

Chapter 1

Kenya: enabling private-sector participation in electricity generation

Inadequate electricity generation capacity and an unreliable power supply have been perennial problems in Kenya for over a decade. As in other African countries, a lack of integration between planning and implementation has plagued the industry. For example, a 328MW expansion in capacity planned for the period 1996 to 2000 saw only 205MW actually being installed, leaving a significant shortfall (Nyoike, 2002).

Hydropower has long dominated Kenya's generating capacity and, in 2010, it supplied almost 55 per cent of the country's electricity. However, severe droughts in the 1990s had virtually paralysed the industry, with the 1999 drought (the worst since 1949), leading to a 79 per cent decrease in hydro capacity between July and December 2000 (Nyoike, 2002). Power cuts were widespread and commerce and industry suffered significant losses. Ironically, the effect of the power outages on domestic consumers was mitigated by the fact that only 18 per cent of Kenyan households have access to electricity.

In 1997, the Kenyan government had commissioned two independent power producers (IPPs) with a combined capacity of 100MW. And when the 1999 drought exacerbated existing problems, an additional 105MW of emergency thermal generation was deployed in 2000.¹ These two interventions proved costly however; the price of electricity rose considerably and has remained high ever since.

While the persistent drought forced the government to introduce stopgap measures, a more fundamental reform of the electricity sector had, in fact, been initiated in 1996. This saw the establishment of an independent regulator, and the unbundling and liberalisation of the electricity sector (described in more detail later in this chapter). As a result, by 2010, Kenya had been able to attract more IPPs than any other African country. This, coupled with capacity expansion, reinforcement and electrification being undertaken by the two dominant utilities, the Kenya Electricity Generating Company (KenGen) and the Kenya Power and Light Company (KPLC),² means that Kenya is well placed to overcome the challenge of inadequate and unreliable electricity supply.

This chapter first outlines the growth and role of the key players in Kenya's electricity industry. We then attempt to analyse whether the country's electricity regulatory system has contributed to strengthening the industry, and to highlight areas that would benefit from further attention.

Kenya's electricity industry

The structure of Kenya's electricity-supply industry can be traced back to the reforms that swept the industry in the mid 1990s. A policy paper on economic reforms (Government of Kenya, 1996) set out the government's intention to separate the regulatory and commercial functions of the sector, facilitate restructuring and promote private-sector investment. Consequently the Electric Power Act of 1997 was passed. The government's primary function, through the Ministry of Energy, became policy formulation, and its regulatory authority was devolved to the newly established Electricity Regulatory Board (ERB) which became functional in 1998 (see Eberhard & Gratwick, 2005). At industry level, rationalisation and unbundling translated into a redefinition of the scope of KPLC's activities such that it now focuses only on the transmission and distribution (including supply) of electricity, while KenGen, established in 1997, has taken over all the generation activities that KPLC had previously managed. While a number of IPPs have subsequently entered the industry, KenGen and KPLC (both loosely referred to as state-owned entities) remain the dominant players.

In its 2003 strategy document on economic recovery the government expressed its dissatisfaction with the performance of the sector (Government of Kenya, 2003), conceding that electricity in Kenya remained unreliable and expensive despite the reforms that had been introduced. To remedy this, the

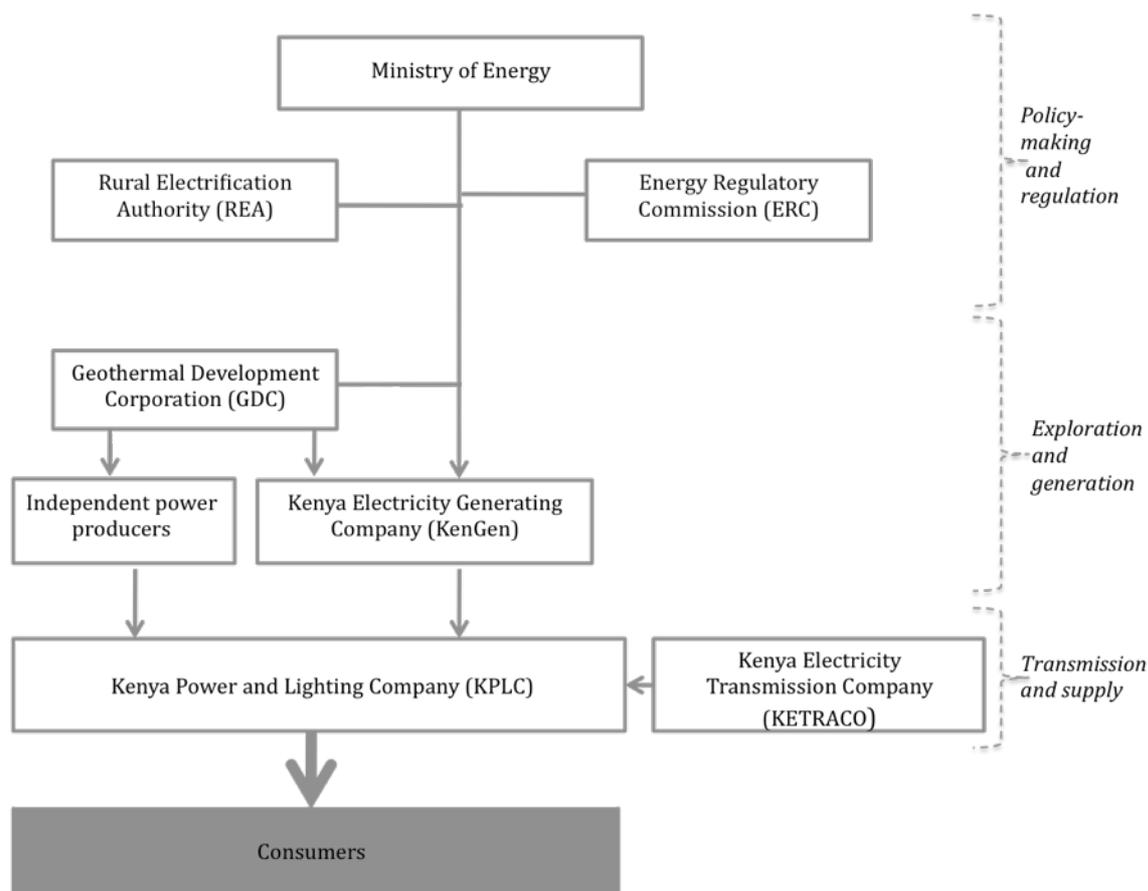
strategy recommended measures to deepen reforms in the power sector. These were subsequently detailed in the national energy policy of 2004 (Government of Kenya, 2004). This included an action plan for the period 2004 to 2007 that set out the government's commitment to:³

- establish a rural electrification authority;
- facilitate the development of a competitive market structure for the generation, supply and distribution of electricity;
- establish the Geothermal Development Company (GDC) to undertake an assessment of Kenya's geothermal resources, including steam-field appraisal and development;
- enact new legislation to, among other things, dissolve the ERB and create a new energy-sector regulator, the Energy Regulatory Commission (ERC);
- increase the rural electrification rate to 10 per cent per annum;
- partially privatise KenGen through an initial public offering of 30 per cent of its equity through the Nairobi Stock Exchange.

By July 2010, most of these measures had been implemented; exceptions were the development of a competitive market structure and the ambitious rural-electrification target. In addition, in late 2008, the government incorporated the Kenya Electricity Transmission Company (KETRACO) to construct, operate and maintain new, publicly funded, high-voltage electricity transmission networks.

The emergence of the key players in the electricity sector is briefly described below and Figure 1.1 provides an overview of the structure of the industry.

Figure 1.1: An overview of Kenya's electricity sector



Note: GDC drills steam wells and the actual power generation is done either by KenGen or IPPs.

