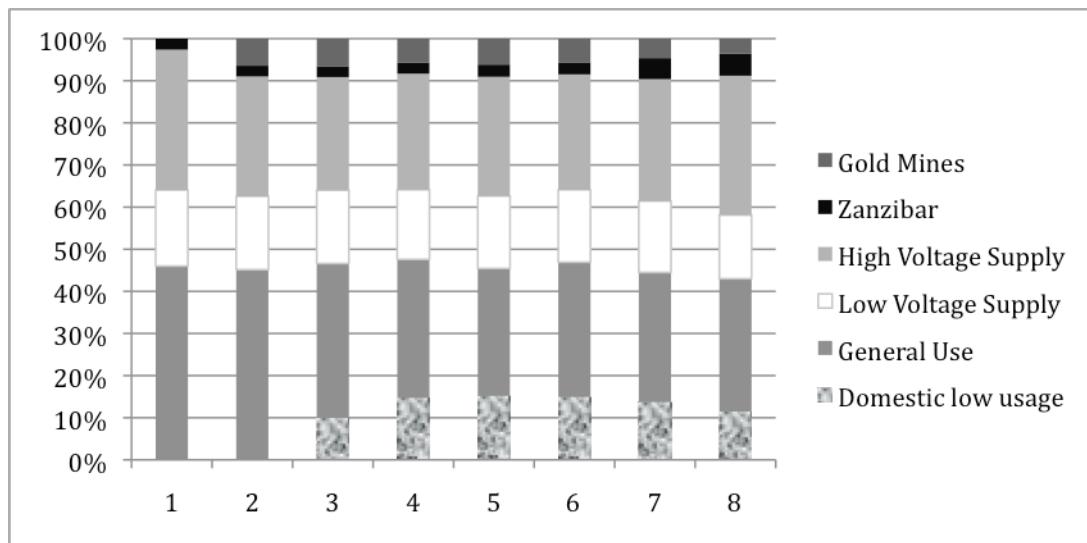


Source: TANESCO Annual reports

Note: TSh/US\$ exchange rates provided by EWURA.

Tariff structures

The high-voltage and general-usage categories in TANESCO's tariff structure have consistently consumed the most power since 2002, and in 2009 accounted for 34 per cent and 28 per cent of total consumption respectively (see [Figure 2.4](#)).

Figure 2.4: Structure of electricity demand, Tanzania 2002–2009

Source: TANESCO

Note: The tariff structure changed during the course of 2003 to include the category 'domestic low usage'.

TANESCO'S tariff categories are described in **Table 2.4**. The general-usage category is a curious one. In cost-reflective tariff design, the object is, to the extent possible, to charge consumers based on the costs that they impose on the grid. This is virtually impossible in the general-use tariff category since it consists of very diverse consumer groups whose usage and consumption patterns vary considerably.

Table 2.4: TANESCO tariff categories, 2010

Tariff category	Description
Domestic low usage (1-phase 230V)	Residential consumers, with the first 50kWh enjoying a lifeline subsidy
General usage (1-phase 230V or 3-phase 400V)	Residential, small commercial, light industrial use, public lighting, billboards etc.
Low voltage maximum demand (supplied at 400V)	Industrial consumers with monthly consumption greater than 7 500kWh and demand less than 500kVA
High voltage maximum demand (11kV and above)	Industrial consumers

Regulatory governance

As part of Tanzania's transition to a market economy, the government published the Competition and Utilities Regulation Policy in 1999. The policy sought to establish a framework to regulate competition in general, and the utility and infrastructure sectors in particular. Consequently, the Energy and Water Utilities Regulatory Authority Act (the EWURA Act) of 2001 was passed. This paved the way for the establishment of an independent regulator for the electricity-supply industry. As its name suggests, the Energy and Water Utilities Regulatory Authority (EWURA) is responsible for the regulation of four interrelated sectors, namely, electricity, petroleum, natural gas and water.

Although the Act was passed in 2001, EWURA only became operational in 2006. For independent regulatory authorities to be free to make decisions, within the confines of primary policy, and without political pressure, requires a well-defined relationship between the government and the regulatory agency. In the run-up to the passing of the Tanzanian legislation, it had been recommended that EWURA be answerable to a government ministry with no direct relationship to any of the sectors it was to regulate. This became a contentious issue, with the World Bank making funding conditional upon its acceptance, while the water and energy ministries argued that they were ceding too much power.

Eventually a compromise was reached and it was agreed that, although Tanzanian legislation allocates specific policy responsibilities to the energy minister, EWURA would report to the water ministry, which is responsible for only one of the four sectors regulated. This has the advantage of limiting the direct influence that the minister of energy has over regulatory decisions in the electricity-supply industry, and thus helps to entrench regulatory independence. The arrangement appears to be working well, and in an assessment of the regulator's performance, the Minister of Energy and Minerals remarked that 'government appreciates that EWURA is fulfilling its mandate' and that issues that had been challenging were now being overcome.²⁵ This was echoed in discussions with media representatives who, in general, seem to consider EWURA independent. Indeed some journalists were of the opinion that EWURA's presence had brought a 'semblance of sanity' to the petroleum sector, where previously you 'could get away with anything'.²⁶

Legislative framework

The duties (and objectives) of EWURA are laid out in Clause 6 of the EWURA Act as follows:

It shall be the duty of the Authority that in carrying out its functions it shall strive to enhance the welfare of Tanzanian society by –

- (a) promoting effective competition and economic efficiency;
- (b) protecting the interests of consumers;
- (c) protecting the financial viability of efficient suppliers;
- (d) promoting the availability of regulated services to all consumers including low income, rural and disadvantaged consumers;
- (e) enhancing public knowledge, awareness and understanding of the regulated sectors including:
 - i. the rights and obligations of consumers and regulated suppliers;
 - ii. the ways in which complaints and disputes may be initiated and resolved; and
 - iii. the duties, functions and activities of the Authority;
- (f) taking into account the need to protect and preserve the environment.

Independent regulation is premised on the need to depoliticise potentially sensitive issues such as licensing and tariff setting through the separation of the policy-making and regulatory roles. While this separation is implicit in most countries, Clause 4(1) of the Electricity Act of 2008, which complements the EWURA Act and further clarified the roles and functions of EWURA in relation to the electricity sector, states that:

The Minister shall provide supervision and oversight in the electricity supply industry and shall in that respect –

- (a) develop and review government policies in the electricity supply industry;
- (b) prepare, publish and revise policies, plans and strategies for development of the electricity subsector;
- (c) take all measures necessary to reorganise and restructure the electricity supply industry with a view to attracting private sector and other participation in such parts of the industry, phases or time frames as he deems proper.

