# UNDERSTANDING ELECTRICITY UTILITIES IN SUB-SAHARAN AFRICA

## THE ROLE OF CIVIL SOCIETY IN IMPROVING PERFORMANCE, GOVERNANCE, AND ACCOUNTABILITY

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*Progress in addressing the energy challenges in sub-Saharan Africa depends on the existence of viable electricity utilities. The vast majority of utilities in the region are in a state of financial duress, unable to borrow affordably and therefore unable to make the investments necessary to drive the energy transition. At the heart of this state of affairs lie issues of weak governance. This primer outlines the role utilities play in addressing the energy challenges in sub-Sahran Africa, the state of the utilities in the region, implications for the energy transition and opportunities for the "utility of the future", and the scope for civil society to improve their governance.*

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# ABBREVIATIONS

| | |
|---|---|
| AfDB | African Development Bank |
| CSO | civil society organization |
| DER | distributed energy resources |
| EBIT | earnings before interest and taxes |
| EBITDA | earnings before interest, taxes, depreciation, and amortization |
| EPP | emergency power plant |
| ERI | Electricity Regulatory Index |
| GW | gigawatt (capacity) |
| ICT | information and communication technology |
| IMF | International Monetary Fund |
| IPP | independent power producer |
| kWh | kilowatt-hour (energy) |
| MFI | monetary financial institutions |
| MW | megawatt (capacity) |
| PPA | power purchase agreement |
| PRLN | Peer Review and Learning Network |
| PV | solar photovoltaic |
| SAIDI | System Average Interruption Duration Index |
| SAIFI | System Average Interruption Frequency Index |
| SDGs | Sustainable Development Goals |
| SOE | state-owned enterprise |
| SSA | sub-Saharan Africa |
| TSO | transmission system operator |
| UPBEAT | Utility Performance and Behaviour Today |
| VIU | vertically integrated utility |

# EXECUTIVE SUMMARY

Most utilities in sub-Saharan Africa (SSA) are in dire financial straits, unable to invest in system expansion and refurbishing, maintain existing networks, or even connect new customers. The financing requirement and investment gap is too large and lags other regions of the world, constraining the achievement of outcomes like universal access. At the same time, utilities' governance arrangements and performance are suboptimal. Fixing the distribution and transmission segments is a top priority as the viability of the power sector and its ability to attract private investment ultimately hinge on the strength of the distribution sector.

This report provides a primer on the performance of utilities in SSA, reflecting on the current landscape of power sector and utility challenges, the reforms undertaken to address performance failures, opportunities for a "utility of the future" amid the global energy transition, governance frameworks available to assess performance (like the infrastructure regulatory system and World Bank's Utility Performance and Behaviour Today [UPBEAT] platform), and the prospects for changing the political economy of state-owned utilities to significantly improve transparency, accountability, and performance. It provides foundational knowledge on how to use financial statements and economic tools so that nonexperts can assess the financial health of a utility for the purposes of demanding greater accountability. It also provides insights on why energy sector power purchase agreements (PPAs) should be made more transparent for greater public accountability.

Lastly, this primer lays out the need for an enhanced role of civil society in advocating for improved transparency and greater civil participation in the governance of state-owned utilities and how regulation can be of further help. The key takeaway is that state-owned enterprises should be subject to commercial governance arrangements, including mandatory and stringent contracts and exposure to some private capital as well as stakeholder annual general meetings, open to the public, similar to those that occur in the private sector.

This report complements three other reports published for Ghana, Kenya, and South Africa. Each of those reports focuses on understanding the specific governance conditions surrounding their respective national electricity utilities. All these reports together are intended to build the programmatic and campaigning capacity among civil society actors to enable them to engage in improving the governance of electricity utilities. As such, the intended audience for this report is, first, members of civil society, and then policymakers and energy sector practitioners who are concerned about the operations of their national electricity utilities and who are contemplating advocacy and programming to improve their performance.

# INTRODUCTION

Sub-Saharan Africa's electricity sector stands out for all the wrong reasons, which are reflected in six major and enduring challenges in the region. First, the region has extremely low installed generating capacity compared with other regions. For a population of 1.21 billion, the region has just 190 gigawatts (GW) of generating capacity. More than half of that (100.7 GW) is found in just two countries—South Africa (54.6 GW) and Egypt (46 GW)—with the remaining 97 GW spread among the region's other 47 countries (World Bank, 2024a). In comparison, a single European country—Germany—has 228 GW of installed power for a population of about 83 million (BNEF, 2020; IEA, 2019; Statista, 2019). Second, sub-Saharan Africa is the world region with the lowest per capita electricity consumption—181 kWh (kilowatt-hours) per person per year, or 3% of the European average. This lack of generation capacity and low consumption constrains economic growth and social development in the region (AfDB, 2017; Bank, 2017; Findt et al., 2014; IEA, 2014). Third, about 439.8 people in sub-Saharan Africa lack access to electricity—accounting for about 60% of the people without access to electricity globally. Widespread lack of access has persisted in SSA, even as the number of people without electricity globally fell from 1.2 billion to 733 million (as of 2020). More than two-thirds of those without access reside in 16 countries, 12 of which are in sub-Saharan Africa (IEA, 2023). Access levels in rural areas are even lower than in urban areas, at 44% in sub-Saharan Africa countries (IEA et al., 2022).

Fourth, for many of those with a connection, the electricity supply remains unreliable and of poor quality, oscillating between 32.7 and 51.6 outages a month (Balabanyan et al., 2021; Willuhn, 2018). Power cuts and load shedding are frequent occurrences in many countries. Fifth, despite being connected to the grid, some people cannot afford to consume electricity and thus cannot make use of modern energy services (Avila et al., 2017). Faced with this situation, people and enterprises often have to rely on expensive diesel backup power generation to meet their electricity needs, costing in excess of US$0.25/kWh (Kojima et al., 2016; Trimble et al., 2016). The cost of electricity - median tariff of USc15/kWh in Africa is among the highest in the world (Huenteler, Dobozi, Balabanyan, & Banerjee, 2020), yet poverty levels are also highest in the region. Faced with high tariffs, consumers default on bill payments or defect from the grid, creating a viability gap in the revenues of utilities, which in turn fail to invest or expand service delivery and are entrapped in a cycle of financial distress – the sixth failure, poor performance. Ultimately these utilities are unable to invest, expand, or maintain existing assets, which leads to further service deterioration. In combination, these challenges have serious consequences for economic development and human welfare.

Electricity is crucial for fighting poverty and social injustice due to its transformative impact. It enables access to education, healthcare, communication, food security, employment, and economic opportunities, fostering social mobility. It it thus essential to address the challenges listed here, and doing so will require a critical evaluation of the operation, management, and performance of grid-tied utilities and the introduction of innovative solutions that will improve performance, governance, and accountability.

This study uses a combination of data collection methods involving desk research of qualitative information and analysis of financial data. The desk research included a review of secondary literature on past decades of experience in power sector reforms; the structure and performance of utilities in SSA; and the processes, events, contexts, drivers, and outcomes (or current status) in the power sector. A review of expected future aspects of the energy transition of utilities helped inform the analysis. A further literature survey was conducted to identify the principles of utility governance and to trace linkages of civil society organizations involved in the energy sector and how they advocate for change in utility governance practices. To glean insights about the state of utility financial sustainability, an analysis of financial data was conducted based on the World Bank's UPBEAT database.

The report is organized as follows. After presenting the study methodology, it describes emerging utility models and opportunities for sub-Saharan Africa to leapfrog older technologies to advance the energy transition. The following sections provide an understanding of the challenges characterizing utilities and give an overview of structured governance frameworks currently being used to evaluate utility governance and to drive performance improvements. Next the report provides a synopsis of the scope of power sector reforms in sub-Saharan Africa, including the underlying context and current landscape of reforms. It explains how these have been applied, identifies their weaknesses, and draws key lessons on how reforms can be revised to address utility performance failures and political economy considerations. In addition, it highlights the opacity of private power purchase agreements (PPAs) and argues for greater transparency. The following section provides a guide on key ratios for assessing utility financial performance and sustainability to help enable civil society to advocate for improved utility performance and greater transparency and accountability, and it offers visualizations of these key indicators and ratios (using data from the World Bank's database - Utility Performance and Behavior Today [UPBEAT]). The report then describes how an enhanced role for civil society can help improve utility governance, performance, and accountability and presents a call to action for future civil society engagement with utilities. The report concludes with key recommendations.

# EMERGING UTILITY MODELS AND OPPORTUNITIES IN SUB-SAHARAN AFRICA

Utilities are critical to the economy, providing the vital infrastructure and energy services for economic growth. They will continue to exist to address energy access challenges—the goal enshrined in Sustainable Development Goal 7 (SDG7)[1]—and ensure a supply of energy capable of sustaining economic growth into the future. The landscape of energy supply, however, is changing rapidly.

Significant unprecedented changes in the provision and consumption of electricity services are now underway, driven to a large degree by technological innovations in power generation, reductions in the cost of renewables, economies of scale, competitive supply chains, increased automation and information technology services, flexible financing instruments and other factors. The installed global capacity of all solar photovoltaics (PV)—both utility scale and rooftop—increased from 42 GW to 714 GW from 2010-2021, and between 2012 and 2020 the estimated cost of renewable power generation was found to be lower than the cheapest fossil fuel option. The weighted-average levelized cost of electricity (LCOE) for newly commissioned utility-scale solar PV projects fell as much as 85% between 2010 and 2020, with further reductions forecasted in both developed and emerging economies. The global average price for commercial solar PV electricity in 2020/21 fell by 13% year-on-year from USD 0.055 per kWh to USD 0.048 per kWh (IRENA 2021). A variety of emerging distributed technologies—including flexible demand, distributed generation, energy storage, automation, and advanced power electronics and control devices—are creating new options for the provision and consumption of electricity services in brown and greenfield areas. At the same time, information and communications technologies are rapidly decreasing in cost and becoming ubiquitous, enabling more flexible and efficient consumption of electricity, improved visibility of network use, and enhanced control of power systems (MIT Energy Initiative, 2016). These innovations are mostly occurring outside of incumbent distribution utilities and are driven by broader concerns, such as climate change,[2] as well as by increasingly competitive costs and energy security concerns (Ting & Byrne, 2020).

Distributed energy resources (DERs) consist of technologies such as microturbines and small wind farms, solar arrays, generators, and battery energy storage systems (Akorede, Hizam, & Pouresmaeil, 2010). They can be owned and operated by utilities, independent power producers, businesses, or individuals. These systems are usually under 10 megawatts (MW) in capacity and are directly connected to medium-voltage or low-voltage distribution systems rather than to bulk power transmission systems. DERs are typically defined based on their working principle and the manner in which they are connected to the network, which is mainly "behind the meter" and on consumer premises. Although the technologies are controlled by the producer and consumer—not system operators, as in traditional systems—they are integrated within the electricity distribution network (Birk, Chaves-Ávila, Gómez, & Tabors, 2016).

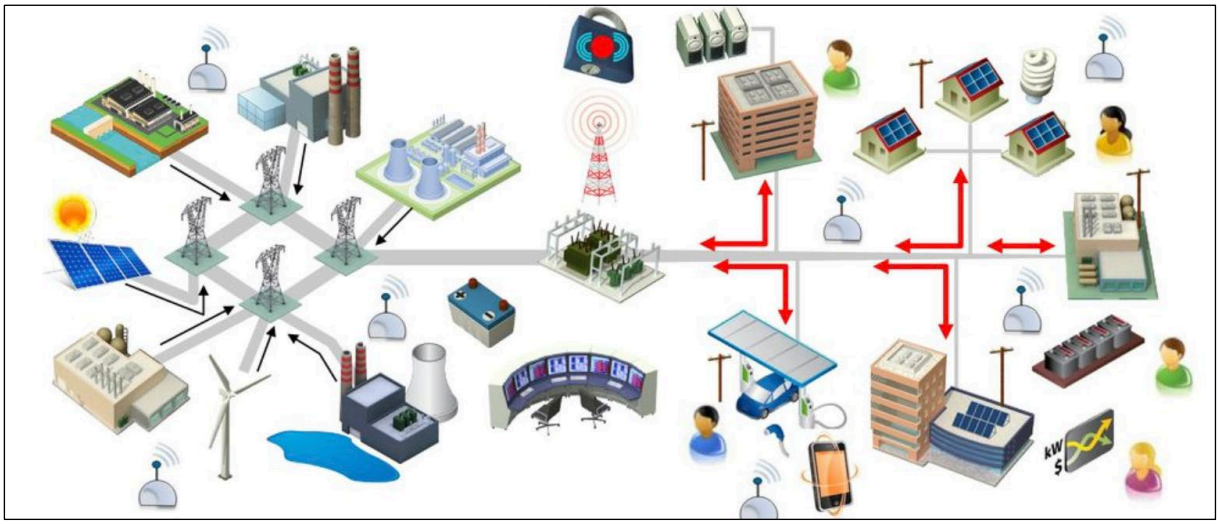
[1] SDG7 calls for ensuring access to affordable, reliable, sustainable and modern energy for all.

[2] The Paris Agreement inspired nationally determined contributions (NDCs), where countries must show successive progressive climate action. As the Integrated Resource Plan (IRP) of 2010 influenced the NDC of 2015, the subsequent NDC of 2015 influenced to an increasing degree the IRP of 2019.

Most utilities in SSA, however, are lagging, still depending on old technologies. To cope with the rapid energy transition and avoid losing a significant market share to the private sector and prosumers[3] in the near future, they will need to adopt new and innovative business models.

Grids and power systems are starting to transition to more radial structures with meshed patterns[4] (Khan et al., 2022) to facilitate the integration of DERs. Smart grids with new geometries will begin to emerge from a new landscape of traditional electricity networks interspersed with mini-grids, community grids, and distributed individual generation systems. Modular renewable energy technologies will be able to bring generation closer to consumers, even as large low-cost sources of generation remain centralized and distant.

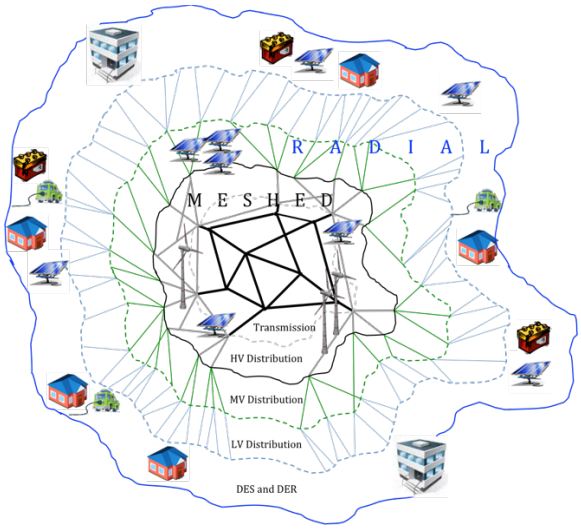
Figure 1: Modular technologies and ICT innovations involving distributed energy resources (DERs)




Source: Electric Power Research Institute.