The Kenya Power and Lighting Company

KPLC's history dates back to 1922 when the Mombasa Electric Power and Lighting Company merged with the Nairobi Power and Lighting Syndicate to form the East African Power and Lighting Company (EAP&L). A decade later, EAP&L extended its geographical reach with the acquisition of a controlling stake in the Tanganyika Electricity Supply Company (TANESCO). EAP&L attained its maximum reach across East Africa in 1936, when it acquired a licence to generate and distribute electricity in Uganda. This however only lasted until 1948 when the Ugandan government established its own vertically integrated Uganda Electricity Board. EAP&L's geographical spread was further curtailed in 1964 when it sold its stake in TANESCO to the Tanzanian government. Acknowledging that its operations had been confined to Kenya, EAP&L was renamed the Kenya Power and Lighting Company in 1983.⁴ As mentioned earlier, Kenya's electricity industry was unbundled in 1997. Since then, KPLC has been responsible only for the transmission and distribution of electricity in Kenya.⁵

KPLC is still partially privately owned although, its largest shareholder is the government of Kenya with a stake of 40.4 per cent (KPLC, 2009). For this reason, the company is considered a parastatal or state-owned enterprise, and it is subject to the requirements of the State Corporations Act of 1987 (as revised in 2009), which governs state-owned enterprises in Kenya. Furthermore, in 2010, the government announced its intention to increase its stake in KPLC to 51 per cent through a restructuring of the firm's share capital.⁶

Key indicators of KPLC's performance over the ten-year period 2000 to 2009 are shown in Table 1.1. In 2004, the company emerged from a period of sustained loss making and has remained profitable

Table 1.1: KPLC's key performance and financial indicators, 2000–2009

Performance indicators	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Peak demand (MW)	708	724	760	786	830	884	916	987	1036	1070
Annual demand growth (%)	-3.5	2.3	5.0	3.4	5.6	6.5	3.6	7.8	5.0	3.3
Electricity purchased (GWh)	4,461	4,081	4,564	4,750	5,035	5,347	5,697	6,169	6,385	6,489
Electricity consumption (GWh)	3,504	3,212	3,628	3,801	4,090	4,379	4,580	5,065	5,322	5,432
Annual consumption growth (%)	-5.7	-8.3	13.0	4.8	7.6	7.1	4.6	10.6	5.1	2.1
System losses (%)	21.5	21.3	20.5	20.0	18.8	18.1	19.6	17.9	16.6	16.3
Financial indicators										
Fuel costs (US\$ millions)			77.7	51.6		85.0	163.0	196.9	253.6	373.1
Fuel cost per unit of total purchased energy (US¢/kWh)			1.7	1.1		1.6	2.9	3.2	4.0	5.8
Energy purchase costs (US\$ millions)			264.5	245.8		236.9	319.8	371.3	435.6	620.2
Average generation tariff (US¢/kWh)			5.8	5.2		4.4	5.6	6.0	6.8	9.6
Revenue from electricity sales (US\$ millions)	308.8	358.6	315.6	302.8	294.6	365.8	462.7	539.5	620.8	858.3
Average retail tariff (US¢/kWh)	8.8	11.2	8.7	8.0	7.2	8.4	10.1	10.7	11.7	15.8
Average tariff less fuel pass-through (US¢/kWh)	8.8	11.2	7.0	6.9	7.2	6.8	7.2	7.5	7.7	10.1
Profit before tax (US\$ millions)	-33.7	-52.2	-36.2	-53.8	11.1	25.6	34.1	37.7	41.7	63.0

Source: KPLC Annual Reports 2003, 2005–2009

Note: Certain financial indicators for 2000, 2001 and 2004 were not available at the time of writing.

since then. Its return to profitability saw revenue from sales increasing by over 170 per cent. Interestingly, the average retail tariff⁷ has been relatively stagnant, especially when fuel pass-through costs are excluded from the calculation. The only significant change was in 2009 when the average tariff increased by 35 per cent to US¢15.8/kWh (31 per cent to 11.7US¢/kWh excl. fuel). This came as a result of approval by the ERC of KPLC's application for an upward adjustment in the retail tariffs.

The impact of drought on the Kenyan electricity supply industry is apparent from the extremely low annual sales/consumption figures seen in 2000 and 2001; operations at Kenya's hydro plants were severely curtailed by the lack of water, and power was simply unavailable.⁸ The reduced growth rates for both demand and sales in 2003, 2006, 2008 and 2009 can also partly be linked to low rainfall levels. The violent aftermath of the 2007 elections, which depressed economic activity, was another factor in the lower sales and demand recorded in 2008 and 2009. System losses, comprising both technical and commercial losses, have been steadily reduced since peaking at 21.5 per cent in 2000. KPLC's stated target of 14.5 per cent by 2005, with additional annual reductions of 1 per cent thereafter (KPLC, 2003), has remained elusive however. The target date for reaching this level has since been revised to 2013 (Ministry of Energy, 2010). These figures may seem high by international standards but in Africa it is not uncommon for total losses to be well in excess of 20 per cent.

As stated earlier, KETRACO established in 2008, is a relatively recent entrant to the transmission portion of the industry. KPLC's ownership structure (private and state) presents a potential barrier to raising public and donor funds for the expansion of the transmission grid. Wholly state-owned, KETRACO was set up to undertake all new transmission projects. As numerous industry officials stated: 'The transmission grid is like the roads. Building new roads is government's responsibility. That will be KETRACO's role'. While KETRACO's mandate is to design, construct, operate and maintain new high-voltage electricity-transmission lines, at the time of writing it was still unclear whether it would also take over KPLC's system operations and planning functions. Either way, KETRACO's roles and responsibilities need to be clearly demarcated from those of KPLC.

Kenya's electricity generating company

KenGen traces its history back to 1954 when the Kenya Power Company (KPC) was formed (KenGen, 2010). KPC was set up to construct an electric power interconnector to transmit power from the Owen Falls Power Station in Uganda and to develop electricity generation facilities in Kenya. From its inception, KPC was operated by KPLC through a management contract. This arrangement continued until 1997 when the electricity industry was unbundled. KenGen was then established and it incorporated KPC's generation assets.

KenGen remained wholly state-owned until 2006 when it was partially privatised. This was in tune with government's 2003 economic strategy that acknowledged that electricity supply in Kenya was expensive and unreliable and that some form of public-private partnership would be necessary to 'mobilise the investment needed for expanding generating capacity' (Government of Kenya, 2003: 20). Consequently 30 per cent of the company's equity was floated on the Nairobi Stock Exchange in 2006. The initial public offering, which was oversubscribed by 233 per cent, raised Ksh26 billion (US\$325 million) (Njoroge, 2006). At the time, it was the largest-ever initial public offering on the Nairobi Stock Exchange.⁹

The success of the share offer meant that both KenGen and KPLC were listed on the local stock exchange and their shares publicly traded. This is an unusual ownership structure for state-owned utilities in Africa and has two important implications. Firstly, the two utilities are obliged to adhere to the reporting and governance requirements of the stock exchange. Secondly, although their private shareholders are profit seeking, they are also consumers of electricity who expect a quality, reliable and competitively priced service.

Generation capacity

KenGen's installed capacity as at June 2009 was 1 018.6MW with 74 per cent being hydropower (KPLC, 2009) as shown in Table 1.2. Kenya's dependence on hydro-generation represents a risk not

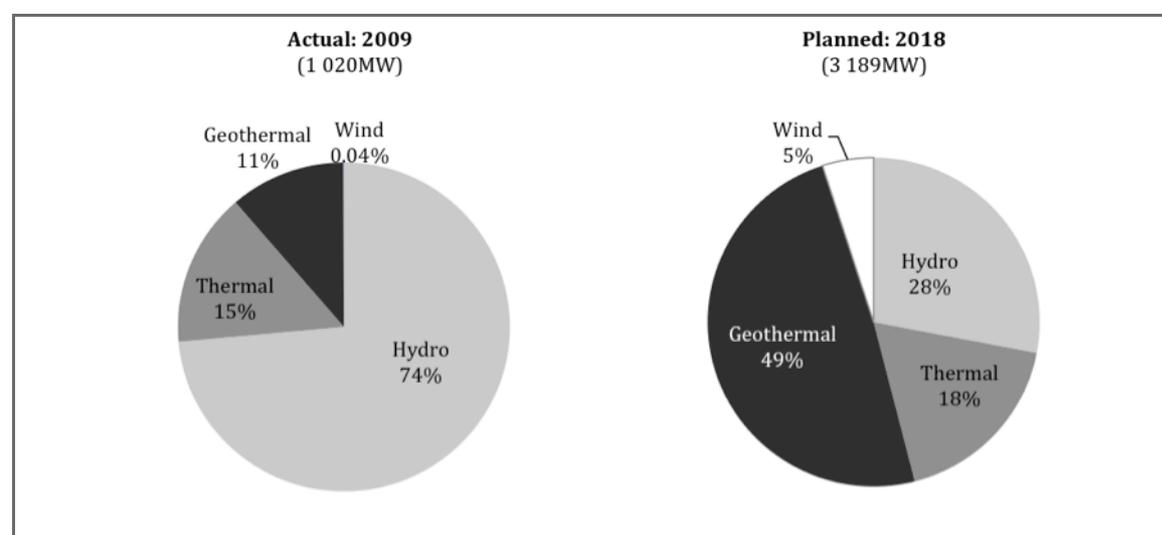
only to the country's electricity supplies but also to KenGen's future revenue stream. This, and the ever present need to increase capacity, have led KenGen to plan for the diversification of its generation mix over the medium term, and the expectation is that hydropower will account for just 28 per cent of KenGen's installed capacity by 2018. As shown in Figure 1.2, increased exploitation of the country's geothermal and wind-energy resources is expected to drive this diversification.