EWURA's powers and functions

The core functions of regulation are licensing (or regulating access to the market), tariff setting and the establishment and monitoring of technical standards that promote quality and reliability in electricity service provision. EWURA has responsibility in all of these areas as stated in Clause 5 of the Electricity Act:

The Authority shall have powers to –

- (a) award licences to entities undertaking or seeking to undertake a licensed activity;
- (b) approve and enforce tariffs and fees charged by licensees;
- (c) approve licensees' terms and conditions of electricity supply; and
- (d) approve initiation of the procurement of new electricity supply installations.

It is notable, however, that in terms of the EWURA Act, the regulator cannot award or cancel a licence of five or more years' duration without prior consultation with the minister. This is at variance with the view that 'regulators should, by law, be free to make decisions within their scope of authority without having to obtain prior approval from other officials or agencies of the government' (Brown et al (2006: 59).

Clause 6 (1) of the Electricity Act assigns specific functions to EWURA in relation to the electricity supply industry to: protect customers' interests, promote competition in the sector to ensure access and affordability, promote improvements in operational and technical efficiency and reliability, improve health and safety standards and ensure that environmental protection is integrated into industry practices.

Regulatory independence

Brown et al. observe that while the law sets out the primary policy that the regulator is obliged to follow, 'inevitably...the primary policy will prove to be lacking in detail and will have to be fleshed out in greater detail in order for the regulator to make actual decisions' (2006: 91). In addition, it is difficult to predict future market behaviour, and changing the primary law (usually a lengthy process) in response to market conditions is likely to be inefficient. It is therefore considered best practice for the regulator to be responsible, within certain limits, for some subsidiary policy and rule making. Consistent with this rationale, the Electricity Act sets out the specific areas in which the minister can make regulations and EWURA can make rules (see [Table 2.5](#)).

Table 2.5: A summary of ministerial and EWURA's regulatory and rule-making powers

The Minister can make regulations that:	EWURA can make rules that:
<ul style="list-style-type: none"> Ensure that electricity supplies are sufficient to meet expected demand. Protect the public from the dangers arising from the generation, transmission or supply of electricity, or from the installation, maintenance or use of any electrical equipment. Promote access to electricity in rural areas in accordance with the Rural Energy Act. Promote research into, and the development of, new technologies relating to electricity supply. 	<ul style="list-style-type: none"> Regulate the activities of licensees. Determine tariffs and fees. Standardise accounting and reporting procedures. Set standards for customer service. Ensure non-discriminatory access to transmission or distribution facilities designated for common carriage. Prescribe the operation and management of the transmission and distribution system (the grid code). Prescribe how electricity is traded (market rules). Ensure that technical and safety standards are monitored. Govern the inspection of licensees' accounts and premises. Determine terms and conditions for the granting of licences.

Administrative and financial independence

Brown et al. (2006) suggest that three institutional building blocks facilitate decision-making independence for regulatory bodies, namely:

- Organisational independence (the regulatory agency being separate from existing ministries and departments);
- Management independence (autonomy over internal administration and protection from dismissal without due cause); and
- Financial independence (an earmarked, secure, and adequate source of funding).

As discussed in more detail below, the provisions of the EWURA Act for staffing, funding and budgeting within the regulating authority are generally consistent with international best practice and promote independent decision making.

EWURA's board and staff

The EWURA board comprises seven members who are all non-executive with the exception of the director-general (who also acts as the CEO). The chairperson is appointed by Tanzania's president,

and the other members are appointed by the Minister of Water and Irrigation. Appointments to the board can only be made from a shortlist of nominees compiled by a nominations committee, which is chaired by the permanent secretary of the Ministry of Water and Irrigation, and includes a representative from a body that represents private-sector interests, and a person nominated by the Consumer Consultative Council.²⁷ This infuses an element of transparency into the board recruitment process, which is augmented by the provision in Clause 10 (2) of the EWURA Act which allows the nomination committee to advertise ‘in the news media widely circulating within and outside Tanzania’s mainland.’ Furthermore, all nominees have to be graduates of recognised universities with at least ten years of experience in management, law, finance, economics and/or engineering.

Board members are appointed on four-year terms. For the first board however, the legislation made special provision for the terms of various members to run for three, four or five years, thus staggering the entry of new members. The aim of this was to preserve board memory and competencies, and to facilitate the sustainability of the structure and the predictability of regulatory decisions.²⁸

The EWURA Act also provides specific and limited conditions under which a member can be removed from the board. Consistent with international best practice, these include bankruptcy, criminal conviction, conflicts of interest, ill health and failure to attend board meetings. As of 2010, no one had been removed from the board prior to the end of their term. This could be an indication of government’s commitment to the regulatory process or simply a reflection of the fact that EWURA is still in its formative stages.