Figure 2: Meshed distribution network patterns of utilities

[3] Prosumers are a new category of consumers who produce and consume electricity on site.
[4] Radial distribution systems have a centralized power source (such as a substation or generation plant), with feeders to transmit power from the center to sparsely populated areas. These systems are increasingly enmeshed with smaller modular mini-grids, micro-grids, rooftop solar systems, and battery storage systems, changing the business model of the traditional vertically integrated bulk grids to a more fluid DER system.




Source: Center for Energy and Environmental Policy Research, MIT.

Africa has an opportunity to leapfrog older technologies and drive the energy access and efficiency agenda by leveraging mini-grids for the productive use of electricity to improve farm productivity and incomes. Recent research by Oxfam has demonstrated that the most obvious pathway by which electrification might affect productivity among rural households is through the uptake of electricity to drive increased agricultural production. This rise in production could take place directly through increased labor as more people use minigrids to power previous subsistence farms to new larger commercial farms that require irrigation or are employed to operate and maintain  DER systems aor indirectly through the availability of new services (such as refrigeration to prevent spoilage or information and communication technologies [ICTs] to increase access to farm extension) (Morrissey, 2019, pp. 20, 27). Utilities at the frontiers of innovation have an opportunity to advance the electrification agenda on behalf of the massive unserved population of Africa and to help spur economic development linked to agriculture, industry, services, transport, and communication.

Electricity distribution utilities therefore must be improved, reformed, restructured, and/or prepared to enable the development of more efficient distribution utility business models and the adoption of innovative technologies. However, new electricity production and consumption methods are giving rise to equity issues. For example, in recent years, renewable energy decentralization has led to a new category of customers known as prosumers, who are able to produce, consume, and in some cases store electricity onsite. This has resulted in load defection and grid defection by some consumers that has forced utilities to recover fixed system costs from a smaller pool of often less-affluent customers (when tariffs are volumetric), creating a serious equity issue.

Affordability challenges can deepen inequality, as marginalized communities struggle to access clean and sustainable energy as they can't afford the upfront capital costs and collateral of new DERs. Additionally, geographic disparities may arise, with some regions rich in renewable resources benefiting more from renewable energy projects while others, typically disadvantaged areas, lag behind. Ensuring equitable access to affordable and sustainable electricity is essential for addressing poverty and social injustice, and utilities should design programs that incorporate solutions to these issues. Prosumers are expected to fundamentally change the functioning of the retail market, especially through peer-to-peer trading.[5] They are becoming serious competitors to traditional distributors of electricity and thus may provide an alternative route to the

[5] Peer-to-peer trading is a mechanism for small-scale distributed generators to trade electricity.

liberalization of the retail market. This means utilities will have to improve reliability of supply and modify their tariff structures to offer more efficient and competitive tariffs.

Furthermore, the emergence of prosumers, along with advances in digital technologies, smart meters, automation, artificial intelligence, and ICTs (specifically, blockchain technology[6]), has led to new electricity trading arrangements in the form of aggregators and peer-to-peer trading. These new arrangements will fundamentally change the function of the grid from a network to a platform that requires new regulatory models for cost and price determination; the utilities will have to spearhead these models or be ready to cede the role to other market participants. The grid as a platform, rather than a regulated monopoly of delivery infrastructure, was not envisioned in the original Tesla-Westinghouse "bulk grid" model of power supply and subsequent sector reform interventions advanced by the World Bank. The advent of distributed energy resources (DER) and bidirectional flows of energy means that utilities must be rethought and restructured for purpose. Furthermore, it is still not clear how to deal with some of these emerging technologies. For instance, in the United Kingdom, battery storage is regarded effectively as a consumer when power is flowing in and a generator when power is flowing out, leading to the risk that it has to pay twice for network use (Keay and Robinson, 2017).

Utilities, therefore, remain critical systems and enterprises through which new technologies and business models can be adopted and adapted to offer better services, since they already have infrastructure assets that can be easily upgraded and interlinked with mini-grids and standalone systems that can address the electrification challenge and energy efficiency in developing countries. Utilities can also play a pivotal role in partnering with external private entities that can provide capital, advanced technologies, and managerial expertise to increase electricity access in SSA and other developing regions.

In sum, sub-Saharan Africa is faced with many opportunities that may arise from the energy transition, green energy solutions, and changing energy business models. To realize these opportunities, African decision-makers must make a visible commitment to reform so that the necessary conditions relating to utilities' financial viability and technological efficiency can provide a launch pad for it to leapfrog other regions of the world in adopting cheaper and cleaner renewable energy technologies.

[6] Blockchain technology offers a cryptographically secure shared record of transactions updated by a network of computers instead of a central authority (Bublyk, Borzenko, & Hlazova, 2023)

# CHALLENGES POSED BY UTILITIES IN SUB-SAHARAN AFRICA

## TECHNICAL INEFFICIENCIES

Most utilities in sub-Saharan Africa have been technically and commercially inefficient over the years and continue to lumber on. Technical inefficiencies are reflected in high losses, meaning that a significant proportion of the electricity they distribute is lost and cannot be monetized. The weighted average loss figure for sub-Saharan Africa is 15% and rises to 23% if South Africa is excluded (Foster and Rana, 2019; Trimble et al., 2016). In 2018 the median reported total distribution losses increased to 17.7% for vertically integrated utilities (VIUs) and to 15.8% for distribution-only utilities . Making matters worse, only 20 utilities reported total distribution losses, implying that information on utilities' total losses (transmission-only, distribution-only, and distribution and transmission combined, also known as system losses) is not widely reported owing to a lack of enabling management information systems (Balabanyan et al., 2021).

In addition, utilities are plagued by inefficiencies in capital expenditures; projects experience huge cost overruns as a result of poor planning, and sometimes corruption (Power Futures Lab, 2020), which results in high cost of service. The situation is aggravated by the poor maintenance of assets and networks which negatively affects quality of service. The System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) are high: in 2018 across SSA utilities, the median reported SAIDI was 51.7 hours, and the median SAIFI was 24.7 interruptions. Only five distribution utilities[7] reported SAIDI and SAIFI (Balabanyan et al., 2021); the majority of utilities have limited ability to view/monitor their networks and are unable to measure and report on the reliability of their grids. Poor reliability leads to lower per capita consumption and lower revenues for the utility.

## COMMERCIAL INEFFICIENCIES

Commercial inefficiencies are reflected in poor billing and collections. The low billing and revenue collections imply that utilities lose revenue as a significant proportion of electricity is used and billed to consumers but not paid for. Against a benchmark of 100% collection efficiency, the total loss of revenue to utilities in SSA averages about 0.2% of current GDP, and goes as high as 0.5% of current GDP in some countries (Trimble et al., 2016). This results in large debts and payment arrears, leading to chronic indebtedness, which makes utilities financially unsustainable (Eberhard and Dyson, 2019). In addition, many utilities appear to be overstaffed[8] relative to the efficient average benchmark level for developing countries within 10% of operating costs. Staff costs represent a median of 14% of operating costs. Median overstaffing (extra staff) across all utilities is 41%, with most utilities in the 25-65% range (Eskom for, example, stands out for overstaffing in absolute terms with a staff complement of 41,800 employees against an estimated benchmark of 14,200 staff, implying overstaffing by 27,500 staff) (Trimble et al., 2016). This means that utilities are incurring high payroll costs for

[7] These five are Angola's ENDE, Ghana's ECG, Kenya's KPLC, Sudan's SEDC, and Uganda's Umeme.

[8] There are several dimensions to consider for overstaffing including staff numbers, staff skills, attendance (reporting to work) and salaries and benefits. However, this needs to be assessed in comparison with the country's power system size and population.

staff that are unproductive,[9] which increases the overall unproductive overhead costs. Overall, staffing typically represents a relatively low percentage of operating expenditures compared to other quasi-fiscal deficits.

## UNDERPRICING/ BELOW-COST TARIFFS

Another aspect of commercial inefficiency is underpricing: tariffs do not reflect costs. Most utilities do not recover their operating and capital expenditure costs and will require significant tariff increases to achieve viability of existing cost structures. The median level of underpricing at benchmark (efficient) performance is US$0.04 per kWh sold relative to the median tariff of US$0.15 per kWh sold, meaning that tariffs need to be increased or the power mix needs to be changed to reduce costs. Only two countries (Uganda and, Seychelles,) have achieved cost recovery levels (Trimble et al., 2016). ERONGO RED in Namibia would have been the third, however, it was not covered in the study as it is a smaller regional utility. Utilities without cost-reflective tariffs and sufficient revenues skimp first on capital expenditures and then on maintenance, and finally they cannot even cover operating expenses, resulting in deterioration and perhaps even a collapse of electricity services.

## FINANCIAL DISTRESS

Finally, utilities are beset by poor customer service, revealed in disconnections, erroneous and delayed bills, slow resolution of complaints, poor staff attitude, inefficient interface platforms for bill payment, and so on, leading to low customer satisfaction and low willingness to pay. As a consequence, most utilities are not financially viable and are unable to provide adequate service. Most incumbent distribution companies are financially distressed and dysfunctional. Accessing finance is essential to develop new projects, but utilities struggle to gain customer and investor confidence to attract equity and private capital. The largest potential source of funds—the private sector—is easily deterred by the high risk of investing in a dysfunctional system. Because utilities do not cover the cost of service, they are unable to achieve creditworthy balance sheets. Indeed, the performance of most utilities is hindered by large debts and deficits on the order of US$200 million to US$25 billion (Eberhard and Dyson, 2019), compounded by poorly structured tariffs that drive deficits deeper with each kWh of energy supplied (irrespective of the utility's institutional structure: vertically integrated, fully or partially unbundled).

The other remaining utilities experience financial uncertainty that further limits the scope of their operations. The resultant revenue gap imposes an additional burden of subsidies on already strained government fiscal status—a trend that has persisted in most SSA countries. Financially distressed utilities are unable to invest adequately in either the maintenance or the expansion of assets (generation, networks) because they do not earn an adequate return on their assets and hence have insufficient funds. As a result, infrastructure continues to be underdeveloped and the quality of service declines drastically.

[9] According to Trimble et al. (2016), a utility may appear overstaffed, but if many staff members on the payroll are not showing up for work—a known problem in several utilities—the utility may actually be chronically understaffed, with large and unproductive overhead costs that have a strong political dimension. Staff skills may also be a concern, with many utilities suffering from lack of appropriately trained and experienced staff.

# GOVERNANCE FAILURES

Some of the main sources of this dysfunction include poor governance and leadership at strategic and operational levels, limited incentives for efficiency improvements or cost reductions, consistent reliance on soft budgets from the state rather than hard budgets akin to those used in the private sector, regulatory failure, and lack of competition. Other sources of dysfunction include non-competitive and opaque procurement contracting practices that are breeding grounds for corruption, as well as inadequate technical capacity reflected in poor energy systems planning practices and poor financial modeling, which result in oversized projects and high levels of debt. An interesting commonality that accentuates this poor performance is that the majority of these utilities are state-owned enterprises (SOEs) with no commercial orientation and market incentives to turn around their performance.

In Tanzania, for example, the procurement of a 126-megawatt (MW) emergency power plant (IPTL/Richmond/Dowans/Symbion) during drought to address a power shortage crisis in September 2006 became embroiled in corruption allegations, leading to the resignation of then prime minister Edward Lowasa and two other ministers in 2008 (Eberhard et al., 2016). In South Africa's Eskom, the procurement of the Medupi and Kusile power projects has been mired in corruption, with cost overruns in excess of R300 billion (Illidge, 2022; Smit, 2022). The projects are largely perceived to be occurring through an organized cartel for state capture (Eberhard and Godinho, 2017).

At the same time, there are notable examples of utilities with excellent governance arrangements and strong financial performance, such as Uganda's Umeme concession (Twesigye, 2023), that could become models for utilities in other SSA countries. Comparative case studies such as Twesigye (2022) also provide a detailed understanding of the drivers of utility performance across different power sector structures, governance arrangements, and optimal capital structures.

# FRAMEWORKS FOR EVALUATING UTILITY GOVERNANCE AND PERFORMANCE

## ELECTRICITY GOVERNANCE INDICATORS

There is no standard governance evaluation framework that has been consistently applied to utilities in SSA. Efforts have been made, however, to use elements of the Electricity Governance Initiative's Electricity Governance Indicator Toolkit, which is based on the principles of institutional transparency, participation, accountability, and capacity of regulators. The initiative, funded by the World Resources Institute (WRI), was developed to evaluate Indian electricity regulatory commissions and then extended to several other countries – and unfortunately only in South Africa although it was unsuccessful here. It establishes a set of 16 policy indicators and 15 regulatory indicators focusing on the social and environmental impacts of processes (Dixit et al., 2007). In this approach to institutional effectiveness, four to eight elements drive each governance indicator. For example, the "effective functioning of the legislative committee" indicator is evaluated in terms of eight elements: (1) disclosure of interests, (2) active committee, (3) reasoned reports, (4) proactive

committee, (5) public consultations, (6) transparency of submissions to committee, (7) transparency of committee reports, and (8) reporting by executive.