Table 1.2: KenGen's power plants and installed capacity, 2009

Hydro	MW	Thermal	MW	Geothermal	MW	Wind	MW
Gitaru	225.0	Kipevu I Diesel	75.0	Olkaria II	70.0	Ngong	0.4
Kiambere	156.0	Kipevu Gas Turbines	60.0	Olkaria I	45.0		
Turkwel	106.0	Fiat (Nairobi South)	13.5				
Kamburu	94.2	Garissa & Lamu	5.4				
Sondu Miriu	60.0						
Kindaruma	40.0						
Masinga	40.0						
Tana	14.4						
Other (small)	13.7						
Sub-total	749.3		153.9		115.0		0.4
Total MW	1 018.6MW						

Geothermal energy in Kenya has the potential to provide an abundant, reliable and relatively environmentally friendly source of electricity. The Rift Valley runs to the north of Nairobi and contains more than 14 high-potential thermal sites with an estimated capacity of 7 000 to 10 000MW, of which only 202 MW has been exploited. To fast track the development of its geothermal resources, the Kenyan government established the Geothermal Development Company (GDC) in 2008 as a wholly state-owned enterprise. GDC's main role is to conduct surface exploration and drill steam wells. GDC plans to drill wells sufficient for the generation of up to 5 000MW by 2030 (GDC 2009).

Figure 1.2: KenGen's generation mix, 2009 and 2018



Source: KenGen, personal communication, 2010.

KPLC's Annual Report to 30 June 2009 gives an installed wind power capacity of 0.4MW attributable to the KenGen farm at Ngong on the outskirts of Nairobi. Press reports in 2009 indicated that Danish company, Vestas, intends to increase this capacity by 5.1MW (GENI 2009). But it is in the north west of the country where the highest potential for wind power exists. Here, in the districts of Marsabit and Turkana, wind speeds in excess of 9m/s at 50m elevation have been measured (GENI

2009). And it is in Turkana that Kenya intends to build the largest wind farm on the continent. The Lake Turkana project, at a planned cost of US\$800 million, is tentatively scheduled to generate its first 50MW in 2012, and could eventually produce up to 300MW (Rice 2010). With national peak demand at just over 1 000 MW, the commissioning of the Lake Turkana project will significantly alter Kenya's 'green' credentials.

Operations and performance

KenGen's financial and operational indicators for the period 2005 to 2009 are shown in Table 1.3. The 11 per cent drop in electricity sold between 2008 and 2009, again reflects the risks associated with Kenya's dependence on hydro electricity. The conclusion of new power purchase agreements with KPLC during the same period did however mitigate the associated financial loss.¹⁰ In fact, over the five-year period, KenGen remained profitable and is well positioned to raise the funding that is required for its ambitious generation-expansion programme that seeks to double generation capacity by 2018.¹¹ As part of this expansion drive, KenGen in 2009 issued a public infrastructure bond offer, in order to raise funds from the Kenyan financial market. The success of this offer which raised KSh15 billion (US\$200 million), with an option for a further KSh10 billion, is a reflection of the positive view that the markets have on KenGen's performance, its long term future and that of the electricity industry as a whole.

Table 1.3: KenGen's financial indicators, 2005–2009

Financial indicators	2005	2006	2007	2008	2009
Units sold (GWh '000)	4 280	4 538	4 599	4 818	4 339
Average Gx Tariff (KSh/kWh)	1.76	1.76	2.36	2.36	2.42
Electricity sales (million US\$)	96.5	108.8	154.3	173.0	151.6
Profit before tax (million US\$)	33.8	50.7	67.1	46.8	60.0
Financial ratios					
Income for the year as % of average capital employed	2.46	5.70	3.23	3.63	4.60
Profit before tax, dividend & exp. items / net fixed assets in service (%)	7.00	7.00	7.00	3.35	4.92
Return on total assets (%)	4.00	6.00	3.00	3.52	4.89
Profit before tax, dividend (less exceptional items) / capital employed (%)	2.00	4.00	1.00	1.11	3.37
Current ratio	2.60	2.30	2.00	1.40	2.17
Debt service coverage ratio	3.1	3.3	5.4	5.0	3.9

Source: KenGen (2009)

Kenya's independent power producers

By 2010, reforms in the energy sector were clearly bearing fruit and Kenya had attracted more IPPs than any other African country. The introduction of IPPs got off to a shaky start, however. IPP procurement began in 1995 when the Kenyan energy ministry offered two 20-year 'build, own and operate contracts' on an international competitive-bidding basis for a geothermal plant (Olkaria III at 48MW) and a diesel-fired thermal plant (Kipevu II at 74MW). Lengthy negotiations took place and eventually Olkaria III, developed by OrPower4, began commercial operations in 2000, but took until 2003 before it ramped up to full capacity. Similarly, Kipevu, developed by Tsavo, only commenced commercial operations in 2001.

Meanwhile, faced with a drought that had diminished generating capacity and 'insufficient public funds to build power plants, KPLC ordered two stop-gap IPPs in 1996, both on seven-year PPA contracts (Eberhard and Gratwick, 2005). Before the end of the following year, the barge-mounted kerosene-fired Westmont (46MW) and the medium-speed diesel IberAfrica (44MW) plants were in

operation. The haste with which these two plants were procured (through a selective-tender process), and the short duration of the PPAs led to the cost of the power from the two plants being excessive.¹² These costs became a sticking point and, at the end of their respective contracts, re-negotiations led to IberAfrica decreasing its charges by 50 per cent, while Westmont failed to reach agreement with KPLC and disinvested. (Eberhard and Gratwick, 2005).

Despite these events, the authorities continued to pursue IPPs and, in 2006, KPLC put out a tender on international competitive-bidding basis for a 20-year ‘build, own, operate and transfer’ 90MW HFO plant at Rabai in Mombasa (Eberhard and Gratwick, 2010). Aldwych International won the bid¹³ and the plant was commissioned in 2009. Also in 2009, a co-generator, Mumias Sugar Company, increased its supply to KPLC from 3MW to 26MW (MSC, 2007).¹⁴

Having established a track record, a good reputation, and an ever-increasing competence in deal structuring, by the middle of 2010, KPLC was negotiating with:

- three IPPs, the outcome of an international competitive-bidding process;
- three IPPs, on a direct-negotiation basis, for two wind projects totalling 360MW; and
- IberAfrica for a 52MW extension; and
- OrPower4 for a 52MW extension.¹⁵

Electricity regulation

We now examine the regulation of the electricity sector in Kenya, beginning with an overview of regulatory governance arrangements, and followed by an assessment of what the regulatory authority in Kenya does, that is, the core of the authority’s work and its impact.

The Energy Regulatory Commission

At the heart of the regulatory system is Kenya’s independent Energy Regulatory Commission (ERC), an important outcome of sector reforms. The predecessor to the ERC was the Electricity Regulatory Board established under the Electric Power Act of 1997, but the passing of the Energy Act of 2006 resulted in its dissolution and the birth of the ERC. In contrast to Electricity Regulatory Board, the ERC’s mandate extends beyond electricity and includes natural gas (including petroleum), renewables and all other forms of energy.

The objectives and functions of the ERC are set out in Clause 5 of the 2006 Energy Act, which states that:

5. The objects and functions of the Commission shall be to:
 - a) Regulate:
 - i) Importation, exportation, generation transmission, distribution, supply and use of electrical energy;
 - ii) Importation, exportation, transportation, refining, storage and sale of petroleum and petroleum products;
 - iii) Production, distribution, supply and use of renewable and other forms of energy;
 - b) Protect the interests of consumers, investors and other stakeholders;
 - c) Maintain a list of accredited energy auditors as may be prescribed;
 - d) Monitor, ensure the implementation and the observance of the principles of fair competition in the energy sector, in co-ordination with other statutory authorities;
 - e) Provide such information and statistics to the Minister as may from time to time be required;
 - f) Collect and maintain energy data;
 - g) Prepare the indicative national energy plan;
 - h) Perform any other function that is incidental or consequential to its functions under this Act or any other written law.