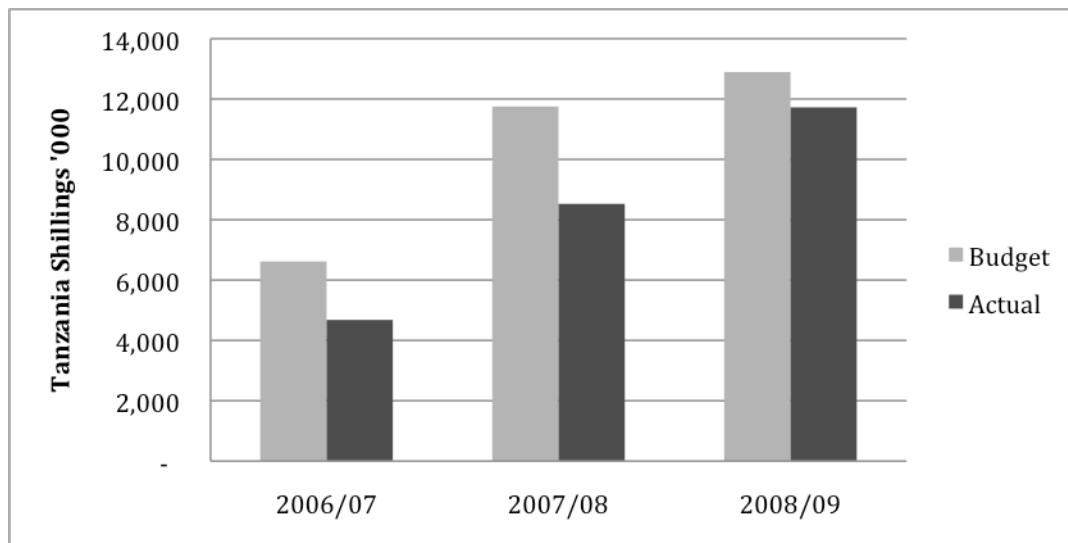
EWURA’s organisational structure and staffing is determined by the board of directors. Unlike other countries discussed in this volume, no ministerial approvals are required in relation to staff appointments. This helps to enhance the independence of the institution. The EWURA Act does specify that divisional directors (in other words, senior-level staff) be appointed on renewable five-year contracts, and that the recruitment process has to be carried out on a competitive basis. In addition, and to prevent a ‘revolving door’ syndrome, the law prevents members of the board and staff of EWURA from entering into any form of contract (employment or otherwise) or acquiring a financial interest in any entity under EWURA’s jurisdiction for a period of 18 months after leaving EWURA’s employment. To compensate for this, management offers competitive conditions of service. The low annual staff turnover, which averaged three out of 55 over the period 2007 to 2009, seems to indicate that employees are reasonably satisfied with the terms and conditions of their employment.

As at 2010, a draft code of conduct was available on the EWURA website. The code is extensive, defining conflicts of interest and outlining the processes to be followed by members of the EWURA board and its staff in declaring their interests, dealing with gifts from external parties, handling of confidential information and interfacing with the public. The code also prevents board members and staff from being employed by a regulated company for a period of 18 months after leaving EWURA.

Budgeting and funding sources

Consistent with best practice provisions for independent regulation, EWURA determines its own budget. Once approved by EWURA’s board of directors, the budget is submitted to the Minister of Water and Irrigation, but only for information purposes. The minister does not have any direct power to approve or veto the budget, but can request EWURA to commission its auditor to assess whether the budget is fair and reasonable. If such a test proves that the budget is unreasonable, the minister can request that the budget be revised.

A comparison between budgeted and actual income from inception to 2008/09 ([Figure 2.5](#)) reveals that in financial years 2006/07 and 2007/08 actual income was less than budget by approximately 30 per cent and at the end of the period by about 10 per cent. By EWURA’s own admission, this discrepancy is probably more reflective of a fledgling institution working out its modus operandi than any real problem with obtaining funding for the institution.²⁹

Figure 2.5: EWURA's budgeted versus actual income, 2006/07–2008/09

Source: EWURA officials, personal communication, 2010

The EWURA Act allocates four sources of funding for the authority:

- fees, including those payable for the granting and renewal of licences;
- regulatory levies collected from regulated suppliers;
- payments or property due in respect of any matter incidental to its functions;
- grants, donations, bequests or other contributions.

The regulatory levy can be up to a maximum of one per cent of the gross annual operating revenues of licensed operators in the sectors that EWURA regulates. The levy can be set at different levels across sectors (electricity, water, petroleum and natural gas), but must be uniform within each sector. As at 2010, the regulatory levy for the electricity sector had been set at the maximum one per cent. As shown in Table 2.6 the regulatory levy is a significant source of funds for EWURA, contributing 26 per cent, 80 per cent and 75 per cent to total income in financial years 2006/07, 2007/08 and 2008/09 respectively.

Table 2.6: EWURA's income by revenue source

Revenue stream	2006/07		2007/08		2008/09	
	TZS	%	TZS	%	TZS	%
Regulatory levy	1 230 558	26	6 797 926	80	8 745 598	75
Operating grant	3 346 529	71	1 361 466	16	2 517 690	21
Licence and application fees	102 100	2	167 040	2	62 894	1
Other income	1 575	0.03	200 263	2	399 566	3
Total	4 680 762		8 526 695		11 725 748	

Source: EWURA officials, personal communication, 2010

While this apparent reliance on a single source of income could be perceived as a risk to EWURA, it is not necessarily problematic. After all, most government agencies tend to rely on just one major source of income, the national treasury.

Accountability

Accountability is obviously crucial to the credibility of a regulator. The law requires EWURA to keep its books in accordance with commercial accounting standards, and to appoint an external auditor to carry out an audit at the end of each financial year. The audited accounts form part of an annual report which has to provide detailed information on how EWURA has carried out its mandate and exercised its powers during the preceding 12 months. The annual report has to be submitted to the Minister of Water and Irrigation within three months of financial year-end and be tabled in parliament as soon as possible thereafter. EWURA also frequently appears before various parliamentary committees.

The controller and auditor-general³⁰ is also required to undertake a performance audit of EWURA at least once every two years. Clause 28 of the Public Audit Act of 2008 prescribes that the performance audit shall ‘enquire into, examine, investigate and report’, in so far as this is considered necessary, on: the expenditure of public monies and the use of resources; the conduct and performance of accounting officers, heads of department and the CEO; compliance with environmental laws, regulations and other policies and standards; and other activity undertaken by such entities.

Since some stakeholders interviewed are of the opinion that the one per cent regulatory levy imposed by EWURA is excessive and are seeking evidence of its ‘value for money’, these performance audits could be extended to include assessments of the regulatory impact of EWURA’s decisions on the sectors that it regulates. Alternatively, EWURA’s board of directors could consider initiating such impact assessments themselves.

Appeal processes

While common law provides an avenue for parties to approach the courts of law on almost any grievance, the expeditious resolution of disputes requires that regulatory systems have clear channels for matters of appeal. The EWURA Act sets out two formal appeal mechanisms depending on whether the decision being appealed was made under delegated power (in other words, by an employee or a division within EWURA) or by EWURA’s board of directors.

If a party is aggrieved by a decision made by a division (department) of EWURA, or one or more of its board members or employees, they can (within 14 days of receiving the decision) apply to have EWURA review the issue. Such an application invokes an internal review process described in Clause 27 of the EWURA Act. Under the review process, interested parties, including the persons who made the application, the relevant sector minister, the Consumer Consultative Council³¹ and any other party considered relevant, are invited to make recommendations to the EWURA board (within 21 days of receiving the invitation). The board may then endorse, alter or dismiss the recommendations. As at 2010 the Authority not effected any formal delegation and the internal review had never been invoked.