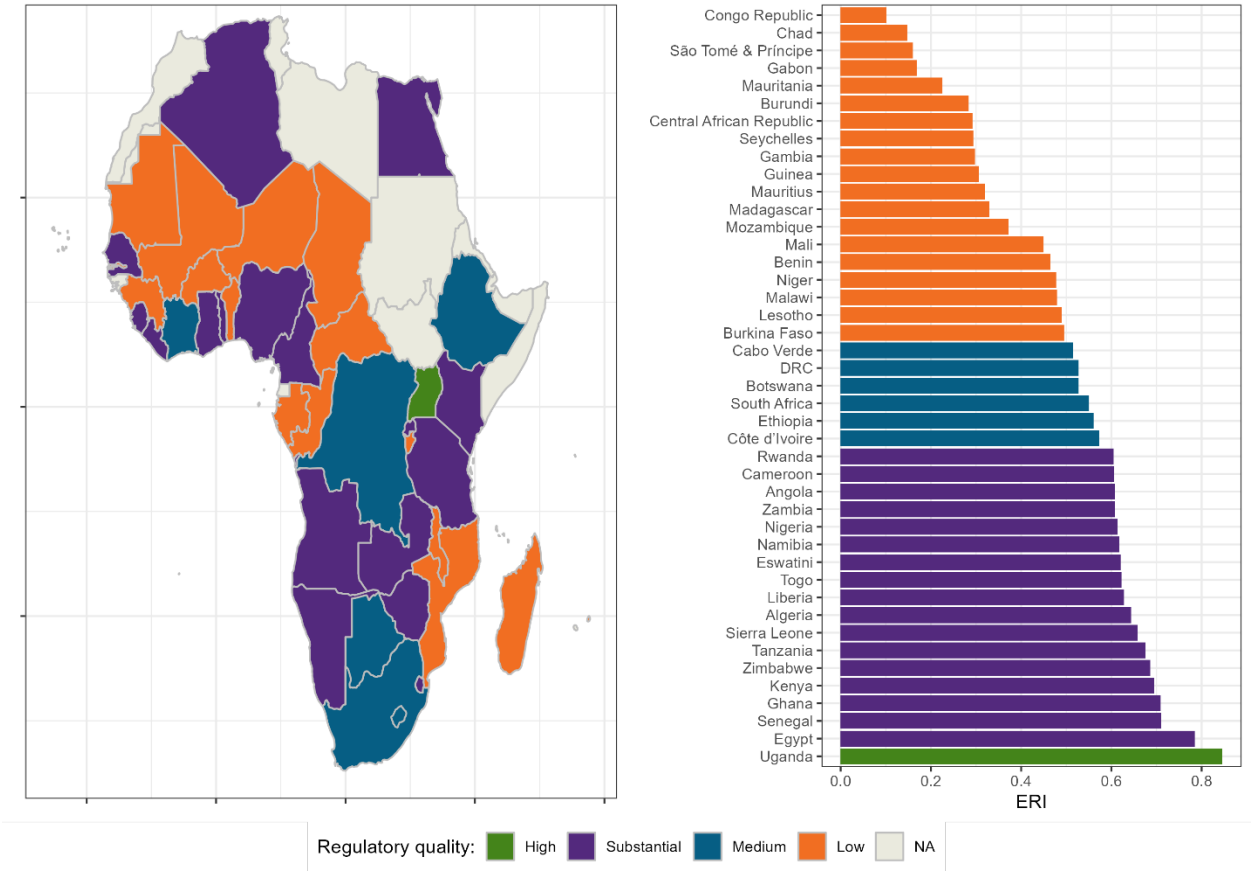
The WRI approach by itself, however, elevates form (procedures) over substance (incentives incorporated in regulatory rulings and the outcomes that reflect the complex interactions among stakeholders). Gauging the actual effectiveness of a regulatory system will require assessing decisions and sector performance.

## *Handbook for Evaluating Infrastructure Regulatory Systems*

The *Handbook for Evaluating Infrastructure Regulatory Systems* (Brown et al., 2006) is the gold standard for assessing the effectiveness of infrastructure regulatory systems and is the most widely known and used assessment framework. It is used in preparation of the Electricity Regulatory Index (ERI), an annual report published by the African Development Bank (AfDB) and, in the African electricity regulators' Peer Review and Learning Network (PRLN[10])—an initiative of the University of Cape Town's Power Futures Lab. The book's three main pillars are regulatory governance, substance, and impact. Brown et al. (2006) decomposes the first pillar, regulatory governance—the institutional and legal design of the regulatory system and the framework within which decisions are made—emphasizing three meta-principles for the governance of regulatory systems: credibility, legitimacy, accountability, and transparency. The second pillar is regulatory substance, which is the content of regulation, the actual decisions, whether explicit or implicit, made by the independent regulator, along with the rationale for the decisions. Typically, this includes tariff determinations and approvals, licensing, and supply and service standards. Regulatory governance and substance translate into regulatory impact on the power sector in terms of yielding competitive prices, reliable infrastructure services, utility financial viability, and new investments. The third pillar, impact, is best assessed at utility, policy, and consumer levels. The volume provides a comprehensive listing of critical standards, carefully defines terms, and provides numerous links to the literature. Overall, the 2022 ERI reveals the weak regulatory performance of the power sector in SSA, with only one country (Uganda) attaining an ERI score that reflects conformity with international best practices (AfDB, 2022) (see Figure 3).

[10] The PRLN is an experiential learning and capacity-building program for African electricity regulator chief executives from six countries (at any time), designed to enhance their leadership and management capability. It helps CEOs benchmark regulatory performance and progressively improve the credibility, transparency, and robustness of regulatory decision-making.

Figure 3: Electricity Regulatory Index (ERI) rankings for Africa, 2022




Source: AfDB (2022) and author's calculations.
Note: An ERI score of 1 indicates conformity with international best practice. NA = not available.

The infrastructure systems evaluation framework of Brown et al. (2006) incorporates regulatory governance and process indicators into the survey; however, the surveys include a number of questions about market structure as well. Furthermore, the volume emphasizes the importance of regulatory decisions. Rules and incentives affect actual infrastructure performance. The emphasis on both substance and process gives the framework a balance that is lacking in some other survey instruments. Governance indicators need to capture both the role of citizen participation and the clarity of regulatory responsibilities. However, without incentives and penalties, poor performance is likely to result. Strong incentives include bonus pools, management performance contracts, bonuses for meeting realistic targets, and replacement of poorly performing managers. With such incentives, efficiency becomes a serious task for managers and staff. Executives tend to manage only what they measure, so targets are one way to focus attention on key outcomes. Improved

performance in the sector means that more resources can be devoted to poverty alleviation without creating new fiscal burdens. While far more politicians have run on a platform of fairness than on efficiency, the latter deserves to be highlighted when considering the links between regulatory governance and sector performance. Efficiency benefits like loss reduction, financial viability, cost reductions, and staff productivity are rarely used for political mileage, yet they are outcomes and signals of a good governance system and are important to a utility's sustainability.

In addition, the understanding of governance within utilities differs, and hence different matrices are used to measure it. Often contractual arrangements defined in performance contracts, management contracts, or concessions express the governance mechanics employed. The most commonly used are memoranda of understanding and performance contracts between SOEs and the central government. However, most utilities do not have robust legal contracts or matrices and furthermore do not enforce them. Instead, provisional considerations are made within board charters, which may include requirements for compliance reporting to regulators; appointment processes for board members, executives, and staff; rules on insider trading policies; delegation of functions within utilities; guidance on relationships with government; policies against corruption; and audit processes. The majority of these, however, are rather subjective and easy to flout, resulting in recurrent performance failures.

In such instances, it is important to change the political economy around the utilities (Gómez-Ibáñez, 2003). This can involve diversifying the shareholding to add more private sector participation (to create mixed capital enterprises - MCEs), limiting information asymmetry by exposing the leadership and governance tools to transparency processes through public participation and voting in annual general meetings, and moving toward more competition in the industry.

## UPBEAT INITIATIVE

A data platform called Utility Performance and Behaviour Today (UPBEAT)—a recent World Bank initiative—is the first attempt to create a metric that explores the health of corporate governance, technical and financial performance across electricity utilities in SSA. It assesses governance on four key core performance indicators: (1) performance management and reporting, (2) integrity and internal controls, (3) capital markets discipline, and (4) stakeholder relations. These are further broken down into 23 transparency and accountability ( T&A ) indicators (Semikolenova et al., 2021). Initial results from UPBEAT's first year of application indicates that most SOEs do not have governance controls and that management processes are in a failed mode. This is because these SOEs do not report the information required, and they are not held accountable. It may be too early to judge the impact of UPBEAT; it was launched only in 2021 and is not yet widely understood by utilities and decision-makers. In addition, while its focus on the operational context of utilities and its mechanism to compare each utility's performance with regional peers are commendable, because most utilities retain hybrid power market structures (unbundled versus vertically integrated) with different governance arrangements (SOEs, private ownerships, independent power producers [IPPs]), the impacts and outcomes of each will manifest differently or will be influenced by different factors, which will in turn make governance assessments difficult to do. However, the seeds of the broad objective of improving governance have been planted and will be realized in the long run.

The above landscape answers the question, How do we characterize the state and performance as well as the governance of utilities in SSA? Based on previous studies such as Eberhard (2019), Eberhard et al. (2016), Balabanyan et al. (2021), Trimble et al. (2016), and Twesigye (2022), we can describe the governance patterns of SOEs as poor and highly influenced by the state. The section "Key Ratios for Assessing Utility Financial Performance and Sustainability" provides a visualization of UPBEAT financial ratios and operational data depicting the poor financial performance of utilities in Africa.

# SCOPE FOR REFORM

## UNDERLYING CONTEXT OF POWER SECTOR REFORM

During the 1990s, the World Bank and other development finance institutions were prominent advocates of power sector reform in the developing world. The main objectives of such reform were to improve economic efficiency and performance and attract private sector investment (Foster et al., 2017; World Bank, 2004). Founded largely on economic principles, the reform model also drew heavily on the experience of two pioneering countries that reformed their power sectors during the 1980s: Chile and the United Kingdom, including Wales.

The literature shows three broad drivers of power sector reform in Africa. First, there was a need to address the poor technical and commercial performance of SOEs. The sector experienced high technical losses averaging about 20%, poor commercial practices such as insufficient billing and revenue collections, low debt coverage ratios,[11] soft budgets,[12] poor governance,[13] inefficiencies in capital expenditure[14] execution and operations, and below-cost-recovery tariffs,[15] which made the sector financially unsustainable (Gratwick and Eberhard, 2008; Joskow, 2008; Williams and Ghanadan, 2006). These aspects of poor performance led to a deterioration of services. The extant literature, including Huenteler, Hankinson, et al. (2020), defines cost recovery along two levels—the fiscal perspective and the overall economic perspective.

Second, there was a need to drastically expand countries' generation capacity by making substantial investments in new power stations, maintenance, and electrification. Such an investment program requires enormous financial resources that are not readily available from public sources but are increasingly available from private sector participation (Bacon, 1995; Bacon and Besant-Jones, 2002). The traditional official development assistance (ODA) model of budget support and infrastructure development was increasingly insufficient and poorly administered. With reforms however, financing was to be mobilized from the private sector and lent out on commercial terms. Development finance institutions, especially the World Bank and the International Monetary Fund (IMF), were seen to be suitable vehicles for disbursing such private finance, often via conditional loans tied to power sector reforms that would enforce strict budgets. Hence these institutions' role in energy reform needed to be accelerated (Godinho and Eberhard, 2019a).

[11] Low debt-coverage ratio means that utilities do not collect enough cash or have enough revenues to cover their debt obligations from lenders.
[12] Soft budgets refer to easy subsidies and direct transfers of public funds from the government to utilities for operational and investment activities; no strict monitoring or penalties are applied if the funds are misused.
[13] Poor governance typically refers to one or a combination of the following: poor leadership and management, corruption, lack of transparency and accountability, inadequate reporting, exclusion of public participation from utility monitoring practices, or inadequate risk controls.
[14] Poor management of capital investments typically involves cost and time overruns, shoddy work, and other problems.
[15] Tariffs charged do not cover the full cost of providing electricity service. Cost recovery is achieved when a utility can cover efficient operational expenditures and full capital expenditures on existing and future assets plus environmental externalities. Cost recovery is understood as an attribute of electricity tariffs and is fulfilled when the average electricity tariff aligns with the average cost of service. Cost recovery is usually measured as the ratio between tariffs and costs (often expressed as a percentage).

Third, the restructuring and privatization of SOEs would create an opportunity for improved transparency, accountability, focused management, targeted risk mitigation, and redistribution of rents and for unlocking the utilities' economic value or reducing government debt (Eberhard, 2007; Victor and Heller, 2007).

Underneath these drivers lay the fourth truth: African governments were in a financial crisis, facing huge investment needs and seeking to carry out development ambitions for the wider economy.

Later, in the 1990s and early 2000s, as the first wave of reform swept across the continent, some governments began setting targets for expanding access, increasing capacity to meet the demand of a growing population, connecting more customers, and achieving socioeconomic development (Eberhard and Dyson, 2019). However, investments remained scarce, and external financing was difficult to secure for the desperate governments. Since most utilities were financially unviable, trapped in chronic debts, and unable to cover their cost of service, they consistently struggled to finance and invest in system expansion and modernization. This resulted in pervasive power deficits, frequent power outages, and huge unelectrified populations. Consequently, the economic development of African countries is depressed, with multiplier effects such as amplified socioeconomic inequality and grievances among populations disappointed by the outcomes of political independence (Eberhard and Dyson, 2019, p. 23). To date, this situation has not changed much in most SSA countries.

Dissatisfaction with the performance of energy sectors and state-owned vertically integrated electricity utilities (especially in the developing world), coupled with the desire to improve economic efficiency and attract private investment, led to a policy agenda developed by the World Bank known as the Washington Consensus. The World Bank and IMF, alongside other development finance institutions, began to actively promote broader economy-wide structural adjustment programs for liberalization as a precondition to issuing loans (World Bank, 1993). Specifically, they offered financing to governments tied to the power sector's adoption of a scorecard of reform indicators (Bacon, 1999) that became highly stylized as the "standard model" or "standard prescription" (Bacon, 2018; Gratwick and Eberhard, 2008; Hunt, 2002).

The standard model involved the logical sequence of the following:

- commercialization and corporatization of utility practices to move prices close to commercial rates, and devolution of the utility from a line ministry into a separate legal entity with an autonomous board and managerial staff
- establishment of an independent regulator that would be mandated to play an oversight role over cost-reflective pricing to protect utility financial sustainability, manage licensing, and monitor performance standards
- the restructuring of SOEs through vertical and horizontal unbundling to separate competitive elements from natural monopolies[16]
- opening up of the market to allow private sector participation to provide alternative structured financing, governance, and incentive arrangements
- competition (both for and in the market) as a means to yield better efficiencies (Twesigye, 2022).

[16] Transmission and distribution networks (wires) are considered to be natural monopolies. Once the huge fixed costs are paid, the average costs decrease with each additional output of electricity generated or as the firm gets larger, meaning that each additional unit costs less as fixed costs can be spread more widely, creating a reasonable price for the consumer. Competing utilities are thus not economic.

# CURRENT LANDSCAPE OF REFORMS IN SUB-SAHARAN AFRICA

Some 25 years have passed since the earliest power sector reform experiences, and during this time the power sector context has changed dramatically. First, accumulated developing-country experience has shown that the model is much harder to apply than originally believed. Even in countries with successful adoption, it has taken decades to fully implement reforms (Foster and Rana, 2019). Many other countries have encountered obstacles and even reversals owing to the complex political economy dynamics of the sector and have only partially adopted sector reforms. Second, the policy objectives of the power sector have shifted away from a narrow focus on economic efficiency and toward the achievement of broader social and environmental objectives. Current objectives include universal access and the transition to a low-carbon energy system prompted by climate change, and these are underpinned by international agreements like the Sustainable Development Goals and the United Nations Framework Convention on Climate Change. Third, the power sector is currently in the midst of a technological revolution, driven by the steep decline in the cost of solar photovoltaics and rapid innovations in ICT and DER technologies, which are making it increasingly economical for both producers and consumers to generate power locally in a highly decentralized manner. This shift is already beginning to reshape the role of traditional power utilities. These realities are shaping a third wave of reforms, partly to address the weaknesses of the first and second waves.