For our purposes, the most crucial of these functions is Clause 5(a)(i) which deals with the regulation of the supply and use of electricity. The protection of consumer interests, promoting and ensuring competition, and the preparation of the national energy plan, are also important functions of the ERC.

The World Bank's *Handbook for Evaluating Infrastructure Regulatory Systems* (Brown et al., 2006) lists 15 minimum functions and powers that legislation should provide in order for independent regulators to carry out their mandates effectively. Essentially, legislation should empower regulators to facilitate market access through licensing, set tariffs at economically efficient levels, set and monitor technical standards, resolve consumer complaints and adjudicate disputes that may arise among industry participants. In addition, regulators should have powers to promulgate rules, compel licensed entities to provide information in a prescribed manner, promote competition and monitor performance. Regulators should also ensure the adequacy of electricity supply, monitor or undertake planning for new capacity, and oversee its procurement. In general, the Energy Act gives the ERC the requisite powers; the three areas in which the ERC does not have specific authority are discussed further below.

Subsidiary policy and rule making

While the ERC does not have the authority to promulgate subsidiary legislation, such as statutory instruments,¹⁶ it can 'make proposals to the minister, of regulations which may be necessary or expedient for the regulation of the energy sector or for carrying out the objects and purposes of the Act.' (Energy Act: Clause 6b). With varied and urgent competing demands on their time, government ministers are not always well placed to understand or appreciate the technical complexity of some regulatory matters, and, in practice, this arrangement can result in delays. For example, Kenya's Electricity Grid Code was finalised by the ERC in 2008 and subsequently forwarded to the Minister of Energy for promulgation in the form of regulations. The attorney general's chambers indicated that publishing the Code in its current form would be problematic and suggested, to the discomfort of the ERC, the separate publication of each chapter of the code. As a result, by 2010, the code remained unpublished and the technical requirements for ensuring open access to the transmission grid that it contains among others cannot be enforced.¹⁷

Accounting standards and performance monitoring

Regulators often seek accounting information in a prescribed manner. Standard accounting statements are not always useful either to the regulator or to the regulated entity. Some utilities are involved in unregulated businesses such as the provision of internet bandwidth. While it is the duty of the regulator to ensure that these additional activities do not have an adverse effect on the provision of electricity, their inclusion in financial statements could distort tariff derivation.¹⁸ In Kenya the Energy Act places no explicit obligations on licensees to adopt ERC-designed accounting standards and reporting. However, the Act does grant the ERC wide-ranging authority and powers, and there does appear to be sufficient scope for the institution of such standards if they are deemed useful. Similarly, the Act makes no explicit mention of the ERC's role in monitoring the performance of industry players, but this is implicit in the objectives, powers and functions allocated to the regulator.

The legal independence of the ERC

According to the Energy Act, the ERC is 'a body corporate with perpetual succession and a common seal' (Clause 4(2)). The same clause further states that the ERC is capable of:

- suing and being sued;
- taking, purchasing or otherwise acquiring, holding, charging or disposing of movable and immovable property;
- borrowing and lending money; and
- doing or performing all other things or acts for the furtherance of the provisions of the Act which may be lawfully done or performed by a body corporate.

While this in essence makes the ERC independent of government, this is further entrenched by Clause 4(3) which states: 'Except as otherwise provided in this Act the Commission shall be independent in the performance of its functions and duties and exercise of its powers and shall not be subject to the direction or control of any person or authority.'

The board of commissioners

The ERC is led by a board of commissioners headed by a chairperson appointed by the president for a four-year term, and renewable once. Seven other commissioners are appointed on three-year terms that are also renewable once. These are: the permanent secretary in the ministry responsible for energy, the director general, and five other commissioners appointed by the minister to represent the private sector in general.

As a pre-requisite to their appointment, commissioners should possess a recognised university degree in engineering, physical sciences, law, finance, economics or energy. In addition, they should have at least seven years' experience in a relevant field, of which at least five should be at a senior level.

On the advice of the ERC, the appointment of the chairperson and the commissioners can be terminated by the president or the minister. Such termination must however be based on the grounds set out in Clause 11 of the Energy Act. These include: bankruptcy; conviction on a criminal offence involving dishonesty, fraud or moral turpitude; absenteeism from Commission meetings without reasonable cause; and failure to declare their interest in a matter before the Commission.

The above provisions are intended to enable commissioners make regulatory decisions without fear of dismissal. Even so, the 'supreme' law governing the operations of all statutory and state-owned institutions is the State Corporations Act of 1987 (and amended in 2009), Clause 7(3) of which contains the following provision:

Notwithstanding the provisions of any other written law or the articles of association establishing and governing a Board, the President may, if at any time it appears to him that a Board has failed to carry out its functions in the national interest, revoke the appointment of any member of the Board and may himself nominate a new member for the remainder of the period of office of that member or he may constitute a new Board for such period as he shall, in consultation with the Committee determine.¹⁹

Through the invoking of this clause, the forerunner to the ERC the Electricity Regulatory Board had no fewer than five chairpersons during its eight-year existence. It appears, therefore, that if the authorities are intent on terminating the term of a commissioner they will do so, and legally. Notably, since the ERC came into being there have been no abrupt terminations of the commissioners' terms in office.

The administrative independence of the ERC

The ERC's management team is headed up by a director-general who is also an ex-officio member of the board of commissioners. The Energy Act provides that the ERC may, through a competitive process, submit a shortlist of three names to minister from which the appointment of director-general *may* be made. This is interpreted to mean that the minister may follow the recommendations of the board in making the appointment but is not obliged to do so.

The Energy Act also gives the ERC's board of commissioners the power to determine the structure and establishment of the ERC, recruit staff, and determine their terms and conditions of service through Clause 15(1):

Subject to subsection (2), the Commission may appoint such directors, inspectors, officers or other staff for the proper discharge of the functions of the Commission under this Act, on such terms and conditions of service as the Commission may determine.

However, Clause 5(3) of the State Corporations Act (1987) also refers to staffing in the following manner:

A state corporation may engage and employ such number of staff, including the Chief Executive, on such terms and conditions of service as the Minister may, in consultation with the Committee, approve.

Given that the State Corporations Act was passed before the Energy Act, it takes precedence where a potential contradiction arises. The ERC's board of commissioners is therefore restricted in the manner

and extent to which it can make staffing-related decisions. For example all state corporations are given a ranking that among other things provides a ceiling for remuneration levels. Higher ranked entities are allowed to pay their staff higher salaries than their lower ranked counterparts. The board of commissioners cannot approve terms and conditions of service without considering the ERC's ranking. As at 2010 the ERC's ranking was lower than that of the two other dominant players in the industry, KenGen and KPLC. This could prevent the ERC from attracting high-calibre staff, and it may create a revolving-door problem if employees are tempted to seek employment from the utilities that they regulate.

While it would be preferable for the board of commissioners to have greater freedom in the setting of remuneration, it is notable that staff turnover at the ERC has remained low and only only seven employees left between 2005 and 2009.

The financial independence of the ERC

The ERC prepares its own budget, which is approved by the board of commissioners. Thereafter the budget is submitted to the Minister of Energy who gives final approval in consultation with the Minister of Finance. Over the period 2000 to 2009, levies on sales of electricity petroleum and other energy sources accounted for by far the largest proportion of the ERC's funding as shown in Table 1.4. This has insulated the ERC from direct government funding, which tends to be associated with late and below-budget disbursement, and is consistent with best practice for independent regulators.

Table 1.4: Sources of ERC funding (US\$ millions)

Funding source	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Electricity levy	2.0	1.4	1.3	1.3	1.5	1.6	1.8	2.0	2.3	2.2
Petroleum levy ^a										2.2
Government transfers								0.3	0.2	0.7
Totals	2.0	1.4	1.3	1.3	1.5	1.6	1.8	2.4	2.5	5.1

Note: a. The petroleum levy came into effect after the 2006 Energy Act and was first applied in 2009.