For decisions made by EWURA as a whole, that is by its board of directors, including those arising out of the internal-review process, aggrieved parties may appeal to the Fair Competition Tribunal, which is a multi-sectoral specialised court. The tribunal consists of seven members appointed by the president in consultation with the attorney-general. A judge of the high court chairs the tribunal, which includes and six other members who should have experience in the relevant industry, commerce, economics, law or public administration. Judgments and orders of the tribunal are final, and executed in the same manner and have the same powers as those of the high court.

Given the specialised nature of infrastructure regulation, Brown et al. (2006: 74) recommend that, if an ‘appellate forum reverses or changes the decision of the regulatory agency, the preferable course is for the matter to be sent back to the regulatory agency to conclude a remedy consistent with the decision of the appellate forum’. This is not the case in Tanzania, however. Instead decisions of the tribunal depend on the relief sought by the applicant.³² This means that the tribunal could for example alter a licensing or tariff decision, and this could, in turn, impact adversely on regulatory predictability.

Transparency and stakeholder engagement

Clear processes that are open to participation by a range of stakeholders can play an important role in the development of independent regulators. Essentially, the more that stakeholders understand about regulatory mechanisms, and have evidence that their views are taken into account when decisions are made, the greater the likelihood that they will deem the regulatory system relevant. EWURA recognises this and, as a result, ‘all key stakeholder groups are actively, openly and routinely consulted before major regulatory decisions are made’.³³ This is made possible primarily through two innovative structures, the Consumer Consultative Council (CCC) and the Government Consultative Council (GCC).

On the one hand, the CCC was set up within EWURA itself, in accordance with Clause 31 of the EWURA Act and its functions are to:

- Represent the interests of consumers by making submissions to, providing views and information to, and consulting with, EWURA, the water minister and other sector ministers;
- Receive and disseminate information and views on matters of interest to consumers of regulated goods and services;
- Establish local, regional and sector consumer committees and consult with them;
- Consult with industry, government and other consumer groups on matters of interest to consumers of regulated goods and services.

The CCC comprises at least six and up to ten members appointed by government for three-year renewable terms who are drawn from a shortlist provided by the business community and organisations recognised as being representative of private-sector interests.³⁴ It is intended that the composition of the CCC is such that the interests of low-income, rural and disadvantaged persons, industrial and business users, as well as government and community organisations are represented.

The CCC is funded by parliamentary appropriation, by EWURA and through grants and donations. As at 2010, it was serviced by a secretariat of five full-time staff all based at EWURA. The law does however specify that after three years of existence, the CCC secretariat should become independent of EWURA. This is due to take place in 2011.

On the other hand, the establishment of the Government Consultative Council (GCC) was driven by EWURA's desire for a structured and transparent avenue of engagement with the government under the remit of Clause 23(1) of the EWURA Act, which states:

The Authority shall, before the start of each year, establish an annual programme for consultation with such persons and organisations as the Authority may consider necessary or desirable to consult for the purpose of effectively carrying out its functions.

As at 2010 the GCC, appointed by the permanent secretary in the Ministry of Water and Irrigation, and was made up of representatives of the prime minister's office, the Ministry of Water and Irrigation, the Ministry of Energy and Minerals, the Ministry of Trade and Marketing, the Ministry of Finance and Economic Development, the Ministry of Infrastructure Development, and the Attorney General's Chambers.

Members of the GCC interviewed believed that it provided a 'productive' means of engagement with EWURA, the performance of which had been 'commendable' since inception. However, like other stakeholders, they did express their frustration with the poor quality of electricity supply.³⁵

Public register and public access to information

EWURA is required by law to keep a public register at its head office, and to make this available for public inspection during office hours. The Minister of Water and Irrigation (advised by EWURA) determines the categories of decisions and information held on the register. As of 2010, these included tariff applications, proposed rules, a complaints register and a draft code of conduct. A replica of the public register is also made available on the EWURA website,³⁶ which also holds a wealth of other information on relevant legislation, applicable technical standards and licence-application forms. One useful addition to the website would be an outline of the licensing process for potential investors. And, given that public understanding of the tariff-setting methodology is generally low,³⁷ a layperson's guide to electricity tariffs would be useful.

EWURA is also required to publish its draft code of conduct in the government gazette (prior to finalisation), as well as any rules or regulations that it formulates, summaries of tariff decisions and any other information that it deems necessary. In practice, this kind of information is also published in national newspapers.

Public inquiries

A public inquiry is defined on the EWURA website as 'an official review of events or investigation held as part of legal proceedings over public concern for a particular issue', and is a requirement for all tariff applications. Although in all inquiries, public notices are given and stakeholder views are solicited, a public hearing is not a requirement (EWURA, 2009). In the event that a public hearing does take place, the applicant is afforded an opportunity to support their application, and stakeholders

are invited to comment and respond verbally and in writing. The applicant is then given time to respond to stakeholders' views and may be required to provide additional information.

Regulatory substance

Having examined the regulatory governance arrangements in Tanzania, we now turn to issues of regulatory substance, namely licensing, planning and tariff setting.

Licensing

Unless exempted by EWURA, the Electricity Act (2008) requires that a licence be obtained for the following activities: generation,³⁸ transmission, distribution; supply, systems operation, cross-border trade in electricity, physical and financial trade in electricity, and electrical installations.³⁹

However, EWURA's licensing system has not yet been fully implemented. Only one full licence had been issued with the remainder being provisional licenses (provisional licences allow a licensee carry out 'assessments, studies and any other activities necessary for application for a licence' as per Clause 12(2) of the Electricity Act). Even TANESCO is yet to be awarded full licenses for its activities because it holds a 55-year licence that is due to expire in 2012. EWURA has also exempted two other operators from licensing.

Furthermore, Clause 41(7) of the Electricity Act precluded IPPs that were involved in electricity supply prior to its promulgation (including parties that have since assumed the assets and or rights of such IPPs) from being granted a licence for a period of five years. Clearly the chequered history that Tanzania has had with IPPs and emergency power providers provided the motivation for this clause. But the provision had the potential to harm the industry by preventing the expansion of existing operators and preventing the use of existing assets. For example, under this clause, the Cyprus based Independent Power Corporation (IPC) that purchased the controversial Dowans' assets in 2010 was not licensed to operate them in Tanzania and planned to ship the plant out of the country.⁴⁰ The law was thus amended during the parliamentary session in July 2010.