Across sub-Saharan Africa, power sector reforms remain a work in progress.[17] Nowhere on the continent is there full wholesale and retail competition, and only 10 out of the 42 countries represented by utilities in the Association of Power Utilities of Africa (APUA) have partially or completely unbundled the electricity sector. Instead, mostly hybrid power markets have emerged. A single-buyer model still dominates in most of sub-Saharan Africa where incumbent state-owned utilities aggregate demand, acting as the counterparty single buyers to long-term contracts with IPPs,[18] while often still building and operating publicly owned generation capacity (Eberhard et al., 2011). Only a small share of countries across these regions—like Cameroon, Côte d'Ivoire, and Uganda—have privatized power utilities via concessions, and short-term private management contracts have been reversed in countries such as Ghana, Kenya, and Tanzania (Twesigye, 2022).

Where elements of competition have been introduced, it has been competition for the market—through auctioning of long-term contracts with IPPs—rather than in the market. Competition in the market would mean that generators continuously compete for least-priced dispatch and sales by balancing markets, day-ahead markets, contracts for differences, and spot power exchanges, which are preferred to increase the liquidity of power trade, while distribution companies offer competitive retail services to customers, increasing their choice options. The transition to full competition in the market has not been realized anywhere in Africa. As of 2023, efforts were being made to unbundle South Africa's power sector to allow full wholesale competition in the market—a trend that may be adopted by other countries in SSA. Even where

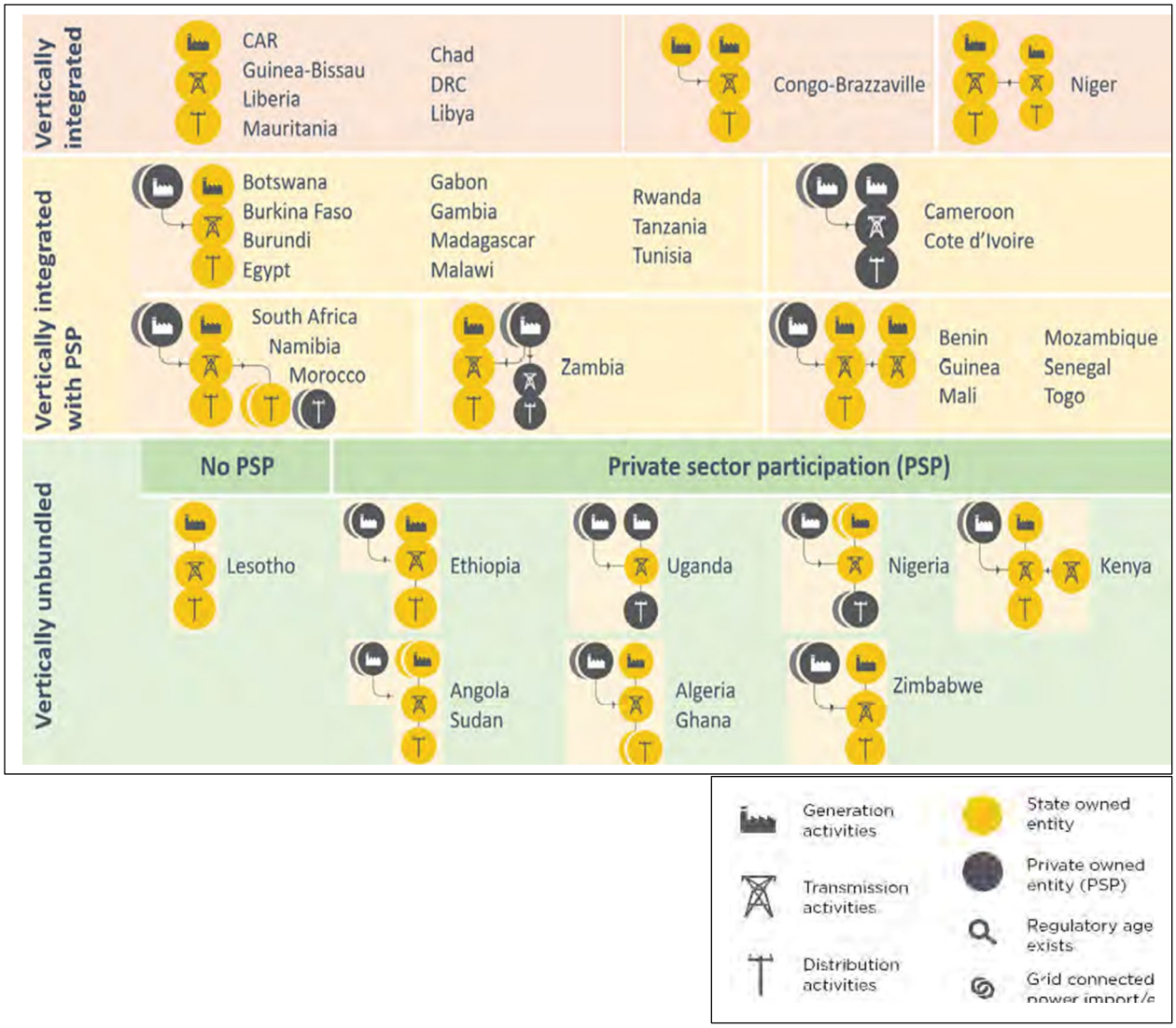
[17] For example, a number of countries in sub-Saharan Africa have terminated or not renewed private management or concession contracts that were undertaken as initial steps toward power sector privatization and/or restructuring, while private sector participation, especially via IPPs, is perversive. In reverting to the vertically integrated, state-owned and -run model, prior commitments to sector reform are typically deferred or taken off the table completely.

[18] State-owned utilities have a sole monopoly to buy power from all generators, including IPPs, and sell it on to distribution companies and other industries.

power pools have been established, they are engaged only in bilateral cross-border power exchanges involving low volumes of power and have not engaged in wholesale competitive trade within countries.

Regulatory reform, including the establishment of an independent regulator, has been the most extensively adopted reform and is widespread in more than 45 African countries. A question could be posed: What would the power sector in Africa look like today if there were no regulation? Regulatory reforms created a paradigm shift in the way the sector is supervised, helping to introduce principles of accountability and transparency, supported by a formal legal mandate, and coupled with methodologies for tariff setting, licensing new private investments, and monitoring performance standards, which have gone a long way toward improving sector performance relative to the pre-reform period. Despite this progress, full regulatory independence is still a challenge in most African countries, especially in relation to the quality of regulation. Because regulators are political appointees, they are still influenced in executing their mandate. It is anticipated that regulatory capability and credibility will improve in the long run, especially as institutional capacity is enhanced. Figure 4 depicts the status of restructuring and private sector participation in Africa.

Figure 4: Status of restructured power utilities in Africa



In general, even where components of the "standard model" have been implemented, greater private investment in power infrastructure, improved energy security, and increased energy access have not necessarily followed. As a result, many of the same conditions that drove reforms in the 1990s still stand and continue to undermine economic growth and development, including deep operational and financial crisis in utilities; a significant investment gap; insufficient, low-quality, and unreliable supply; and inadequate access for residential, public, commercial, and industrial consumers.

Regardless of the weaknesses, power sector reforms (especially in terms of the independence and quality of regulation, governance of state-owned utilities, unbundling where there is a conflict between the state and a private generation company [GenCos], competition for the market, and more private sector participation) remain development imperatives that need to be implemented and supported by all stakeholders. The core challenge remains delivering adequate power at the least cost while ensuring that utilities are technically efficient and financially sustainable. It is not clear that the full reform agenda is the answer. In particular, full competition for the market is not universal even in the United States, and in Africa many markets may yet be too small to warrant it.

A more tailored approach to improving the governance and solvency of utilities, including through better regulation, might be a more workable starting point. The World Bank's assessment of its experience with power sector reform provides more insights into these lessons (Foster and Rana, 2019).

# REFORMS AND THE NEED TO IMPROVE TRANSPARENCY OF POWER PURCHASE AGREEMENTS

An important normative factor in power sector reforms is the need to assess the successes and implications of procuring and contracting new privately funded power projects (commonly known as independent power projects [IPPs]) with associated power purchase agreements (PPAs), to ensure they are transparently done and do not increase overall sector risks and cost burdens to consumers and the state.

IPPs built, financed, owned, and operated by the private sector are one of the most successful reform measures and have become one of the fastest-growing sources of investment in Africa's power sector, representing about 15% of total installed generation capacity. IPPs have diffused across the SSA region and are widespread in 33 out of 46 countries. More than 346 IPPs have reached financial close, representing around 26 GW of generation capacity and about US$55 billion in total investment. However, these volumes are concentrated in a few countries—South Africa alone accounts for about 40% of total capacity.

Recent data shows that since 2014 a rapidly growing portion of these IPPs (60%) is based on renewable energy, and many have been competitively procured (Eberhard et al., 2017). A significant number of others, however, have been directly negotiated among developers, politicians, and technocrats in secrecy under emergency conditions as emergency power plants (EPPs).

At the center of any IPP or EPP is a PPA—a long-term contract of 20–25 years that contains key provisions such as price, payment terms, and obligations of the off-taker (typically a state-owned transmission

company) backed by an explicit or implicit financial guarantee from the host government, represented by the ministry of finance, to fulfill the PPA's financial terms. Despite their weighty effects on energy security, service quality, public finances, and the wider macroeconomy, these agreements are often negotiated and signed behind closed doors, with even the most basic terms shielded from citizens. Contract details are not publicly disclosed by project developers, financiers, utilities, host governments, or even regulators. This opacity has created risks and contributed to costly and damaging outcomes such as overpayment, overcapacity, large debts, and grid instability. These outcomes result in higher retail tariffs for consumers, higher 'deemed-energy' costs[19] on the fiscus, and reputational damage to the country, which dampens or undermines investor confidence.

Recent studies by the Energy for Growth Hub have identified seven areas through which nontransparent PPAs can create risks to the sovereign balance sheet or directly to consumers (Badissy, Kenny, & Moss, 2021):

1. Overpaying—high generation costs compared with national or global comparators are passed along to the distribution utilities and retail tariffs.
2. Overcapacity—transmission companies are compelled to meet "take-or-pay" obligations for the full capacity of a power project, regardless of whether they use the power.
3. Debt risk—utilities may be unable to maintain their payment obligations under PPAs, requiring government subsidies and bailouts and creating significant drains on public resources.
4. Systemic imbalances—utilities may face challenges in matching generation profiles (supply) with demand trends. In the absence of ways to manage demand and supply, utilities may experience blackouts or huge inefficiencies, such as excess capacity during low demand periods.
5. Governance risks—corruption from opaque deals negotiated behind closed doors ultimately affects public confidence in the sector and the government.
6. Dispute risk—changes in the law, world crises, and pandemics can lead to a surge in force majeure declarations, raising questions about contract details and obligations.
7. Investment risks—contract cancellations, forced renegotiations, effective expropriations, and other legal conflicts can place huge burdens on utilities and raise the risk premiums of investing in countries that need capital the most (Badissy et al., 2021).
8. Deemed energy costs—these can arise as a result of inadequate demand or lack of infrastructure to evacuate power from private generation plants with mandatory take-or-pay contracts (Twesigye, 2023).

Several countries have borne the brunt of these risks. In Ghana 46 unsolicited PPAs were signed between 2011 and 2016, costing the government about US$450 million per year for power and gas that go unused (PPA Watch, 2023). Tanzania has perpetually been embroiled in four nontransparent, corrupt EPPs procured directly with government agencies, resulting in a sixfold increase in generation costs; the SOE TANESCO has been forced to pay over US$150 million and is still locked in legal battles with the EPPs. Kenya is experiencing major grid instability and imbalance because PPA obligations necessitate the dispatch of variable wind power over a more stable geothermal source. Kenya was also involved in unsolicited PPAs that increased tariffs; a presidential task force was constituted in 2022-2023 to renegotiate the PPAs. Nigeria is demanding to renegotiate 14 solar PPAs whose terms were found to be overpriced. Uganda, too, is locked into direct subsidies arising out of deemed energy resulting from lack of demand and inadequate transmission infrastructure to evacuate some IPP projects (*The Independent*, 2022).

[19] Deemed energy refers to the amount of electrical energy, in kWh, that otherwise would be available to the buyer (transmission company), but because of a system event limitation, such as inadequate demand or lack of evacuation power lines, the transmission company is unable to provide or absorb the energy and must therefore compensate the IPPs in monetary terms, creating a deemed energy payment risk to the utility and fiscus.

The above scenarios arise partly because of a lack of robust structured mechanisms and initiatives for demanding transparency. Transparency in PPAs refers to the openness and accessibility of information related to the terms, conditions, and pricing of these agreements. Civil society organizations ought to play a major role by demanding access to the PPAs and critiquing the risk areas listed above. This oversight will enhance market efficiency by providing relevant information to all stakeholders including investors, lenders, regulators, and consumers. Open access to information enables better decision-making, encourages competition, and facilitates the efficient allocation of scarce resources within the energy market. Clear and accessible PPA data enables better risk assessment, encourages investor confidence, and attracts much-needed investments. Transparency in PPAs also helps combat corruption and ensures fair competition as the decision-making process takes place in the open and not under the table. Public scrutiny of the PPA process reduces opportunities for undue influence, favoritism, and illicit practices. Furthermore, transparency of PPAs facilitates regulatory oversight and monitoring; as PPA data is shared, revealing pricing and performance terms, it is possible to evaluate the arrangements' compliance with regulations. Lastly, making PPA terms and pricing publicly available helps industry stakeholders compare different agreements, identify best practices, and learn from successful projects. Civil society groups should approach regulators, transmission off-takers, and ministries of energy to demand access to and public disclosure of PPAs.

# POLICY LEVERS, LESSONS FOR REFORMS, AND UTILITY PERFORMANCE

From the literature on the contexts and varied experiences of reform efforts and performance outcomes, it is clear that the prescriptive "standard model" has not been the hoped-for panacea to power sector challenges in the developing world. Instead, the need for a with-the-grain approach—a middle-ground between 'one-size-fits-all' best practices and the view that every country is unique, so needs an entirely unique set of policies—is now more widely accepted (Levy, 2014). Nonetheless, with more than 20 years of experience in the (attempted) application of the "standard model," the literature reveals a number of practical lessons and recommendations that are relevant to power sector reform and development. This section provides a brief summation of lessons from what has not worked and recommendations for what could work.