The Energy Act provides for three other sources of funding for the ERC, namely: interest from bank deposits; revenue from sources such as loans, grants, gifts or donations approved by the minister; and such moneys as may, from time to time, be appropriated by parliament.

Accountability

Energy regulators can only be effective if they are found to be credible and legitimate by all stakeholders. Financial accountability forms a key factor in developing this credibility.

According to the Energy Act, the ERC's *accounts* have to be submitted to the auditor-general within three months of the financial year-end. The audit should be concluded within six months of financial year-end, and a report submitted to the board of commissioners and the minister. The minister is then required to lay the audit report before Kenya's national assembly 'as soon as reasonably practicable' (Clause 22).

The Energy Act also requires that a report on the *operations and activities* of the ERC be submitted to the minister within three months of the financial year-end 'in such form and detail as the Minister shall from time to time determine' (Clause 22.13) This report is also laid before the National Assembly 'as soon as practicable' (Clause 22.11). In practice, the accounts and the report on operations and activities for the year form a single annual report that is available to the public.

The office of the auditor general is also at liberty to carry out an inspection of the ERC's accounts or records whenever it deems this necessary. Such inspections (audits) are carried out at least every six months.

In several other African countries, the regulator is frequently instructed to appear before committees of parliament. This is not the case in Kenya, although the ERC has indicated that it intends to engage more proactively with lawmakers in future.²⁰

The way in which appeals are dealt with, is another important element of accountability. Anyone aggrieved by a decision of ERC may appeal to a specialist court established by the Energy Act, the Energy Tribunal.

The Energy Tribunal

The existence of the Energy Tribunal enhances the overall accountability of the ERC and provides an avenue for expeditious dispute resolution. The tribunal is made up of five members with university degrees and not less than 15 years of experience in matters related to electricity, petroleum, finance, economics, engineering, energy or law. The chair and vice-chairperson are appointed by the president in consultation with the Judicial Service Commission from among persons qualified to be judges of the high court. The minister, in consultation with the attorney general, appoints the other three members. The members serve for three-year terms (renewable once).

Ordinarily, appeals should be filed within 30 days of any decision that is regarded as problematic but this can be extended if sufficient cause is shown to apply. Surprisingly, the tribunal can rule not only on process but also on matters of substance such as tariff structures and levels. These rulings may require the tribunal to draw on a great deal of specialist skills and resources. It may therefore be preferable for substantive issues to be referred back to the ERC, which already possesses the requisite skills and resources or at least is better placed to procure them.

One of the very first appeals heard by the tribunal was a matter in which KenGen was aggrieved with a decision made by ERC on its power purchase agreement with KPLC. In establishing its case before the tribunal, KenGen made the ERC a party to its appeal. Although the matter was eventually settled outside the tribunal, important legal questions since regulators make decisions in a quasi-judicial capacity. The ERC, which believes that it being party to such an appeal is an anomaly, gave the following example: ‘When a party appeals to a superior court, does the subordinate court become party to the appeal?’²¹ By 2010, the tribunal had handled only two cases; it therefore remains to be seen how it will rule on these matters in future.

Transparency and participation

As in many other African countries, ERC meetings are not open to the public. And as per Kenyan practice for government and state bodies, the minutes of ERC meetings are confidential. However, tariff decisions are published in the national gazette. Furthermore the electricity levy, which forms the ERC’s largest income stream, is shown on all consumer electricity bills.

It is a requirement that notification of any intention to apply for a licence be published in the national press. In the event that any objections to such an application are received, the ERC conducts hearings at which the public may air their views. Such hearings however do not extend to what is ostensibly the most contentious of regulatory decisions, namely tariff structures and levels. The reason for this is not entirely clear, but it could be that the authorities find the prospect unpalatable. Nonetheless, extensive behind-the-scenes consultations take place during tariff reviews, during which key stakeholders, such as the Kenya Association of Manufacturers, are active.

The ERC’s website offers stakeholders another medium of access to the organisation. The website is well presented and informative, although links to the energy policy, a layperson’s guide to the licensing process and an outline of the procurement process for potential IPP developers would be useful additions.

Regulatory substance

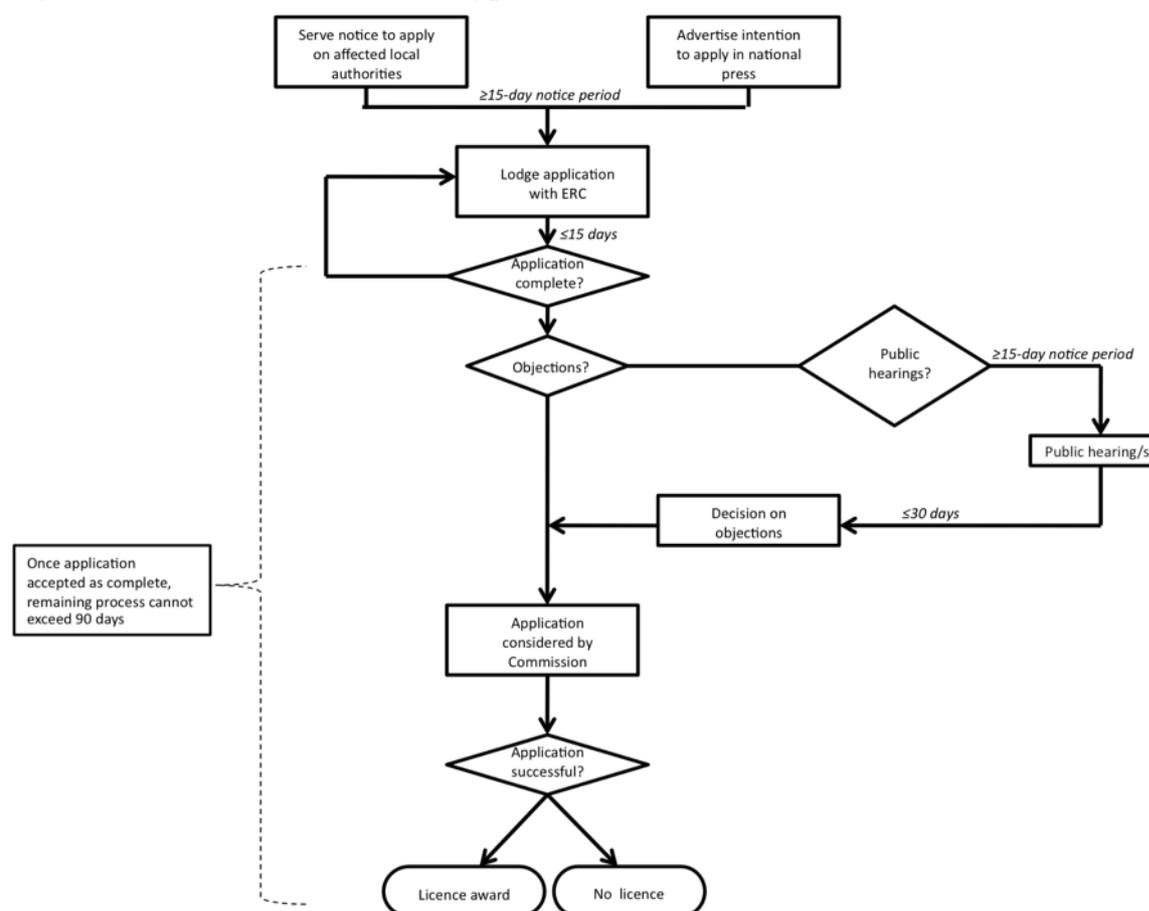
As discussed in the introduction to this volume, regulatory substance is concerned with the intellectual and technical context of a regulator’s decisions in areas such as issuing licences, setting tariffs, setting quality and service standards.

Licensing

In Kenya, the generation, transmission, distribution, supply, import and export of electricity can only be carried out by parties in possession of a licence or a permit issued by the ERC. In the event that the capacity involved is more than 1MW but does not exceed 3MW, a permit is required as opposed to a licence (permits having less onerous conditions than licences).²²

The extension of licences to various private electricity-generation companies has been key to expanding the role played by IPPs in Kenya, so the efficiency of this process is crucial to the industry as a whole. In Kenya, efficiency is facilitated by the fact that responsibilities of the different players are clear, and clear timeframes are attached to each stage (see Figure 1.3).