Unlike in Kenya, the Electricity Act does not set out the procedure for licensing or the timeframes that should be adhered to from application to the awarding of a licence. However, Clause 8(3) of the Act does state in that 'the Authority shall, by rules, make procedures for application of a licence'. These rules are yet to be published, though drafting had been completed and stakeholder consultation had commenced.⁴¹ The EWURA Act also makes it mandatory for a public inquiry to be conducted prior to the awarding, renewing or cancelling of a licence as mentioned above.

Notwithstanding the lack of a clear licensing procedure, the 2008 Electricity Act sets out the matters that should be taken into account when a licence application is under consideration:

- The contribution of the proposed activities to meeting the future electricity needs of customers;
- The consistency of the proposed activities with power-system expansion plans and rural electrification strategies;
- The contribution of the proposed activities to competitive conditions within the sector;
- Any likely social and environmental impacts;
- The health and safety of employees and the public;
- The legal, technical, economic and financial capacity of the applicant;
- The costs of the activities and the effect on electricity prices;
- Any representations and objections made by the public, and
- other public interests which may be affected by the proposed activities.

Allowance is also made to licenses to be transferable provided an application is made to EWURA by the party that the licence is being transferred to and provided EWURA is satisfied with the legal, technical, economic and financial capacity of the latter. Clause 11(4) of the Electricity Act states that:

A licensee shall not transfer a licence without prior written consent of the Authority, where –

- (a) The transfer is made to another person who is not a licensee;
- (b) The transfer relates to the assets which the licensee requires to conduct its licensed activity; or
- (c) A third party becomes, by virtue of the transfer, a majority shareholder to the licensee.

EWURA is also empowered to suspend or revoke licenses when their terms and conditions, or any regulations or rules, are violated. Such violation would be any act that inflicts significant damage on public or private interests, or renders the licensee unable to fulfil their obligations.

Industry restructuring

A crucial issue that has yet to be fully addressed by EWURA, and which could influence future licensing decisions, is the structure of the electricity market in Tanzania. Rather curiously, Clause 41(a) of the Electricity Act (2008) places the following time constraint on the energy minister in relation to restructuring the electricity market:

The Minister shall within one year after the coming into force of this Act prepare and publish a policy for the reorganisation of the electricity market which policy shall stipulate –

- (a) The parts of the electricity market that shall be subject to competition;
- (b) The form of competition that shall be introduced in each relevant part of the electricity market; and
- (c) The timeframes for the introduction of competition.

In carrying this out, the minister is also required to take into account the need to restructure existing entities in the electricity-supply industry to give effect to competition. As at 2010, the policy had not been promulgated, creating a level of uncertainty in the industry. This is not entirely surprising given typical timeframes associated with policy formulation especially when stakeholder consultation is a prerequisite. Ideally policy should be clarified before legislation is passed.

Generation planning and investment

Regulators can play a proactive role in ensuring that sufficient new investment is made in generation facilities and transmission networks in order to secure the adequacy of supply. In hybrid electricity markets explicit attention needs to be given to planning, allocation of new build opportunities (between public and private players), procurement and contracting. Although Clause 20(2) of the Electricity Act clarifies responsibility for power system planning, stating that ‘the System Operator shall update on annual basis, a Power System Expansion Plan taking into consideration: a) policies plans and strategies for the electricity sub-sector; and b) proposed developments in generation and demand’, the absence of a system-operator licensee makes this difficult to effect and institutionalise. As at 2010, therefore, the Ministry of Energy and Minerals remains the de facto custodian of planning, which is implemented by TANESCO with the help of outside consultants. A power master plan was concluded in 2008 and updated in 2009.

No explicit criteria exist for the allocation of new build opportunities between the public and private sectors. TANESCO retains the ‘right of first refusal’ and, in the event that it cannot raise the requisite funding from government or donors, IPPs are then invited to bid. The consequence of this is clear from the fact that the last international competitive bid for independent power generation in Tanzania was won by Songas in 1993.

Generation procurement

Clause 5(d) of the Electricity Act gives EWURA the authority to ‘approve initiation of the procurement of new electricity supply installations’ making Tanzania one of the few countries, and the only one in this volume, where this authority is explicitly stated in the law. While this is commendable, the entity responsible for the initiation and management of the procurement process was not specified. To remedy this, EWURA is in discussions with the energy ministry to develop a framework for the procurement of IPPs and guidelines for potential investors.⁴² To enhance regulatory certainty, it would be preferable that standard bid documents and power-purchase agreements form part of the framework and that the framework itself be promulgated. As experience in Kenya has proved, the building of local capacity in relation to IPP procurement processes enhances the competitiveness and therefore the sustainability of the process. This is particularly important for Tanzania.

Power purchase agreements

EWURA is required to approve all power purchase agreements as provided for under Clause 25 of the Electricity Act. At the time of writing, EWURA was in the process of compiling a set of rules related to this clause. As we stress in this volume, it is advisable for regulators to ensure that these kinds of rules include a mechanism that makes regulatory staff privy to negotiations between potential IPPs and the off-taker (in this case, TANESCO). This ensures that staff of the regulator fully understand the context within which power-purchase agreements are agreed, and are able to shield consumers from adverse tariff surprises. In our view, it is crucial for EWURA to ensure that it retains the right to approve power-purchase agreements.

Small power projects

In order to ease the regulatory requirements on the developers of renewable-energy projects of up to 10MW in capacity, EWURA in 2010 published the draft framework for small power projects.⁴³ The framework minimises the amount of information that is required for regulatory approvals and offers a standardised power-purchase agreement and tariff-setting methodology. This standardisation is expected to make the analysis of applications made to EWURA less onerous and to simplify negotiations between the relevant parties.

Pricing and tariffs

Like many other regulators, EWURA uses the internationally accepted revenue-requirement method⁴⁴ to determine electricity tariffs and adheres to the principles of tariff setting contained in Clause 23(2) of the Electricity Act, namely:

- Tariffs should reflect the cost of efficient business operations;
- Tariffs should allow licensees to recover a fair return on their investments, provided that such investments have been approved by the Authority;
- Costs covered by subsidies or grants provided by the government or donor agencies shall not be reflected in the cost of business operations;
- Tariff adjustments shall, to the extent possible, ensure price stability;
- Access charges for the use of a transmission or distribution system shall be based upon comparable charges for comparable use;
- No class of customers should pay more to a licensee than is justified by the costs it imposes upon such a licensee; and
- Tariffs should enhance efficiency in electricity consumption and should encourage adequate supply to satisfy demand.