For those low- and middle-income countries that began power sector reform processes in the 1980s and 1990s, reform policies were frequently designed through a closed process led by a team of technocrats within a specialized unit or a single ministry, and under the guidance of international consultants from development finance institutions who typically promoted a best-practice approach in the form of the "standard model" (Gratwick and Eberhard, 2008; Williams and Ghanadan, 2006). Key members of the general public, civil society, various stakeholders in the power sector, political actors and groups, and the private sector were rarely consulted and regularly excluded. These closed policy processes critically undermined the political, social, and techno-economic feasibility of implementing reforms in several ways: they discounted the importance of broad-based support and perceptions of legitimacy from key actors and interest groups; underestimated the structural constraints of weak formal institutions, dependence on international investment, and low levels of economic and sectoral development; and overlooked the inertial yet dynamic character of enmeshed political and economic power in highly unequal societies (Besant-Jones, 2006; Williams and Ghanadan, 2006). In addition, fundamental contextualities—such as a country's resource base, economic structure, and even national power sector objectives (such as electrification targets)—were neglected owing to the focus on "standard model" steps and outcomes. In some countries, concerns about utility staff retrenchment were sometimes ignored. The "standard model" failed to address local concerns, political economy, vision, and the needs of local stakeholders and therefore appeared to be cynical, translating to poor levels of local

ownership and support. As a result, the path to implementing power sector reforms in sub-Saharan African countries has been a game of snakes and ladders, where constraining and enabling factors, unmapped and poorly understood, determine the pace, progress, and outcomes of reform, while global macroeconomic and geopolitical conditions set the fate of the dice.

There has also often been an interplay between power sector reforms and other dimensions of government policy, power sector planning, utility mandates, expansion, and social objectives like electrification. More recent changes have seen the creation of regional and cross-border power trade as well as a push by the Global North to decarbonize and transition to cleaner renewable energy technologies (Eberhard and Dyson, 2019). Utilities are major players in this mapping and should play a central role in the customization of reforms for their sustainability into the future.

This paper began by examining the state of power sector challenges in Africa, summarizing the main enduring challenges and shedding light on what future energy markets will look like driven by accelerated innovations and a disruptive energy transition. It then linked these challenges to sources of utility dysfunction and how they manifest. It described the context within which power sector reforms have been used to address utility failures and their limitations, analyzed the risks arising from IPPs' power purchase agreements, and drew lessons for consideration in designing suitable interventions for utilities or for civil society.

In the next section, we provide a guide on how to read and use financial ratios, and identify key indicators and ratios to check, so that civil society can play a larger role in advocating for improved utility performance and greater transparency and accountability. Using the data from the World Bank's UPBEAT database[20] (Balabanyan et al., 2021), we make a contribution by analyzing the provided data, further providing a nuanced visualization and interpretation of various financial ratios for African utilities. We do not attempt to validate the raw data in the UPBEAT database which is beyond the scope of this study.

[20] UPBEAT is a tool used to measure, monitor, and share utility performance data for African utilities (World Bank, 2024b).

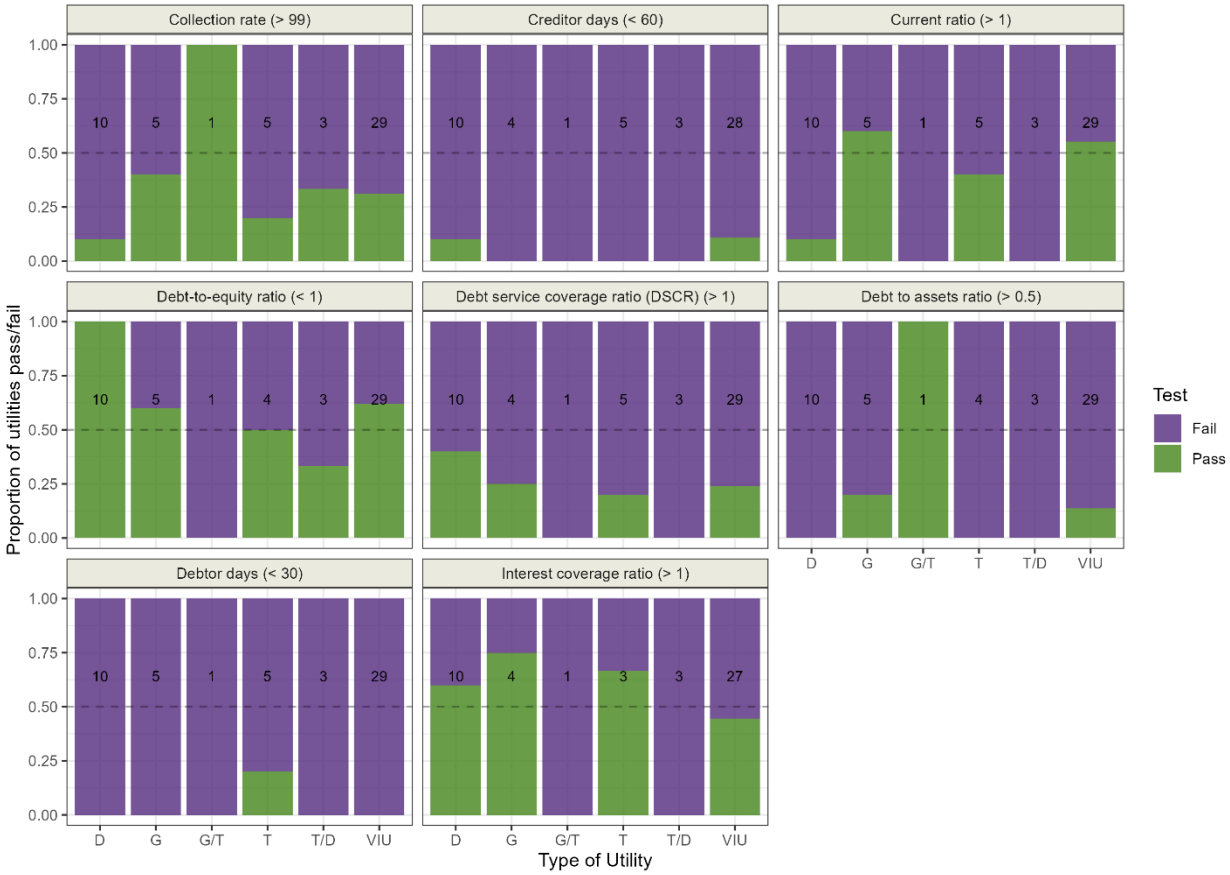
# KEY RATIOS FOR ASSESSING UTILITY FINANCIAL PERFORMANCE AND SUSTAINABILITY

Assessing financial sustainability requires examining a utility's ability to generate sufficient income to cover operational expenses and full capital expenses, including a return on the new and replacement value of existing assets, to allow for growth while maintaining efficient service levels (Pardina et al., 2008). Such an assessment typically involves looking at profitability, solvency, and liquidity ratios to help gauge a utility's financial performance in the long and short term, as well as examining the relationships among the ratios. Profitability ratios include the margins and return ratios. Solvency ratios include the debt-service coverage ratio, the debt-to-equity/assets ratio, the interest-coverage ratio, and the cash flow/self-financing coverage ratio. Liquidity ratios include the current ratio, the quick ratio, and the cash ratio. Also relevant are activity ratios and operating cycle components. The chosen ratios explain the utility's efficiency in deploying its assets to address financial risks resulting from its choice of how to finance the business, using either debt or equity, to support its sustainability into the future. Figure 5 shows the author's visualization of these ratios, using 2022 UPBEAT data, to give a sense of financial performance of utilities in Africa.

Overall, regarding financial management and discipline, evidence from the World Bank UPBEAT analysis shows that only 14 utilities (vertically unbundled and bundled) in 11 countries[21] are able to post a net profit. Of these, only three utilities (Umeme [Uganda], the Public Utilities Corporation [Seychelles], and Erongo RED [Namibia]) have achieved cost recovery of operating and debt-service costs in all years, with a collection rate above 97% and without state subsidies (Balabanyan et al., 2021, pp. 32–33). The majority of the other utilities are in dire financial distress, and their assets and resources are mismanaged.

[21] Côte d'Ivoire, Eswatini, Gabon, Kenya, Lesotho, Mauritius, Namibia, Seychelles, Sierra Leone, Uganda, and Zambia.

Figure 5: Visualization of hurdle rates for various financial ratios




Source: Author calculations based on UPBEAT database (World Bank, 2024b).
Note: Numbers indicate the number of utilities of that type in each group; all utilities are included, and none are treated as errors/outliers. UPBEAT data contains some unexpected results for certain utilities. Data should be interpreted with caution.
D = distribution, G = generation, T = transmission, VIU = vertically integrated utility.

# DEBT-SERVICE COVERAGE RATIO

The debt-service coverage ratio (DSCR) is a measure of an entity's ability to produce enough cash to cover its debt payments—in other words, a measure of cash flow available to pay current debt obligations. The debt payments—that is, the total debt service—include interest payments, payments of principal, and lease payments (if applicable). The DSCR is computed using the following formula:

$$Debt\ service\ coverage\ ratio = \frac{Operating\ income\ (EBITDA) + Opening\ cash\ \&\ cash\ equivalent}{Total\ debt\ service}$$

EBITDA refers to earnings before interest, taxes, depreciation, and amortization.

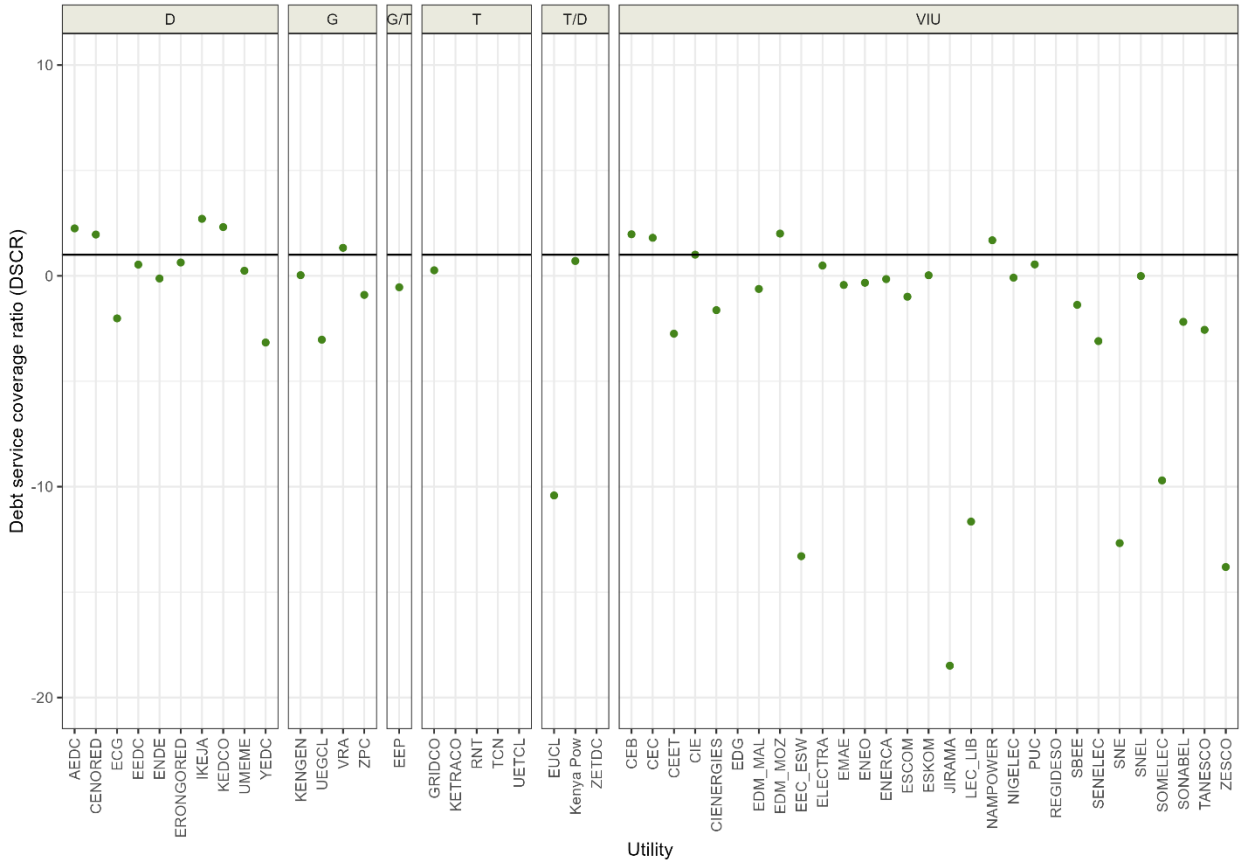
The minimum desirable value of the ratio is usually 1, which shows that the company's operating income and opening cash and cash equivalents are just sufficient to cover debt obligations that arise during the year.

However, because a company's cash flows are used for more than service debt, it is desirable for the ratio to be greater than 1. Indeed, most lenders require a debt-service coverage ratio greater than 1.5.

A DSCR of less than 1 indicates that the company's cash flow generation is not sufficient to cover its debt obligations; the company therefore usually needs additional external funding to service its debt (such as additional borrowing). If the DSCR is too close to 1, say 1.1, the entity is vulnerable, and a minor decline in cash flow could make it unable to service its debt. A DSCR that is consistently below or close to 1 indicates that the company's financial standing is not viable and the company would be in near or constant breach of its lender's covenants.

Figure 6 shows the author's visualization of DSCR for various African utilities (unbundled and vertically integrated), based on data from the World Bank's UPBEAT database. DSCRs range between -40 and +3; most utilities have negative DSCRs (with some outliers as large as -3,500), meaning that most utilities, especially the vertically integrated utilities (VIUs), are financially distressed and unable to meet their debt obligations in contrast to the unbundled utilities with private sector participation.

Figure 6: Debt-service coverage ratios of SSA utilities, 2022




Source: Author calculations based on UPBEAT database (World Bank, 2024b).
Note: UPBEAT data contains some unexpected results for certain utilities. Data should be interpreted with caution. Some utilities are excluded from the visualization to improve insights. Exclusions are thought to include errors: EDG (89.16), KETRACO (-290.32), REGIDESO (15,226.47), RNT (-146.72), TCN (2,610.08), UETCL (-3,499.88), ZETDC (-35.87). D = distribution, G = generation, T = transmission, VIU = vertically integrated utility.