Figure 1.3: An overview of the licensing process, Kenya 2009



Source: Based on the provisions of the Energy Act (2006)

The ERC can suspend or revoke a licence or permit on the following grounds:

- Where the undertaking or work related to the undertaking has not commenced after 24 months
- Operating in a manner deemed to be a wilful or negligent disregard of the conditions of the licence;
- Bankruptcy;
- Representation by the licensee to the ERC that its operations cannot continue profitably and upon the ERC satisfying itself with such representation.

Prior to suspending or revoking a licence, the ERC is required to give the licensee 45 days notice to show why the action should not be taken. The ERC then makes a determination within 90 days of the notice having expired.

The minister also has the power to take over the operations of a licensed undertaking. This may occur in the event that a licensee fails to meet its obligations under the Energy Act even after being notified and given up to 60 days in which to resolve the matter. In this case, of the Energy Act states:

Subject to subsection (3), if a licensee or permit holder fail to comply with the requirements of the notice, the Minister may, on the recommendation of the Commission, enter upon and take possession of the undertaking of the licensee or permit holder and operate the undertaking for and on account of the licensee or permit holder and at the risk and expense of the licensee or permit holder, remitting the balance, if any, of the net income derived from the undertaking to the licensee or permit holder. (Clause 35.2)

Furthermore, in the event that a suspension or revocation of a licence could lead to an interruption in the generation, transmission, distribution, supply, import or export of electricity, the minister may in consultation with the owners of an undertaking declare that it must continue operations while negotiating with another party to take over the facility within reasonable time. If the owners refuse to do this, the minister can, after a valuation, dispose of the facility through an open tender.

Existing licence holders

By June 2010, the ERC had licensed 13 electricity-generation companies (see Table 1.5). KPLC remains the sole licensee for electricity transmission but it is expected that KETRACO will be licensed to perform this role in the near future. KPLC is also the sole licensee for electricity distribution but this is likely to change as mini-grids that form part of the rural electrification drive become operational. No licences have been issued for the import or export of electricity, although this is taking place.

Table 1.5 Electricity generating companies licensed to operate in Kenya, 2010

Licensee	Technology	Location of plant	Capacity (MW)
KenGen	Hydro, geothermal & wind	Various	1003.8
Iberafrica	Thermal	Nairobi	93.0
Rabai Power	Thermal	Mombasa	90.0
Tsavo Power	Thermal	Kipevu, Mombasa	74.0
OrPower4	Geothermal	Olkaria III	48.0
Mumias Sugar ^a	Bagasse cogeneration	Mumias	26.0
Tiomin	Thermal	Kwale	16.0
Pan African Paper Mills	Thermal	Webuye	9.0
James Finlay	Hydro & thermal	Kericho	6.7
Oserian Development Company	Geothermal	Naivasha	3.7
Unilever Tea Kenya	Hydro and thermal	Kericho	3.8
Sotik Tea Company	Thermal	Arroket	1.5
Sotik Highlands Tea Estate	Thermal	Sotik Highlands	1.1

Source: <http://www.erc.go.ke/erc/licencing/?ContentID=7>

Note: a. Plans are in place to expand capacity to 38MW.

Pricing and tariffs

Two statements in the national energy policy (Government of Kenya, 2004) guide electricity pricing in Kenya:

Where the market structure permits, energy prices will be determined by the market mechanism. However, where it is necessary to regulate prices because of the nature of the energy services such as electricity distribution, which is by nature a virtual monopoly, Government will ensure efficiency pricing and a fair return on investments. (Government of Kenya, 2004: Section 6.6.5, Clause 1)

Electricity tariffs will reflect the cost of supply and also be efficient. In addition, consumer tariffs must also meet the social equity objective of affordability for the underprivileged members of our population. The lifeline tariff that currently applies to the first 50kWh will therefore be continued but consumers will be expected to pay a tariff that at least covers the cost of generation, as is the practice in some countries. However, its administration will be streamlined to achieve better targeting, thereby delivering the intended benefits to the needy and vulnerable members of society. (Government of Kenya, 2004: Section 6.6.5, Clause 4)

In addition, the 2006 Energy Act requires that the tariffs contained in PPAs between and among licensees, and between licensees and large retail consumers, are just and reasonable and have the approval of the ERC. In this context, the Energy Act defines a ‘just and reasonable’ tariff as one that enables a licensee to maintain its financial integrity, attract investment capital, operate efficiently, and fully compensate investors for risks taken.

A further requirement of the Energy Act is that ‘the tariff structure and terms for the supply of electrical energy shall be in accordance with principles prescribed by the Commission.’ In this regard the ERC in 2005 published the *Retail Electricity Tariffs Review Policy* (ERB, 2005). The policy details the elements of tariff determination and includes the methodology applied, customer categories and the tariff structure. There is also mention of a marginal-cost pricing philosophy that could possibly come into force in the longer term if competition within the electricity market begins to occur.

Setting prices and tariffs

The underlying tariff methodology for the assessment and approval of PPAs and the determination of KPLC’s retail electricity tariffs is the widely used revenue-requirement formulation, namely:

$$RR = RAB \times RoR + E + D + T$$

Where: RR = revenue requirement, RAB = regulatory asset base;
 RoR = rate of return; E = operations and maintenance expenses;
 D = depreciation; T = taxes.

According to the tariff-review policy, the rate of return (RoR) shall be computed as the weighted average cost of capital (WACC) and which is defined as:

$$WACC = debt \times cost\ of\ debt + equity \times cost\ of\ equity$$

The computation assumes a target capital structure (or debt-to-equity ratio) of 70 : 30 using the actual cost of debt. The determination of the cost of equity does however present a challenge. Although the tariff policy recommends the adoption of a modified capital-asset pricing-model to determine the return on equity, data limitations have led to an abandonment of the entire WACC regime. In its place, the ERC applies the treasury recommendation of a 15 per cent (before tax) rate of return for public companies on the revenue requirements of KenGen and KPLC. For IPPs the rate of return is determined on a case-by-case basis, and is largely influenced by the source and terms of funding.

The most recent (2005) tariff-review policy states that: ‘Depreciation of the regulatory asset base shall be based on the licensee’s depreciation policies, which shall be consistent with industry best practice and the prevailing tax law’ (ERB, 2005: 14). The tariff-review policy does not explicitly state whether historical values or the modern-equivalent-asset method should be used in determining the regulatory asset base.

Generation tariffs

Generation tariffs drive power-purchase costs, which constitute the single most important cost element in Kenya’s retail electricity tariffs. In the financial year 2008/09, power-purchase costs (including fuel) accounted for over 70 per cent of the expenses in KPLC’s income statement (KPLC, 2009). Given the significance of power-purchase costs in Kenya, it is crucial that all the other elements of the generation tariff are prudently applied and, where possible, cost reductions are incentivised.

In general, the tariffs in power purchase agreements are structured to comprise capacity charges, energy charges, fuel pass-through costs and the applicable inflation index (ERB, 2005). Each of these elements is discussed in more detail below.

- *Capacity and the energy charges:* these represent the fixed and variable costs respectively for electricity generating companies. For new IPP projects that are procured through international competitive bidding, it can be assumed that these charges are competitive. The benchmarking with local and international markets that these costs undergo provide further reassurance of their competitiveness. And once agreement has been reached on the costs, they are locked into the PPAs.
- *Pass-through costs:* for thermal generators that primarily use diesel or heavy fuel oil, fuel costs represent an important component of their variable costs. To ensure that fuel costs are incurred prudently, the fuel-supply agreements entered into with fuel suppliers are subjected to the Public Procurement and Disposal Act (2005). KPLC also audits these fuel-supply agreements. Given the exogenous nature of this cost, Kenyan IPPs have tended not to carry the risk that this cost represents; instead the risk is borne by consumers via a cost pass-through regime, that is calculated on a monthly basis by KPLC. It is worth noting, however, that the 2005 tariff-review policy (ERB, 2005) proposed that options for risk sharing amongst consumers, KPLC and the IPPs be investigated. This has yet to be explored.
- *Inflation indexing:* generation tariffs are subject to escalation at the prevailing rate of inflation. However, in order to incentivise cost containment, escalation is calculated less an efficiency factor (in the fashion of the RPI-X regulatory philosophy). This approach is also applicable to KPLC tariffs.²³

Transmission and distribution tariffs

KPLC's retail electricity tariffs are reviewed once every three years. The transmission and distribution businesses of KPLC are ring-fenced, that is, separate regulatory accounts are maintained for the two businesses. The ERC uses a postage-stamp method to derive the wheeling charge.²⁴ In 2009, the wheeling charge was approximately 1.01US¢/kWh.