These principles, which provide unambiguous guidance to the regulator, should help to ensure that tariffs remain cost reflective and economically efficient. They are consistent with best practice for electricity tariff determination. However, the absence of any mention of the special needs of low-income consumers seems to be an anomaly.

Based on these tariff-setting principles, EWURA published its *Tariff Application Guidelines* (EWURA 2009) and is finalising a set of tariff-evaluation guidelines.⁴⁵ These two sets of guidelines explain the application of the revenue-requirement methodology. The various elements included in arriving at tariff calculations are explored in some detail below since tariff setting is one of the most contentious areas in electricity regulation.

Operations and maintenance expenses: the ‘used and useful’ test, where the regulator determines whether a particular cost element was incurred appropriately and is necessary for the delivery of the service, is applied to operations and maintenance expenses. EWURA also examines trends in operations and maintenance expenses over previous years. In addition, the tariff-application guidelines require that tariff applicants who are already in business ‘provide EWURA with independently verifiable evidence of the actual costs recently incurred in providing the regulated service, the continued provision of which is to be covered by the proposed rate or charge’ (EWURA 2009: 1–2). Interestingly, TANESCO retained external consultants to compile this evidence for its 2010 tariff application. This arrangement could however bring the intention of independent

verifiability into question and the retention of the consultants by the regulator itself, at a cost that could be included in the tariff, may in future prove more credible.

Depreciation: the depreciation expense in the revenue requirement includes all assets regardless of type or source of funds. The straight-line depreciation method is used in determining depreciation as follows:

$$RDE_t = CFA_t - RV_t / ULA$$

Where RDE_t = regulatory depreciation expenses during year t in US\$;

CFA_t = cost of fixed assets during year t in US\$;

RV_t = residual (salvage or scrap) value expressed in US\$ (determined by dividing the free cash flow in the last year of the analysis period by the discount rate); and

ULA = useful economic life of assets expressed in years.

As at 2010, depreciation was not being fully expensed in an effort to keep TANESCO tariffs low. Given the perception that tariffs were excessive, the motivation for this is obvious, but it does put the replacement of existing assets at risk. It is noteworthy that TANESCO's 2010 tariff application indicated a plan to fully reinstate depreciation by 2014.

Approval of capital investment: for new investments, EWURA carries out a prudence and reasonableness test on cost estimates supplied, and undertakes a cost-benefit analysis that assesses the economic, financial and technical viability of the project as well as its environmental impact.

Rate of return: the rate of return applied to the regulatory asset base is based on a weighted average rate of return on the applicable source of funds, that is, debt and equity. The cost of equity is determined using a modified capital-asset pricing model, and the cost of debt on actual lender's rates, provided that these pass a prudence test. A capital structure of 60 : 40 (debt to equity) is assumed in an effort to reduce the pass through of expensive equity costs to electricity consumers.

Regulatory asset base: this determined as follows:

$$RABcl_t = RABop_t + PCE_t - ADW_t - RDE_t - EPC_t$$

Where: $RABcl_t$ = closing balance of the regulatory asset base at the end of year t ; $RABop_t$ = opening balance of the regulatory asset base determined at the beginning of year t ;

PCE_t = forecast prudent capital expenditure for the year t ;

ADW_t = forecast asset disposals and write-offs during the year t ;

RDE_t = regulatory depreciation expense for the year t ; and

EPC_t = external contributions, that is, customers, government subsidies and grants, during year t .

The valuation of assets is based on historical values. Although this is common accounting practice, for infrastructure assets with a long life span operating in an inflationary environment and with a devaluating local currency, the use of historical values is likely to result in significant tariff increases when major assets are due for replacement. The use of replacement values in asset valuation is therefore worth considering. Although this could place immediate upward pressure on the tariff, it would shield consumers from excessive tariff increases in the future.

Losses: EWURA allows for some technical and non-technical losses in the tariff determination process. However TANESCO has conceded that making the distinction between the two loss categories remains a challenge and to this effect has commissioned a study that is due to be concluded in 2011 (TANESCO, 2010). The allowance for losses will therefore remain a composite figure until this study is completed. For 2009, transmission and distribution losses were set at 4.5 per cent and 18 per cent respectively. Our calculations, based on TANESCO data, suggest that the actual total losses in 2009 were 1 300GWh. This is equivalent to 27 per cent and, in monetary terms, almost US\$120 million! According to EWURA officials, the authority is contemplating withdrawing the entire allowance for non-technical losses in future tariff calculations in an effort to incentivise better performance in this area.⁴⁶

Pass-through costs: EWURA is also considering the development of a mechanism that would allow automatic adjustment for exogenous factors such as fuels costs, exchange rates and inflation.⁴⁷

Tariffs for small power projects: The tariff methodology for small power projects, which is technology free, is based on avoided generation costs. For grid-connected systems the feed-in tariffs are derived from an assumed seasonal mix of hydro and thermal generation, whereas those for isolated systems are from islanded diesel-generation costs. In 2010, the feed-in tariffs for grid-connected and off-grid systems were 7.9USc/kWh and 26.5USc/kWh respectively.⁴⁸

The 2010 tariff application

In May 2010, TANESCO filed a tariff application with EWURA seeking average adjustments of 34.6 per cent in 2011, 13.8 per cent in 2012 and 13.9 per cent in 2013 in order to reach cost reflectivity.⁴⁹ These figures were based on a cost-of-service study that TANESCO had commissioned in accordance with the requirements of the Tariff Application Guidelines.⁵⁰

The cost-of-service study determined that for 2011, if all of TANESCO's eleven expense categories were accounted for,⁵¹ the full cost-recovery average tariff would be 197.3 TSh/kWh (15USc/kWh), that is 66 per cent higher than the 2010 average tariff of TSh119/kWh (9USc/kWh) (Ridgeway Capital Projects, 2010). The 2011 long-run marginal-cost average tariff was estimated to be 255TSh/kWh (19USc/kWh) (Vernstrom, 2010).