# DEBT-TO-EQUITY RATIO

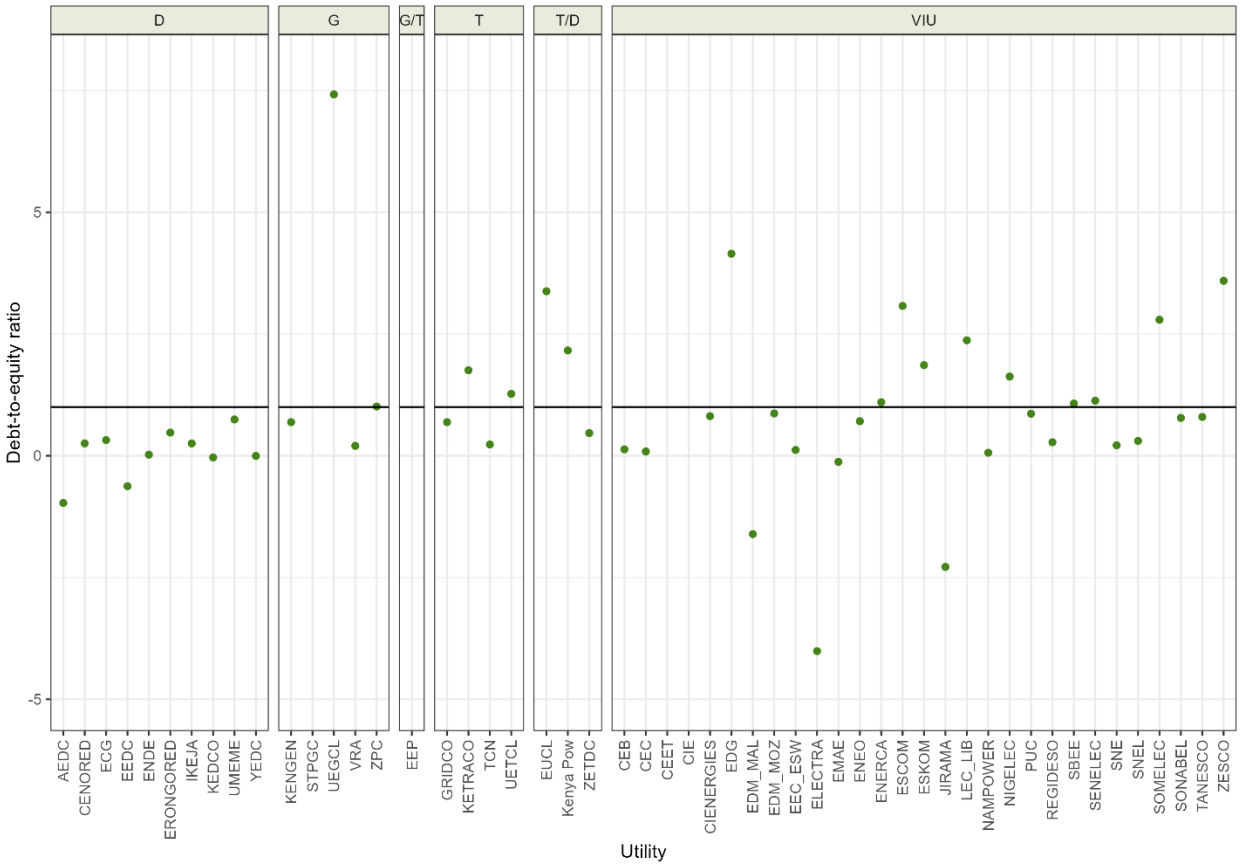
The debt-to-equity (D/E) ratio is also referred to as leverage or capital gearing. It looks at the proportions of owner's capital and borrowed capital used to finance the business. It is a measure of the degree to which a company is financing its operations through debt versus wholly owned funds. More specifically, it reflects the ability of shareholder equity to cover all outstanding debts in the event of a business downturn. Having a large proportion of borrowed capital is risky as interest and capital repayments are legal obligations that must be met if the company is to avoid insolvency. Paying an annual equity dividend, however, is not a legal obligation. Despite its risks, borrowed capital is attractive to companies as lenders accept a lower rate of return than equity investors owing to their secured positions. Companies such as energy utilities that require high investment in tangible assets are commonly highly geared. Although it is difficult to generalize about when capital gearing is too high, it is universally agreed that gearing is high when the proportion of debt exceeds the proportion of equity—that is, when the D/E ratio is greater than 100%. The D/E ratio is computed using the following formula:

$$Debt - to - equity\ ratio = \frac{Long - term\ debt}{Ordinary\ shareholder's funds}$$

A D/E ratio below 100% is considered optimum for a company, as the debt proportion of the company's long-term finance does not exceed wholly owned funds. However, it is not uncommon for companies to have a D/E ratio exceeding 100%, especially during times of low interest rates, since debt financing is considered cheaper than equity financing at such times.

A high D/E ratio is often associated with high risk; it means that a company has been aggressive in financing its growth with debt. If a lot of debt is used to finance growth, a company could potentially generate more earnings than it would have without that financing. If leverage increases earnings by a greater amount than the debt's cost (interest), then shareholders should expect to benefit. A low D/E ratio usually indicates that there is an opportunity to increase the entity's earnings by taking on additional borrowing to finance its growth. However, if the cost of debt financing outweighs the increased income generated, the company's financial health may be affected. Figure 7 shows that most VIUs have high gearing, probably from concessional loans from the government, monetary financial institutions, and multilateral development banks, and this high gearing increases their risk of default or a higher interest burden on consumers and taxpayers.

Figure 7: Debt-to-equity ratios of SSA utilities




Source: Author calculations based on UPBEAT database (World Bank, 2024b).
Note: UPBEAT data contains some unexpected results for certain utilities. Data should be interpreted with caution. Some utilities are excluded from the visualization to improve insights. Exclusions are thought to include errors: CEET (-27.6), CIE (17.69), EEP (105.1), STPGC (-20.43). D = distribution, G = generation, T = transmission, VIU = vertically integrated utility.

# CASH (SELF-FINANCING RATIO)

The self-financing ratio indicates the entity's ability to finance planned investments from its own resources. It is computed as a ratio of the entity's net cash flows from operating activities for the current year to the planned capital expenditures for the subsequent year. If the ratio is greater than 1, the entity's internally generated cash flows are sufficient to finance its capital expenditures for the subsequent period, and the disposable income of the entity may be used for purposes other than investment. This result indicates that the company has healthy operations that generate sufficient positive cash flows for the company's future investment needs. Conversely, if the value is less than 1, the investments will require funds from an external source (such as government grants or borrowing). The formula for the self-financing ratio is as follows:

$$\textbf{Self} - \textbf{financing ratio} = \frac{\textbf{Net cash flows from operating activities (current period)}}{\textbf{Planned capital expenditures (subsequent period)}}$$

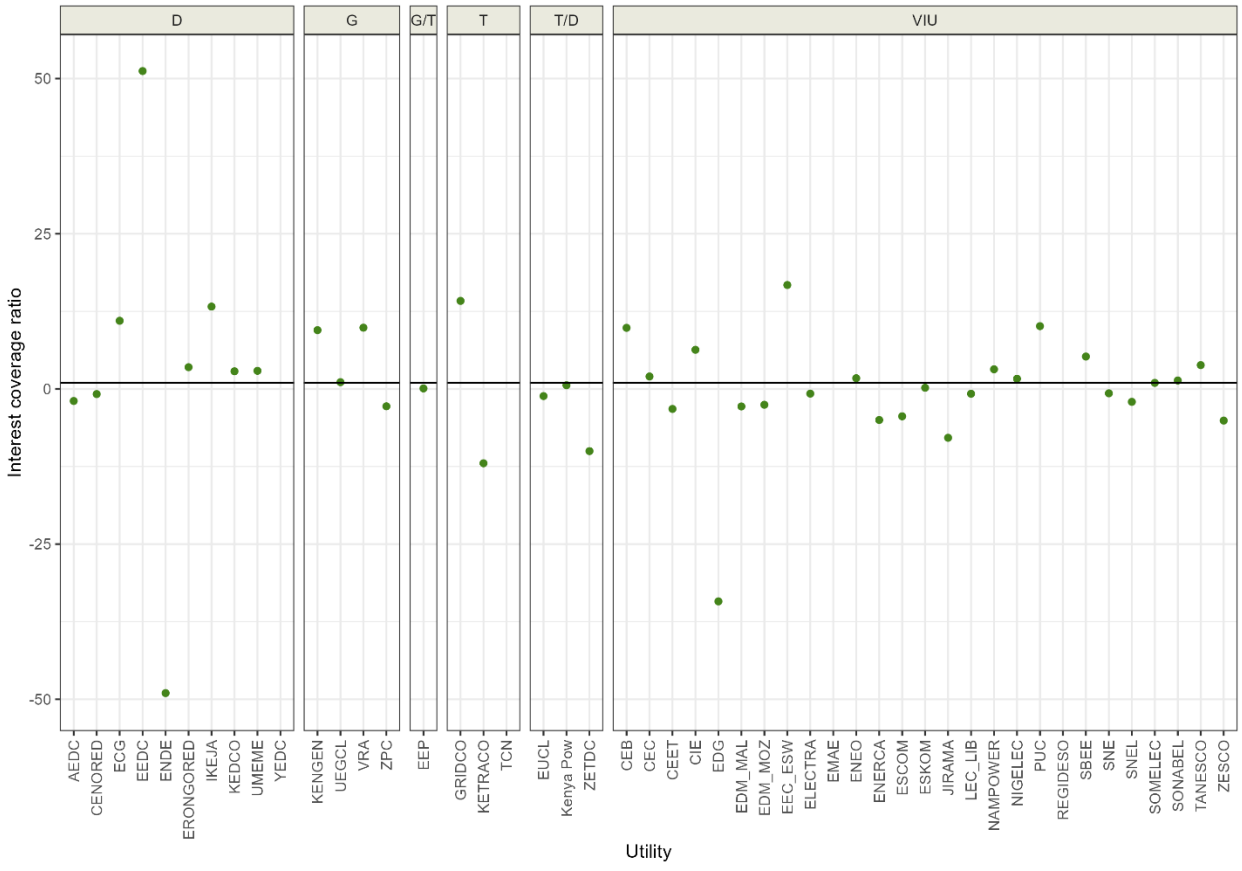
# INTEREST-COVERAGE RATIO

Interest coverage—sometimes known as income gearing—looks at how many times a company's operating profits exceed its interest payable. In other words, it measures the margin of safety a company has for paying interest on its debt during a given period. The interest-coverage ratio is used to determine how easily a company can pay its interest expenses on outstanding debt. The higher the figure, the more likely a company is able to meet its interest payments. The minimum value should be 1, and any value in excess of 4 is usually considered safe. When a company's interest-coverage ratio is 1.5 or lower, its ability to meet interest expenses may be questionable. Companies need to have more than enough earnings to cover interest payments in order to survive future (and perhaps unforeseeable) financial hardships that may arise. The formula for the interest-coverage ratio is as follows:

$$\textbf{Interest} - \textbf{coverage ratio} = \frac{\textbf{Operating income (EBITDA)}}{\textbf{Finance costs}}$$

Figure 8 shows that unbundled distribution and generation utilities generally have positive interest-coverage ratios while vertically integrated utilities generally have negative ratios and do not generate enough cash flows to cover interest obligations.

Figure 8: Interest-coverage ratios of SSA utilities



Source: Author calculations based on UPBEAT database (World Bank, 2024b).
Note: UPBEAT data contains some unexpected results for certain utilities. Data should be interpreted with caution. Some utilities are excluded from the visualization to improve insights. Exclusions are thought to include errors: EMAE (-122.45), REGIDESO (538.99), TCN (8,356.02), YEDC (-2,698.63). D = distribution, G = generation, T = transmission, VIU = vertically integrated utility.

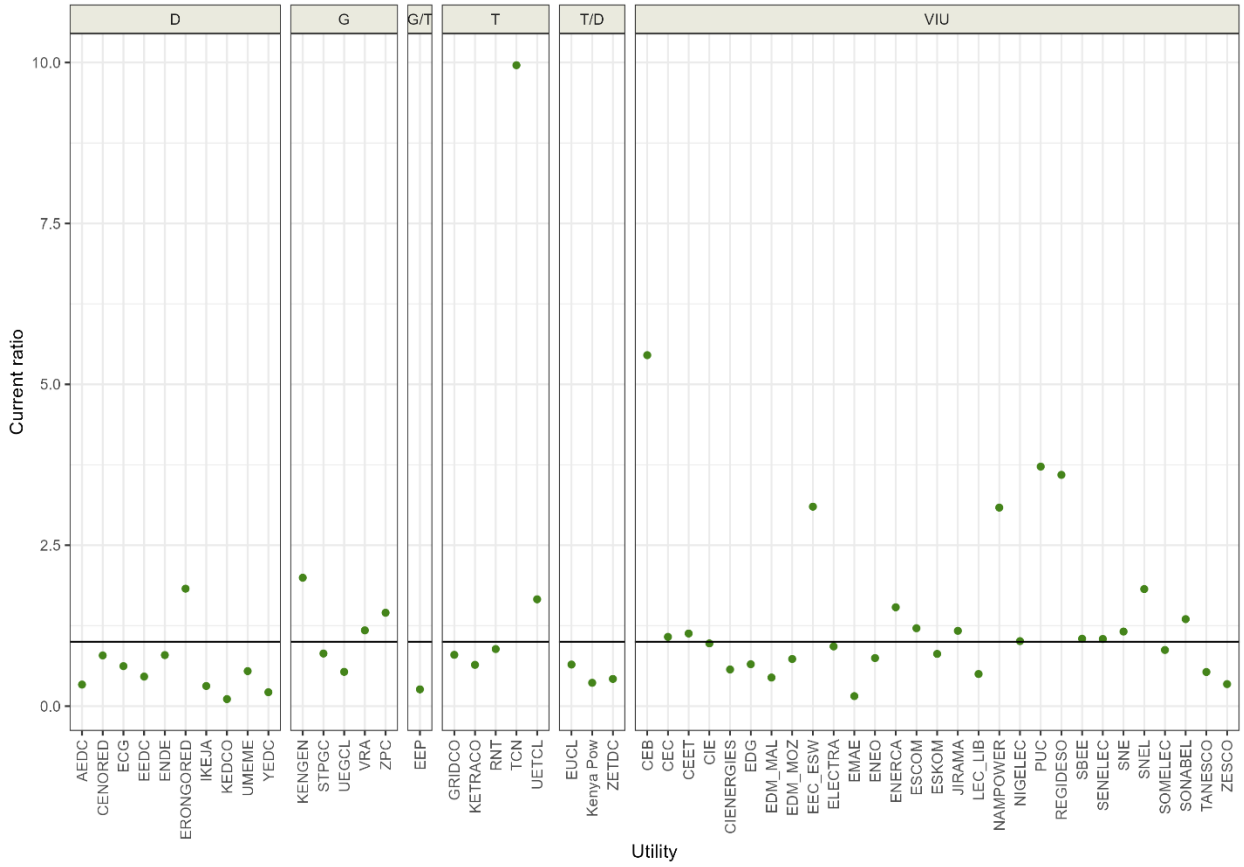
# CURRENT RATIO

The current ratio, a liquidity ratio, is a ratio of current assets to current liabilities. The minimum value of the current ratio should be 1, as this shows that the entity's current assets are sufficient to meet the company's current liabilities. The following is the formula for the current ratio:

$$\textbf{Current ratio} = \frac{\textbf{Total current assets}}{\textbf{Total current liabilities}}$$

Figure 9 shows that most utilities, regardless of the power market structure, have current ratios below 1.

Figure 9: Current ratios of SSA utilities




Source: Author calculations based on UPBEAT database (World Bank, 2024b).
Note: UPBEAT data contains some unexpected results for certain utilities. Data should be interpreted with caution. Some utilities are excluded from the visualization to improve insights. Exclusions are thought to include errors:
D = distribution, G = generation, T = transmission, VIU = vertically integrated utility.