KPLC's allowable expenses include: power purchase costs, operations and maintenance, technical and commercial losses. Power-purchase costs have been discussed. The base value of operations and maintenance expenses are capped for each period and cost escalation (for local inflation) is subjected to an efficiency factor in a manner similar to RPI-X regulation.

Total system losses are capped in the tariff at progressively lower levels as another means of cost containment, since lower losses in any case mean increased revenue. These levels were 16.4 per cent, 15.9 per cent and 15.4 per cent for 2009, 2010 and 2011 respectively. Actual achievement in 2009 was 16.3 per cent. The target loss level in the 2010 *Least-Cost Power-Development Plan* is 14.5 per cent by 2013 (Ministry of Energy, 2010).

Power-sector planning

Detailed long-term planning often gets neglected in the urgency of power-sector reform but Kenya seems to have successfully avoided this trap. The 2005 Energy Act states that one of the objectives of the ERC is to 'prepare indicative national energy plans' (Clause 5g). This emphasis may stem from the fact that planning was previously undertaken by the Ministry of Energy as one of its regulatory functions and not by the (pre-reformed) vertically integrated power utility (as tends to be the case in many other African countries).

Building on the previous experience of the ministry, and to fulfil its planning mandate, the ERC constituted the Least-Cost Power-Development Planning Committee in 2009.²⁵ The committee comprises representatives from:

- The ERC (chairs the committee and provides its secretariat);
- KPLC, KenGen, KETRACO and GDC;
- The Ministry of Energy;

- The Ministry of State for Planning, National Development and Vision 2030;
- The Rural Electrification Authority;
- Kenya's National Bureau of Statistics.

This 'stakeholder-committee approach' enables the ERC to leverage the diverse skills and resources (including data) required for robust planning. In addition, the committee provides a platform for consensus building, a crucial ingredient for ensuring the credibility of the *Least-Cost Power-Development Plan* (Ministry of Energy, 2010). The actual modelling and running of simulations is undertaken by KPLC.

New build opportunities

The *Least-Cost Power-Development Plan* identifies no explicit criteria for the allocation of new build opportunities. The ERC does contend though, that the public sector should undertake projects that may not be attractive to the private sector, for example where returns may be too low. In practice KenGen has the de facto right of first refusal and, if KenGen fails to raise the requisite funding, the private sector is invited to participate via an international competitive-bidding process that adheres to the requirements of the Public Procurement and Asset Disposal Act of 2005. Typically, bids are invited by KPLC although in some cases, such as for the emergency thermal generators required in 2000, procurement was handled by the government through its appointed agent, KenGen. The government, through the Ministry of Energy, may also consider unsolicited bids provided they adhere to the public-procurement legislation.

As has been shown, various IPPs have been persuaded to complement government-funded expansion of Kenya's electricity generation facilities. Various factors have contributed to this:

- Barring the unfortunate political upheaval in 2007, the country's good investment climate, as evidenced by its vibrant and well-entrenched local private sector, encourages new investors;
- Power-sector reform is well supported by government and even championed by Kenya's Permanent Secretary and the Minister of Energy;
- Procurement has been streamlined by the clear assignment of the key responsibilities of planning, tendering, and contracting with strong linkages between these functions;
- Over time, through successive IPP bids, the capacity to undertake efficient procurement and negotiate effectively has been developed in KPLC; and
- Crucially, though financiers have required security in the form of 'comfort' letters or escrow accounts, KPLC as off-taker has never defaulted on any PPA with an IPP. As a result, Kenya now has an established track record with IPPs. Broadly government (and its agents), project developers and financiers alike know what to expect in the procurement process and previous successes are breeding new success.

The ERC's role in procurement seems to be restricted to planning at the front-end and licensing at the back-end. However, given the cost and security-of-supply implications of these deals, there may be merit in its greater involvement in the 'in-between stages' of the process. Were such involvement to occur in future, steps should be taken to ensure that this does not comprise regulatory independence.

Regulatory impact

Despite the successes of the sector in increasing the involvement of IPPs, reliability of electricity supply remains a problem. The Africa Infrastructure Country Diagnostic (AICD) study estimates an average of 53 days of outages per year, the economic cost of which close to 2 per cent of GDP (AICD, 2010). While insufficient generating capacity is a factor in this state of affairs, the World Bank has argued that,

The transmission and distribution networks have limited coverage and inadequate capacity to transmit electricity from power plants to consumers. This has led to an unreliable electricity service and unnecessarily high technical losses in the public electricity system. The reasons for these conditions include underinvestment over a long period of time and narrow focus of

service expansion to rural areas without a matching effort to strengthen the backbone transmission and distribution networks. (World Bank, 2010: 5)

These factors make regulating the quality of electricity supply a challenge for the ERC. Comfort may however be drawn from the fact that this is a challenge common to most if not all of the independent regulators in Africa.

The grid code

The regulatory framework and the detailed provisions that provide the basis for regulating the quality of supply are contained in the *Kenya Electricity Grid Code* (ERC, 2008). The primary objective of a grid code is to establish the technical (engineering) rules that ensure open access to the electricity grid while ensuring that safety and quality are not compromised. The stated objectives of the code in respect of technical and industry operations are to provide:

- 3) Detailed operational requirements, including power-system operations and power-system security, emergency operations, metering, including metering obligations of the distribution-network service provider, and maintenance scheduling;
- 4) Terms and conditions of access and technical standards that will apply for connection to the network;...
- 6) Regulation of the supply of electricity to consumers and terms of supply to consumers;...
- 7) Regulation of the supply of electricity to or from the distribution-network service providers' distribution systems. (ERC, 2008: Section 1.4)

However, although the grid code was first published in 2008, by the time of writing, it had yet to be gazetted and some questions remain about the suitability and enforceability of the code. Some licensees question the code's suitability to Kenyan conditions, and argue that the 2008 Grid Code is a replica of the Ugandan code. They also point out that part of their regular reporting to the ERC includes supplying information on their technical performance. Another issue raised is whether, and how, the ERC could act against a licensee whose performance was at variance with Grid Code's technical standards.²⁶ In the meantime, the Kenya Association of Manufacturers has acknowledged that although quality of supply was 'bad' it had previously been 'a lot worse'.²⁷

Increasing access to electricity

Access²⁸ to electricity in Kenya is 'far below that of other African countries with similar per capita income levels' (PPIAF, 2010). A breakdown of Kenya's overall access rate of 18 per cent (AICD, 2010) is revealing; for while urban access is estimated to be at 51 per cent, access in rural areas is just 4 per cent, and this despite the fact that rural electrification programmes have been ongoing since 1973 (Oyuke, 2008). The Kenyan government's 'Vision 2030' development plan has set the ambitious target of 100 per cent access by 2030 (Government of Kenya, 2007). To achieve this, KPLC will have to reach a new-connections rate of 200 000 per annum²⁹ of which 28 000³⁰ connections are for rural customers.

Through the Energy Act, the Kenyan government established the Rural Electrification Authority (REA) to focus specifically on the rural areas. The REA plans and builds rural electrification projects through labour and transport contractors or turnkey contracts. For projects that are connected to the grid, the REA retains ownership of the assets while KPLC undertakes the operation and maintenance. Where they are grant-funded, rural electrification assets do not earn a rate-of-return in the KPLC revenue requirement for tariff purposes, but depreciation and operations and maintenance expenses are allowed on these assets.³¹ The Rural Electrification Programme Fund finances the programme. According to Clause 79(2) of the Energy Act, this fund comprises:

- A levy of up to 5 per cent on electricity sales;
- Fees and other charges levied by the ERC;
- Appropriations by Parliament;
- Donations, grants and loans; and

- All other monies lawfully received or made available for the programme as the minister may approve.

The REA plans to reach its 2030 target in three phases. The first is to increase rural access to 22 per cent by electrifying all public facilities (such as markets, secondary schools and health centres) between 2008 and 2012. Phase two, running from 2013 to 2022, targets households, aiming to increase access to 65 per cent and the third phase from 2022 to 2030 aims to take the electrification rate up to 100 per cent (Munyu, 2009). The resource requirements for reaching these targets are significant. For example, Munyu (2009) estimates that close to US\$1.3 million will be required just for the period 2009 to 2013.