In order to limit the 'rates shock' that would arise if these tariffs were applied, it was recommended that the financial cost of service be adjusted by excluding the depreciation charge until 2013, when it would be partially expensed, and that this would be fully reinstated in 2014. Furthermore it was proposed that the repairs and maintenance expenses reach its full benchmark rate of 12 per cent in 2013, increasing from 3 per cent in 2011 to 6 per cent in 2012. The last adjustment was to forego return on equity over the period 2011 to 2014 (Richmond Capital Projects, 2010). TANESCO's 2010 tariff application was based on these recommendations, and, if approved, will result in an average tariff of 160TSh/kWh (12USc/kWh) for 2011.

Regulatory impact

After just four years in operation, it is perhaps too early to fairly assess EWURA's impact on the electricity sector industry as a whole, but it is true to say that the reliability and quality of electricity supply in Tanzania remains a major issue. 'Load shedding is an all too frequent occurrence which can be linked to insufficient installed generation capacity and high distribution losses. Furthermore, customers are subjected to regular unplanned outages which are often the result of a lack of repairs and maintenance across the distribution network' (Ridgeway Capital Projects, 2010: 1). **Table 2.7** shows the number and duration of outages recorded from January to September 2009.

Table 2.7: Electricity outages by voltage level, Tanzania, January to September 2009

Voltage level (kV)	Number of outages	Total duration (hours)
220	104	115
132	47	51
66	2	1
33	4980	9633
11	4032	6323

Source: EWURA official, personal communication, 2010.

EWURA clearly has a significant role in remedying the poor state of the quality of electricity supply in Tanzania. As at 2010, no specific standards had been put in place to regulate technical quality and reliability. EWURA had however constituted a working group that is expected to draft a set of standards that will ultimately be promulgated by Tanzania's Bureau of Standards. Adherence to these standards should form part of the conditions involved in the granting and renewal of operating

licences, and should determine performance indicators for industry players and incentivise improvements across the sector.

Service standards

Since the passing of the Electricity Act in 2008, responsibility for the development of service standards and complaints handling has fallen on the holders of distribution licences. According to Clause 29(1) of the Electricity Act, these licence holders required to develop: customer-protection standards, service-quality standards, performance standards, procedures that are appropriate to the customers of the licensee (including simplified procedures for customers in rural areas), and programmes to inform customers on related issues.

In fulfilment of this requirement, TANESCO published its *Customer Service Charter* in 2010 under which it is obliged to adhere to prescribed service levels for new connections, metering, power-interruptions and complaints handling (TANESCO, 2010). TANESCO plans to report its performance against these standards to EWURA, which, according to one official, views the initial levels at which they had been set as 'light' and 'achievable', and expects the standards to become progressively more onerous and to benefit consumers increasingly.⁵²

Pro-poor regulation

We now assess how the special needs of low-income consumers of electricity are responded to. Generally there tend to be two forms of policy intervention that governments adopt for this purpose. These are extending access to electricity to communities that have not previously had access, and promoting affordability through subsidy schemes and appropriate tariff design.

According to Ridgeway Capital Projects (2010), only 14 per cent of Tanzania's population has access to electricity, and for rural areas, this figure has been estimated at a mere two per cent (Banks et al., 2008). It is therefore not surprising that government has set an ambitious target in its *Power System Master Plan Study* of making 100 000 new grid connections per year, over the period 2009 to 2014 (United Republic of Tanzania, 2008). In 2009 only 60 000 new grid connections were made, a reflection of the challenge that fulfilling the target presents.⁵³

Furthermore, by 2010, only ten projects had been undertaken by the Rural Energy Agency, a figure that will need to be increased significantly if any meaningful impact on access to electricity is to be made in relation to rural communities.

The D1 tariff category is applicable to low income consumers. This category does not attract a monthly fixed charge and the first 50kWh is charged at a subsidised rate. An excellent feature of the D1 tariff is a built-in price escalation such that if consumption exceeds 283.4kWh the consumer pays more than the tariff in the next tariff category. This is an effective means of preventing high-use consumers from taking advantage of the scheme while specifically targeting low-income consumers.

Conclusions

Tanzania's regulatory governance systems are excellent and should entrench the independence, accountability and transparency of the regulator and encourage public participation – the key determinants of regulatory credibility. In this respect, two features are notable. First is the unique manner in which the reporting lines into government have been separated between policy and administrative matters. By law, the minister responsible for the electricity sector (the Minister of Energy and Minerals) is responsible for providing policy guidance to EWURA while administrative matters such as the appointments of board members or the chief executive officer, ensuring the quality of annual reporting etc. are the preserve of the Minister of Water and Irrigation. In theory, government policy should be coherent and this arrangement should simply afford EWURA a measure of insulation from political pressure. But in practice, government ministries tend to be fairly monolithic and, as EWURA is a fledgling organisation, the enduring benefits of this arrangement remain to be seen.

Second is the Government Consultative Council that aims to streamline EWURA's interactions with government on regulatory issues. Regulators across Africa, and the government ministries or departments responsible for their oversight have grappled with the concept of regulatory

independence since the start of the current wave of power sector reform. In fact, many governments argue that regulators cannot be independent as they are quasi-governmental in nature. This has led to an increasing use of the more politically correct term ‘autonomous’. An important element of the relationship between government and the independent regulator is the manner in which government shares its views on matters before the board. For many regulators, this takes the form of informal consultations, the GCC however is an attempt at formalising this engagement and making it more transparent, and there could be a lesson here for other African countries.

While its regulatory governance arrangements are commendable, the performance of Tanzania’s electricity sector has been poor for many years and still is. EWURA is the youngest of regulatory agencies covered in this volume. It has huge potential to play a positive role in turning Tanzania’s electricity industry around.

The authority has to rise to the challenge of facilitating new investment, and overseeing improvements in the quality of electricity supply. Forward planning will be essential in order to meet unserved and future demand, and EWURA’s role in relation to this needs urgent clarification. With responsibility for planning allocated to a yet to be established system operator, EWURA could play an oversight role that ensures that planning is ongoing, and flags the initiation of procurement processes as needs arises. Given the controversies of the past, procurement should be based on international competitive bidding (ICB). In the event that circumstances do not allow for this, safeguards should be put in place such that there is comfort that the outcome is close to that of ICB. A grid code and technical standards also need to be finalised to allow EWURA to better enforce compliance within the industry and improve the quality of supply. With respect to prices, these require to be set at a level that is cost reflective and efficiency benchmarks will need to be stipulated in the determination of tariffs to ensure that operations and maintenance costs for TANESCO are factored in at prudent levels. Furthermore with TANESCO’s total losses estimated at over 20 per cent there is a case to embed stronger loss-reduction incentives in the tariff determination.