# GROSS PROFIT MARGIN

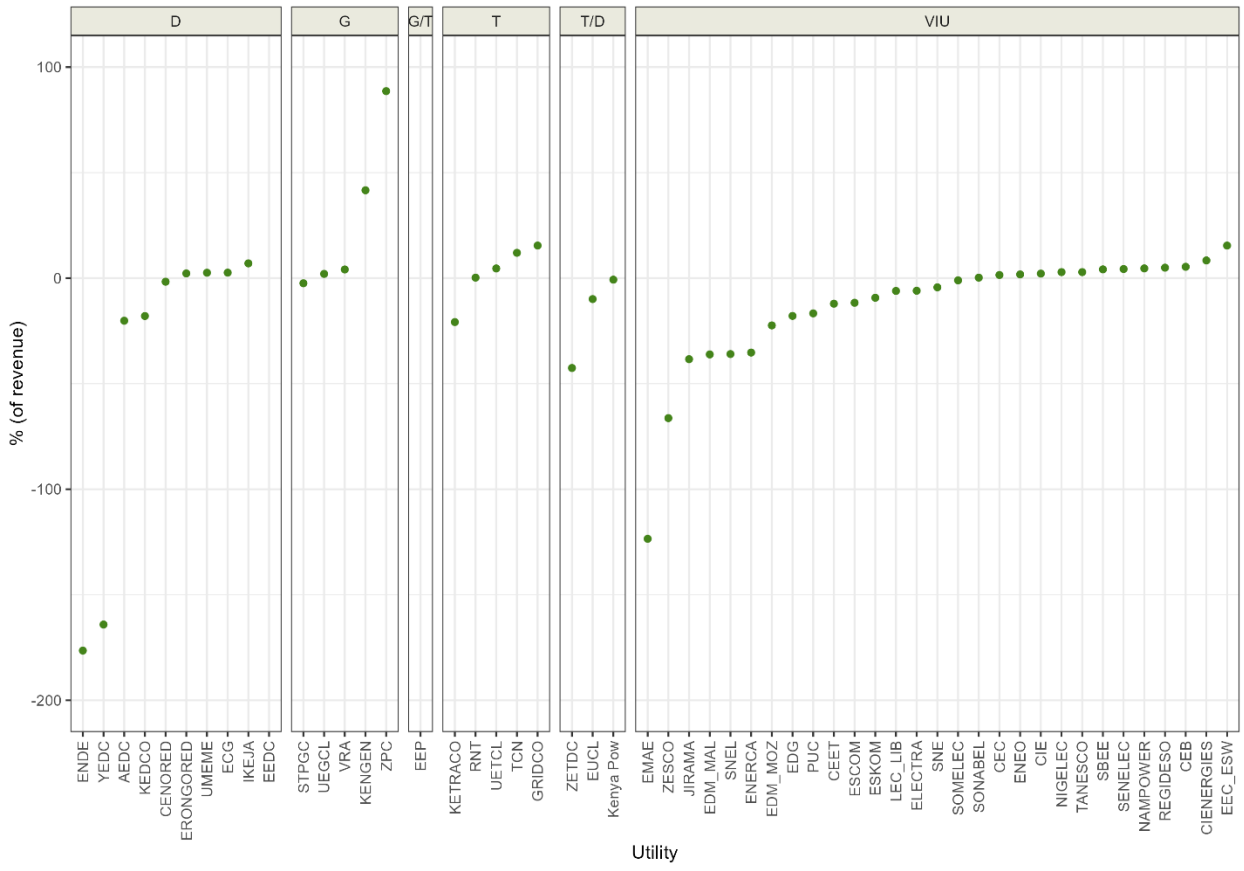
The gross profit margin is the ratio of gross profits to sales, which is an indication of how profitable the company's sales are. A low gross profit margin is undesirable, as it indicates that the company would not have sufficient gross profits to cover overhead costs and taxes and leave a profit to be distributed to shareholders. There is no universally agreed desirable level for the gross profit margin, but depending on the nature of the business, the gross profit margin should be high enough to cover overhead costs.

# NET PROFIT MARGIN (AFTER TAX)

The net profit margin is the ratio of the net profit (after tax) to sales, which is an indication of the overall profitability of the company after all expenses and taxes are deducted. There is no universally agreed desirable level for the net profit margin, as this is driven by the level of competitive return on investments sought by the shareholders and equity owners of the company. The size of investments or the regulated asset base (RAB) is determined mostly by regulators.

Figure 10 shows that most VIUs are unable to post a profit, including Eskom, the largest utility on the continent.

Figure 10: Net profit margins of SSA utilities

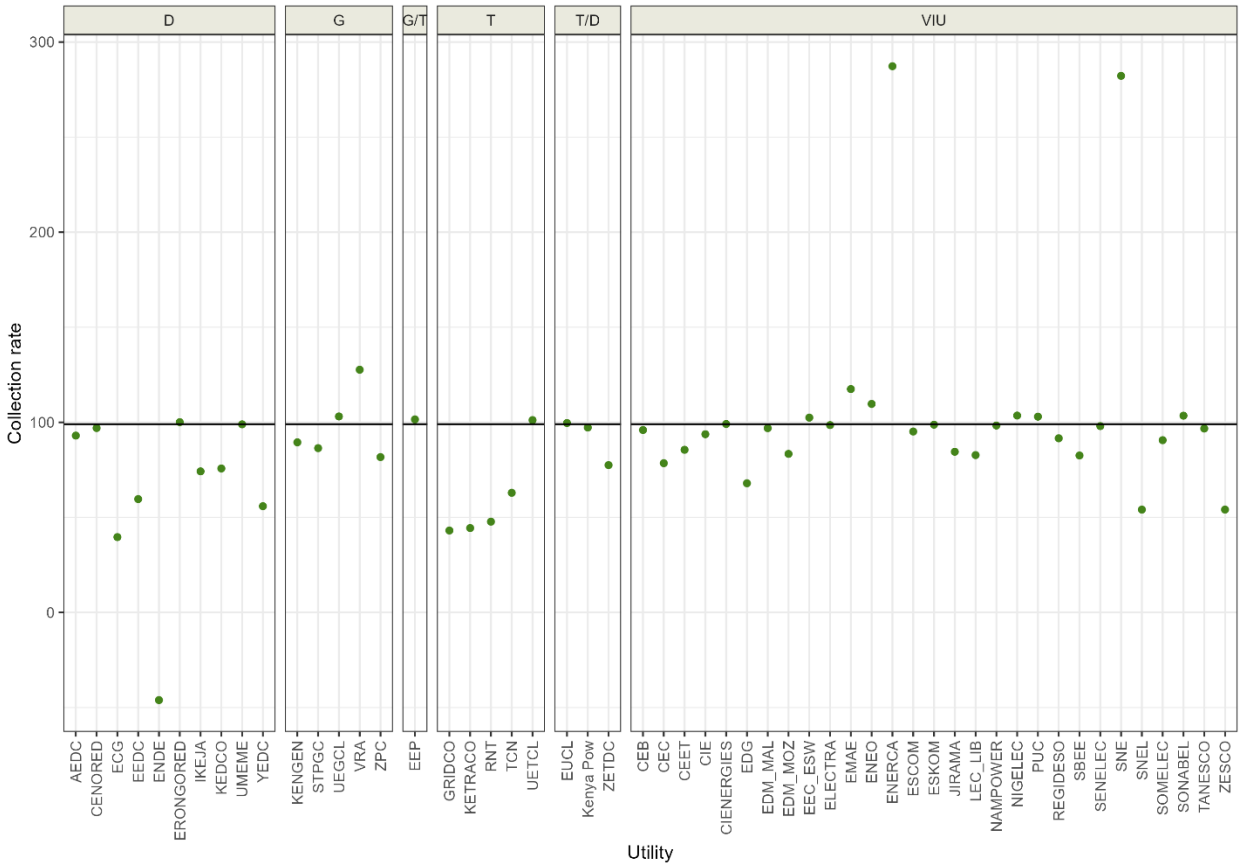


Source: Author calculations based on UPBEAT database (World Bank, 2024b).
Note: UPBEAT data contains some unexpected results for certain utilities. Data should be interpreted with caution. Some utilities are excluded from the visualization to improve insights. Exclusions are thought to include errors: EEDC (260.02). D = distribution, G = generation, T = transmission, VIU = vertically integrated utility.

# COLLECTION RATE

The collection rate is defined by the ratio of total collections (inclusive of arrears) to total billings per annum—a critical indicator for debt collection. Most utilities appear to be struggling with collection rates below the internationally accepted efficient level of 100% (Figure 11). Utilities with outlier ratios present data discrepancies, arrears collected in one particular year, or misreporting of data.

Figure 11: Collection rates of SSA utilities



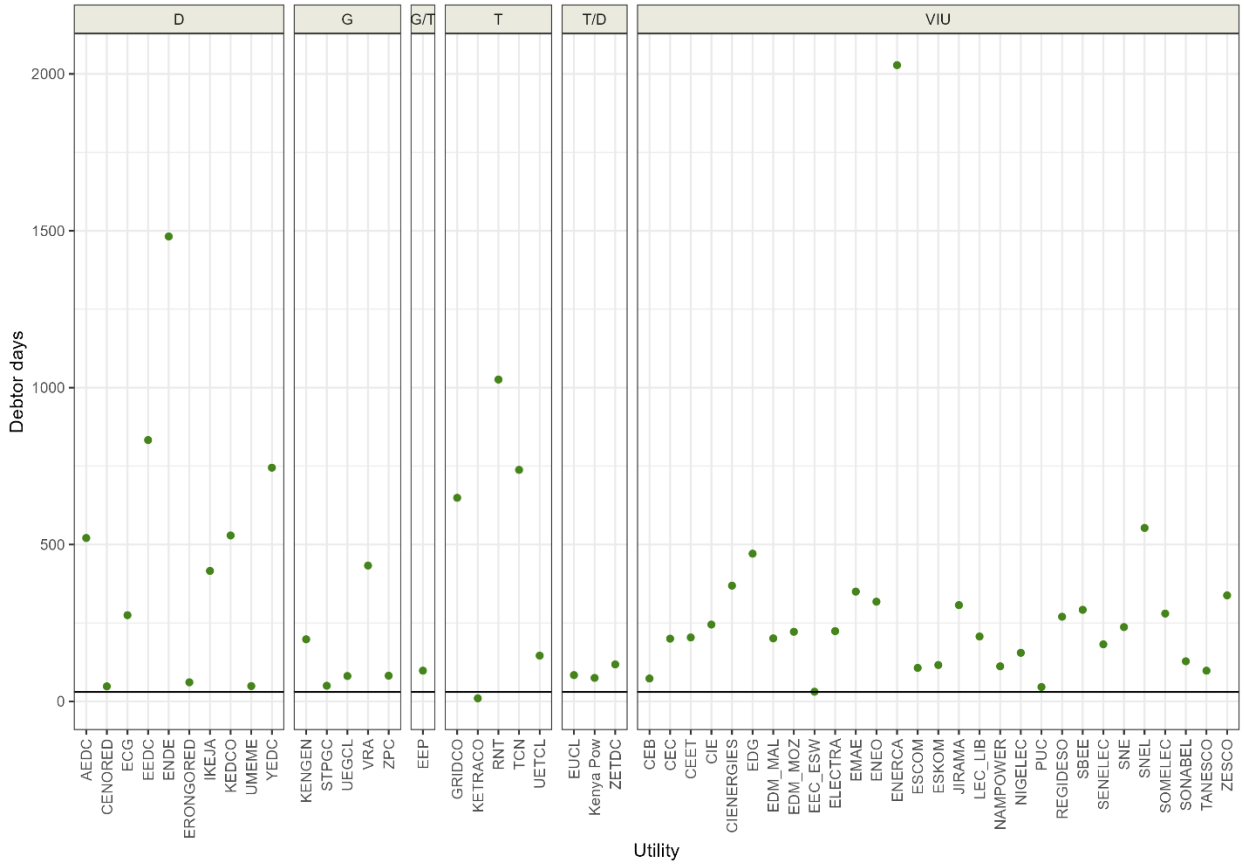

Source: Author calculations based on UPBEAT database (World Bank, 2024b).
Note: UPBEAT data contains some unexpected results for certain utilities. Data should be interpreted with caution. D = distribution, G = generation, T = transmission, VIU = vertically integrated utility.

# DEBTOR DAYS RATIO

The debtor days ratio shows how quickly a utility's debtors and customers take to pay after transactions or consumption of services. The higher the ratio, the less solvent the utility is. It is recommended good practice not to exceed 30 days, especially with available new technologies like prepaid meters for single-phase and three-phase consumers.

$$\textbf{Debtor days} = \frac{\textbf{Average debtor days}}{\textbf{Turnover or gross revenue}} \times 365$$

Figure 12: Debtor days ratios of SSA utilities



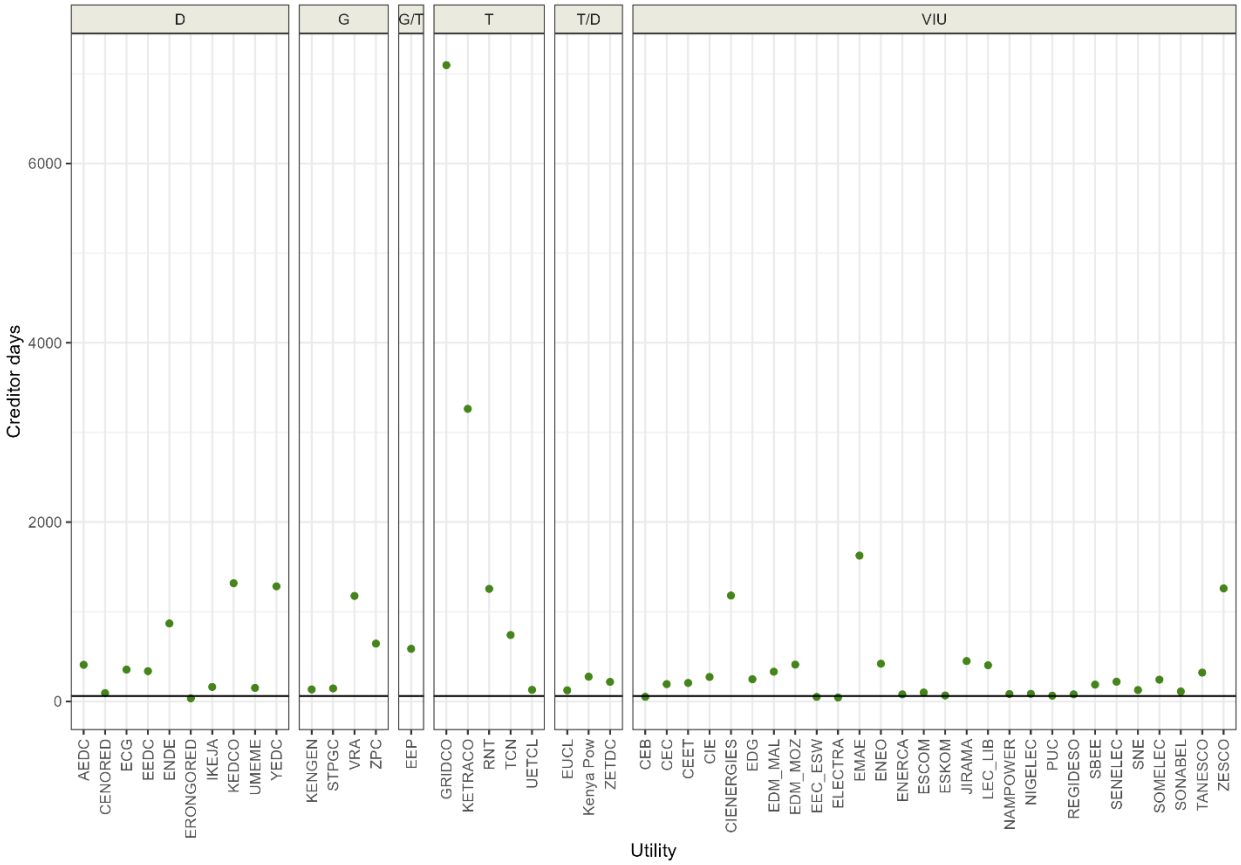

Source: Author calculations based on UPBEAT database (World Bank, 2024b).
Note UPBEAT data contains some unexpected results for certain utilities. Data should be interpreted with caution. D = distribution, G = generation, T = transmission, VIU = vertically integrated utility.