Loans and subsidies for the poor

The electrification drive does not fund the cost of connections to consumers. For consumers within a 600m radius of a transformer, KPLC charges a uniform KSh35 000 per connection. For many, this amount is a barrier to connectivity. To overcome this, KPLC in partnership with local banks have a 'StimaLoan' facility, the advertising campaign for which, in Swahili, is *Pata stima lipa pole pole*, meaning 'get electricity, pay slowly, slowly'. The facility allows consumers to get connected by paying 30 per cent of the connection fee with the balance paid back over a maximum of 36 months at 15 per cent interest on the reducing balance. For potential consumers who find even these terms onerous, KPLC is piloting another StimaLoan facility that works on a revolving-fund basis with a 20 per cent upfront payment plus a once off 5 per cent administration fee, no interest, and is repaid over a maximum of 24 months.

Consumption of electricity up to 50kWh is charged at the so-called lifeline tariff, that is, a subsidised rate of KSh2 per kWh.³² Although this tariff is intended for the poor, it benefits all domestic consumers. The subsidy is funded by domestic consumers whose consumption is above 1 500kWh, that is, the highest band in the tariff structure. In addition, since there is a policy of implementing uniform tariffs across the country, rural consumers are effectively subsidised by those in urban areas.

Conclusion

Electricity-sector reforms in Kenya have achieved many successes, not least in attracting new capital to fund the expansion of generation plants. The ERC does however need to strengthen its role and participate more fully in this success story. In general, stakeholders view the ERC positively but there is a belief that the regulator is beholden to government and not sufficiently independent. Stakeholders wish to see the credibility, robustness and sustainability of its decisions enhanced especially with respect to the enforcement of tariffs and technical standards.

Communication: It would therefore be beneficial to the ERC if it embarked upon a sustained communication strategy. Firstly, licensees need to be regularly engaged so that all the industry players achieve a common understanding of regulatory matters. Secondly, Kenyans need to be made aware of the ERC's role in protecting consumers while ensuring that utilities are financially viable and able to expand their services. And thirdly, even though this might be viewed as alien to Kenyan culture, the ERC should consider conducting public hearings, especially around tariff setting, as a means of engendering greater transparency and public participation.

Planning and investment: The Energy Act clearly assigns responsibility for planning to the ERC and it is crucial that the Commission entrenches its leadership role in this area. To avoid confusion and mixed signals that could delay the sector's expansion, the Least-Cost Power-Development Plan, generated under the stewardship of the ERC, needs to be accepted as the national plan for the sector; it cannot be seen as subservient to the in-house plans of the utilities or other arms of government. Furthermore, criteria for the allocation of new-build opportunities between the public and private sector need to be clarified. The ERC could issue guidelines for the investment community to clarify this and lay out the framework for power expansion planning, tendering, contracting as well as for the procedures to be followed for licence applications and for obtaining PPA approvals.

Market structure and licensing: One of the ERC's responsibilities is to promote competition in the sector. While recognising that establishing competition in power markets is a challenging undertaking, the Energy Act does allow for third-party access to the transmission grid. If this was clarified by the ERC it could provide some competition in the sector with large consumers contracting directly with generators. This however cannot take place without resolving the outstanding issues related to the Grid Code. With regard to licensing, it was surprising that despite the Energy Act clearly stating that licences were required for the import and export of electricity, these activities continued to take place even though no party was licensed to undertake them. This raises credibility concerns and should be resolved as a matter of urgency.

Power purchase agreements: Regulators find themselves in a difficult position during negotiations for power purchase agreements. It is generally accepted that they should give final approval to these agreements and that in order to do so impartially, they should not be party to the negotiations. On the other hand regulators have a role to play in ensuring the security of supply and in protecting consumers from excessive pricing. And because power generation projects typically have long lead times, a regulator may not approve a PPA, and thereby put the supply of electricity at risk unless they are fully informed about the key issues. Such an outcome could be avoided if a mechanism is developed for ERC staff to attend negotiations as observers, and provide non-binding views on elements of the PPA as required by the parties, without losing their right to make the final decision on the PPA.

A striking feature of Kenya's electricity generation expansion plans is the extent to which green energy sources are expected to be exploited, namely geothermal, biomass and wind. If these plans come to fruition, approximately half of the country's installed capacity will come from these sources – a significant accomplishment for any country.

Kenya gives cause for hope in terms of electricity regulation in Africa. Were elements of its power-sector reform process to be learned from and applied elsewhere, it is likely that significant progress towards ridding the continent of the stigma of darkness would be made.

Notes

- 1 By the end of 2001, the 105MW had been decommissioned. However, with the return of drought in 2006 a further 110MW of emergency thermal generation was contracted and at the end of 2009 a total of 290MW was in operation. As dam levels rose again towards the end of 2009 and in 2010, the emergency plants began to be retired, and by July 2010 only 60MW of emergency supply was in service.
- 2 Both KenGen and KPLC are majority state-owned, with significant private shareholding.
- 3 For a full list of the short-term measures for the electricity sector, see Government of Kenya (2004).
- 4 More on KPLC's history can be found at: <http://www.kplc.co.ke/index.php?id=128>.
- 5 These responsibilities include system operations.
- 6 'Energy Ministry Seeks Control at KPLC', *Daily Nation*, 17 March 2010.
- 7 Computed as total sales divided by total revenue.
- 8 For example in 2009, Reuters reported on a 14MW hydro plant at Masinga that was forced to shut-down due to inadequate water, see <http://af.reuters.com/article/kenyaNews/idAFLU26595120090630>.
- 9 According to an article in the *Daily Nation*, 'All the signs indicate we are on course to recovery', 4 January 2010, cellular operator Safaricom surpassed this record in 2008 when its initial public offering raised KSh50 billion.
- 10 In Kenya Shilling terms, electricity sales were in fact higher by 10 per cent for the period 2008/09 when compared to the previous year. However this is not reflected in Table 2.4 due to depreciation against the US dollar over the same period.
- 11 KenGen official, personal communication, 2010.
- 12 Eberhard and Gratwick (2005) estimate the cost to have been approximately twice that of the OrPower4 and Tsavo plants.
- 13 One of the other three bidders, Simba Energy, subsequently filed an objection to the awarding of the tender with the Public Procurement Complaints, Review and Appeals Board which ruled against the objection. Simba Energy then initiated proceedings in the high court in Nairobi but the matter was settled out of court.

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- 14 Mumias Sugar Company Ltd. ‘Half-Year Results to 31 December 2007’ Available at http://www.nse.co.ke/newsite/pdf/Announcement%202008/Mumias_Sugar.pdf.
 - 15 Personal communication.
 - 16 In law, a statutory instrument is a form of delegated or secondary legislation that can be enacted to give effect to higher-level legislation.
 - 17 For a more on Kenya’s grid code, see p. 17 of this chapter. Interestingly, in neighbouring Uganda, the Grid Code was published as unitary instrument in 2003.
 - 18 Tariffs are discussed further on on pp. 13–16 of this chapter.
 - 19 The committee referred to here is the State Corporations Advisory Committee, which is appointed by the president to advise on matters and perform any functions as required by the State Corporations Act.
 - 20 Personal communication, 2010.
 - 21 Personal communication, 2010.
 - 22 With security of supply not always assured in Kenya, it is common for individuals and businesses to own generators for their own use. Permits are not required in these cases, provided that these generators are not installed in a manner that would allow electricity to be conveyed to the national grid.
 - 23 RPI-X regulatory philosophy acknowledges that many consumer costs tend to rise at the level of inflation or the retail price index (RPI), but makes an allowance for RPI less an efficiency factor (X). This is intended to incentivise cost containment.
 - 24 In the postage-stamp method the total transmission costs of the electricity grid are spread evenly over all users, and each user pays the same rate (per unit) regardless of the cost (or benefit) that they impose on the system.
 - 25 A similar committee was in place when planning was the responsibility of the Ministry of Energy
 - 26 Personal communication, 2010.
 - 27 Personal communication, 2010.
 - 28 The Kenyan authorities distinguish between access and connectivity. Here the two terms are used interchangeably.
 - 29 O Turana, ‘KenGen Receives KSh26Bilion for Geothermal Power’, *Business Daily*. 7 July 2010.
 - 30 REA staff, personal communication, 2010.
 - 31 For example, if the electrification of a school or a clinic is donor funded, KPLC does not earn a return on the asset, but the ERC allows for related operations and maintenance costs as well as the cost of depreciation.
 - 32 This is as at June 2008, and excludes fuel pass-through costs.

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