Notes

- 1 Personal communication (2010).
- 2 ‘The dark side of the Richmond power generation scandal’, *ThisDay*, 27 July 2010. Available at: <http://www.thisday.co.tz/?l=10906>.
- 3 A detailed account of TANESCO’s history and development can be found at: http://www.tanesco.co.tz/index.php?option=com_content&view=article&id=38&Itemid=126
- 4 Tanganyika gained independence from Britain on 9 December 1961. On 19 December 1963, Britain transferred its power over the neighbouring island territories of Zanzibar to the Sultan of Oman on. On 12 January 1964, Zanzibaris revolted and installed their own revolutionary government. On 26 April 1964, Tanganyika united with Zanzibar to form the United Republic of Tanganyika and Zanzibar, which was renamed United Republic of Tanzania on 29 October of the same year.
- 5 Power exports to Mombasa ceased in 1965.
- 6 This section is based largely on Ghanadan and Eberhard (2007) who give a detailed account of the TANESCO management contract.
- 7 ‘Debate Raging Over Netgroup’s Tenure at TANESCO’, *The East African*, 14 March 2006.
- 8 In the first two years of the contract there were three expatriate managers after which an additional two were brought in.
- 9 ‘Phase II’ of the contract ran from its renewal in August 2004 to December 2006.
- 10 M Mande, ‘TANESCO contract: SA firm fights back’, *The East African*, 30 May 2006.
- 11 In response to the 1994 drought, two additional 36MW LM6000 Jet A1-fuel turbines were procured for Ubungo, increasing capacity to 115MW in 1995. By this time, financial closure on the Songas deal was yet to be reached owing to the complexity of the project structure, changes in the project sponsors and the equity structure of the project company, among other factors.
- 12 It is important to note that by this time, the drought had receded, and with the capacity extensions that had been made at Ubungo, the Songas project, a 180MW hydro scheme at Kihansi and the IPTL project itself, there was a relative ‘abundance’ of capacity.

13 The total investment cost was reduced from US\$150 million to US\$120 million and as a result capacity charges dropped from US\$3.6 million/month to US\$2.6 million/month (EWURA official, personal communication, 2010).

14 IPTL is a joint venture between a Malaysian company, Mechmar, and a local partner ,VIP Engineering and Marketing Ltd.

15 EWURA officials, personal communication, 2010.

16 'Malaysia firm loses in IPTL case', *Daily News*, 16 May 2010.

17 W Edwin, 'Tanzania says it has been overpaying power firm IPTL', *The East African*, 14 July 2008.

18 The rationale for this arrangement was to limit delays while financial closure on the deal was reached, and to commit equity owners in Songas, to the project. The allowance for funds used during construction was to be capitalised at the end of the project and thus be included as a portion of the capacity charge. However in order to limit the capacity charge the Tanzanian government and TANESCO effected a buy down of the funds in 2003, which by that time had reached a cool US\$103 million.

19 'The dark side of the Richmond power generation scandal', *ThisDay*, 27 July 2010.

20 R Athumani, 'Richmond: Briefcase firm that won lucrative tender', *The Citizen*, 7 February 2008.

21 T Mosoba 'TANESCO now halts Dowans contract. *The Citizen*, 1 July 2008.

22 The Artumas Group merged with an Australian firm in mid 2010, and is now known as Wentworth Resources Ltd. It is publically listed on the Oslo stock exchange.

23 As at 2010.

24 The cost of sales includes generation and transmission costs, the costs of purchased electricity (from IPPs and emergency-power sources) as well as distribution and depreciation costs.

25 Personal communication, 2010.

26 Personal communication, 2010.

27 The Consumer Consultative Council is discussed in more detail later in the chapter.

28 This is outlined in the First Schedule of the EWURA Act.

29 EWURA official, personal communication, 2010.

30 The equivalent of controller and auditor-general in other countries is the Auditor General.

31 The Consumer Consultative Council is discussed in more detail below, in the section on transparency and stakeholder participation.

32 EWURA official, personal communication, 2010.

33 EWURA official, personal communication, 2010.

34 As at 2010, efforts were underway for the minister to pass regulations governing the recruitment, tenure and duties of CCC members.

35 Personal communication, 2010.

36 <http://www.ewura.com/register.html>

37 According to local journalists interviewed in 2010.

38 This applies only to installations with a capacity greater than 1MW. Installations with a capacity of 100kW to 1MW are required to register with EWURA, but are not required to apply for a licence.

39 The regulation of electrical installation is important in ensuring the safety of the public. It is however questionable whether this function, which requires competencies related to factory and household safety, should fall under the remit of a regulator, the core mandate of which is market access, pricing and technical standards in the provision of electricity.

40 'Dowans Generators Sold for Sh101Bn' *The Citizen*, 11 April 2010, <http://www.thecitizen.co.tz/news/4-national-news/1320-dowans-generators-sold-for-sh101bn.html>

41 EWURA official, personal communication, 2010.

42 EWURA official, personal communication, 2010.

43 See <http://www.ewura.com/sppselectricity.html>

44 $RR=RAB \times RoR + E + D + T$ where RR = revenue requirement, RAB = regulatory asset base, RoR = rate of return, E = operations and maintenance expenses, D = depreciation, T = taxes.

45 As at 2010, a final draft was undergoing stakeholder review.

46 Personal communication, 2010.

47 EWURA official, personal communication, 2010.

48 EWURA official, personal communication, 2010.

49 In response to previous applications, EWURA awarded TANESCO increases of 6 per cent in 2006 and 21.7 per cent in 2008.

50 Two studies were commissioned and were conducted by separate consultants; the first was a cost-of-service study covering the period 2011 to 2013, and the second was a long-run marginal-cost study.

51 The 11 categories are: tax, return on expenditure, other expenses, capital investment, provision for doubtful debts, depreciation, financing, staffing, repairs, maintenance, and electricity purchases.

52 Personal communication, 2010.

53 Rural Energy Agency official, personal communication, 2010.

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