# CREDITOR DAYS RATIO

The creditor days ratio indicates how long the suppliers allow a utility not to pay for purchased goods and services.

$$Creditor\ days = \frac{Average\ creditor\ days}{Sales} \times 365$$

Figure 13: Creditor days ratios of SSA utilities




Source: Author calculations based on UPBEAT database (World Bank, 2024b).
Note: UPBEAT data contains some unexpected results for certain utilities. Data should be interpreted with caution. D = distribution, G = generation, T = transmission, VIU = vertically integrated utility.

# STRENGTHENING THE ROLE OF CIVIL SOCIETY IN UTILITY GOVERNANCE

As already discussed, the utilities continue to lumber on in spite of poor performance, and little pressure has been exerted to push them out of their comfort zones and demand adherence to hard budgets, accountability, and reliable service delivery. A structural cause of this situation is the fact that reforms have assigned the task of protecting the interests of the public to regulators, while civil society has been categorized under "customers or consumers" (Wood, 2005). The assumption of civil society's role in advocacy by regulators or corporatized utilities has profoundly diminished civil society's advocacy mandate. As a result, the coordination of civil society efforts in agitating for better service delivery in SSA has been left to the wishes of regulators, who can determine to what extent and pace civil society can influence policy and utilities' performance.

Effective regulation should make a difference in addressing the key outcomes that concern consumers: facilitating access to reliable and high-quality electricity service at competitive prices. These objectives can be achieved if regulators incentivize utilities to be efficient, financially viable, and capable of undertaking adequate and timely investments. Given that the poor performance of the power sector endures in many countries despite the existence of independent regulators, civil society should rise to complement regulator functions.

# CHANGING THE POLITICAL ECONOMY OF GOVERNANCE IN UTILITIES

Sometimes governments ignore recommendations for improving sector regulation that arise from regulatory impact assessments by research institutions, universities, and collaborating monetary financial institutions like the World Bank and the AfDB. In such cases advocacy by stakeholders (including consumer associations, shareholders, private investors, and media), and civil society becomes important.

Gómez-Ibáñez (2003) has written about the importance of building alliances that have an interest in improved regulatory performance. Specifically, this involves strengthening the interests of stakeholders through partial listings who would like to see improved performance of utilities, such as electricity consumers or investors. Improved transparency in reporting would equip relevant stakeholders to act on their improved knowledge of utilities' technical and financial performance. Both regulated entities—civil society and electricity consumers—have an interest in more predictability, transparency, and accountability in regulatory decision-making. Gómez-Ibáñez describes these processes as changing the political economy around the regulator (or, in different cases, around the utility) and the importance of stakeholders in complementing regulatory interventions.

It has been difficult to achieve positive regulatory outcomes or impacts in the form of effective rules of the game and near cost-reflective and economically efficient tariffs that enable financially viable utilities to operate more efficiently and invest adequately, thus fulfilling the needs of electricity customers for access to reliable and competitively priced electricity. This is where civil society, consumers, and ordinary citizens, as active shareholders of SOEs or mixed capital enterprises, must make a contribution.

# THE ROLE OF CIVIL SOCIETY IN IMPROVING GOVERNANCE

Privately managed or listed companies (like Umeme in Uganda and Kenya Power) face the discipline of private capital, which subjects them to rigorous scrutiny, penalties, and liabilities. They also face greater pressure for compliance regarding transparency in reporting, including on performance targets, to ensure there is a sustained positive trend in performance. State-owned enterprises, in contrast, are not subject to rigorous scrutiny, penalties, and liabilities. However, since they are taxpayer-funded companies, citizens should be seen as shareholders of these companies. When ordinary citizens, civil society, and consumers act as shareholders to hold SOEs accountable, they are exercising active citizenship.

Currently, many utilities do not hold annual general meetings (AGMs) or account to consumers in a public forum. For utilities where ownership structures do not allow for public shareholding, some utility board meetings and AGMs are held secretly. Even when AGMs are organized, the information disclosed is minimal and touches only on peripheral issues. This lack of transparency undermines good corporate governance and makes it difficult for civil society and consumers to access sufficient information to suggest ways to combat inefficiencies. Civil society should insist that SOEs have AGMs where shareholders get the chance to elect representatives to the board of directors, receive updates on annual plans and accountability mechanisms, and voice their interest in having a well-managed and profitable utility. Consumers and new stakeholders, including the media and civil society organizations, could then challenge utilities' strategies and risk mitigation measures, ask questions about activities, and hold the board and management accountable (Newell, 2008). This case, however, requires civil society to be well informed and knowledgeable about the workings of utilities.

Industry groups, consumers, and civil society groups should be accorded voting rights at board and shareholder meetings. Participation models include dedicated civil society seats, advisory committees, stakeholder engagement representations, partnership structures, and public board meetings. These examples are evident in Kenya Power's board representation as well as Umeme's shareholding, which allow civil society to demand better performance from the board and management. Board supervision roles may include the design of remuneration strategies for staff and executive management to minimize weak allocations to service delivery. Ghana's electricity regulator, PURC, has industry and customer representation on its board; these representatives help safeguard consumer interests during applications for electricity connections and in various service delivery decisions involving energy customers.

Civil society should call for rational, strict budgets relating to remuneration and incentives for the board and executives and ensure these budgets are made public. In cases where SOE executives and boards earn enormous remuneration packages and annual bonuses while the utilities they manage incur losses, requiring constant state bailouts with publicly mobilized tax resources, civil society participation would help cut this excessive fat. Excessive remuneration gives managers no incentive to become efficient, honest, or accountable and only leads to entrenchment and pilferage of cash, ultimately resulting in a growing public debt burden.

Another governance weakness of SOEs consists of incompetent boards and executives, resulting in noncredible decision-making and nontransparent practices. The appointment of these two levels of leadership is often heavily politicized. Appointees may lack industry-specific skills and the dynamism to reform, and they are often nonprofessionals and lacking in diversity. They are frequently recycled from one

SOE to another since the appointment process is usually shrouded in secrecy. Nowhere on the continent does an open, publicly advertised, and transparently vetted process exist for the selection of board members. Civil society agents should campaign for transparency and public and media access to information about SOE board and CEO appointments and highlight conflicts of interest among board members and politicians. Civil society organizations should insist on public participation in SOE board appointments and even push for legislation to make such participation compulsory. In addition, the performance measures of the board should be arranged on a contractual basis rather than through political rewards.

Civil society and individual citizens should contest irregular board and executive appointments in courts of law. Failing this, citizen activists should go to court to challenge poor SOE board appointments. They must also target failing but politically connected board members for dismissal and have incompetent, corrupt, and neglectful board members and executives declared delinquent. The Organisation Undoing Tax Abuse (OUTA) and Greenpeace in South Africa, the Africa Institute for Energy Governance (AFIEGO) in Uganda, the ACCESS Coalition in Kenya, and the Institute for Energy Security and the Consumer Protection Agency in Ghana are some of the civic groups advocating for better governance in the energy sector.

Furthermore, most of the irregular spending, wasteful spending, and corruption take place in SOEs' procurement systems. There must be greater public participation in the awarding of tenders by SOEs. Citizens, civil society, and the media should sit in on tender award deliberations. These groups must work to get corrupt companies blacklisted from tendering for government services. They should also take SOEs to court when incompetent companies have been fraudulently awarded tenders to provide services and products.

Civil society groups should call for SOEs to have forums for users, including customers, watchdogs, and community groups, who can monitor the quality of SOEs' services, determine whether they fulfill their social obligations, and hold them accountable. Innovative utilities like the National Water and Sewerage Corporation (NWSC) in Uganda, NamPower in Namibia and the Kenya Power and Lighting Company (KPLC) in Kenya have introduced citizen and consumer satisfaction surveys as part of their corporate performance contracts with governments. These go a long way toward improving customer voice and participation in utility service delivery. Such surveys and forums should be made mandatory and results made public. Sunshine regulation may follow to shame poor performers.

Regarding financial management and discipline, evidence from the World Bank UPBEAT analysis shows that only 14 utilities in 11 countries are able to post a net profit. Among these, only three utilities have achieved cost recovery of operating and debt-service costs since 2012, with a collection rate above 97% without state subsidies. Most other utilities are in dire financial distress, with their assets and resources mismanaged. South Africa, for example, Eskom's debt has ballooned to over R442.7 billion in 2023/24, of which over R70 billion is from municipality distribution utilities, which are also publicly managed with limited or no incentives for hard budget controls. Its profitability, solvency, and liquidity ratios are of great concern and unsustainable. Even when utilities promise to turn around their performance, they often do not. Civil society and consumers, therefore, should demand solid turnaround plans that incorporate governance reforms, including private sector participation, enforcement of hard budgets, anticorruption measures, recruitment of competent staff with appropriate skills, and incentive arrangements that promote commercial behavior. This would change the political economy of utilities.

# A CALL TO ACTION AND AGENDA FOR CIVIL SOCIETY ENGAGEMENT WITH UTILITIES

It is urgent that civil society organizations step up their involvement in addressing the poor governance and performance of utilities in Africa. Despite historical under-involvement, CSOs are uniquely positioned to drive meaningful change in utility governance and performance. A call to action and an agenda for their future engagement would include the following:

- Awareness campaigns: Launch educational initiatives to inform citizens about the critical role of power utilities in national development and the implications of poor governance.
- Advocacy efforts: Lobby governments and regulatory bodies for increased transparency, accountability, and public participation in utility decision-making processes via well-structured and scrutinized avenues like AGMs. Advocacy should aim to restructure the ownership models of utilities to allow greater private sector participation in ownership to establish mixed capital enterprises (in shareholding) and independent representation at the board level to demand better performance.
- PPA transparency and generation tariff disclosures: Demand access to PPAs, monitor the risk areas listed in this report, and publicly disclose generation tariffs on regulator websites. This will help to enhance market efficiency by providing relevant information to all stakeholders including investors, lenders, regulators, and consumers.
- Stock listings: Call for increased listing of companies on the securities exchange, which would require companies to alter their governance arrangements, allow more capital injections from the private sector and allow for greater discipline of private capital and rigorous scrutiny in performance reporting.
- Expanded concession models: Lobby for expanded concession models in electricity supply as these typically minimize conflicts of interest with governments and allow for focused utility management and performance.
- Stakeholder alliances: Forge partnerships with consumer associations, media outlets, and industry groups to amplify advocacy efforts and apply collective pressure on utilities and regulators.
- Legal action: Use legal mechanisms to challenge irregular board appointments, corruption, and mismanagement within utilities, ensuring accountability at all levels.
- Capacity building: Provide training and resources to empower citizens to actively participate in utility governance, fostering a culture of accountability and civic engagement.
- Support for regulator functions: Complement regulator functions to demand greater performance from utilities in instances where regulatory impact assessments are ignored.

In sum, CSOs must seize this opportunity to catalyze positive change in the energy sector, promoting sustainable development and ensuring equitable access to reliable and competitively priced electricity for all.

# CONCLUSION AND RECOMMENDATIONS

This primer has provided an overview and foundational knowledge about the enduring challenges of utilities in sub-Saharan Africa and power sector reform options that have been used to address these failures. It presents lessons on how reforms can be better designed to improve stakeholder buy-in and outcomes of reforms and identifies entry points where civil society organizations could exert a positive influence. Additionally, the report offers a primer for CSOs in interpreting and using financial data to assess utility viability and sustainability. From this analysis, the following holistic recommendations and conclusions emerge:

- **Structural and market reforms need to complement new regulatory institutions to achieve improvements in power sector performance**. Corporatization of state-owned utilities—where professional boards are appointed, codes of corporate governance are adopted, and utilities become subject to business law and internationally recognized accounting standards—will not only increase transparency and accountability but also create incentives for improved performance. Performance contracts between shareholder ministries and the boards of power utilities, and between the boards and senior management, create further incentives for better performance, although principal–agent challenges can arise. Effective supervisory and monitoring agencies and capabilities are required to reduce information asymmetry.
- **One of the most effective complementary reforms and interventions to improve utility performance is to change the political economy around utilities.** This requires civil society organizations, consumer groups, the media, and the public to demand greater transparency and accountability, enabled by a precise understanding of key financial measures as discussed in this report
- **Structural reforms are further powerful interventions to alter the governance arrangements and incentives of utilities and regulation**. Vertical and horizontal unbundling removes conflicts of interest and separates the potentially competitive elements of the power sector (such as generation and retail) from those elements that tend to be natural monopolies (such as transmission and distribution wires). Horizontal unbundling of generation and retail creates more opportunities for competition, potentially improving efficiencies in operations and capital execution, to the benefit of consumers, and such unbundling must be sustained and supported. Regulation should complement structural reform by providing the right incentives to private capital, de-risking investments, and minimizing information asymmetry between utilities, consumers, industry, and principals, while also allowing for the setting of cost-reflective tariffs to help utilities achieve financial viability.
- **State-owned utilities should be exposed to private capital markets to create further incentives for performance improvements**. Creditworthy public enterprises can then access private debt markets. These so-called mixed capital enterprises are state owned but access private capital markets—for example, through bond issues. These utilities should then be subject to debt covenants and credit ratings, creating further imperatives for management to improve performance.
- **To complement structural reforms, civil society actors should insist that SOEs have annual general meetings where they can elect representatives on the board of directors**, get regular updates on annual plans and accountability mechanisms, and voice their interest in having a well-managed and profitable utility.
- **Industry groups, consumers, and civil society groups should be accorded voting rights at board and shareholder meetings.**
- **Civil society should call for rational, strict, hard budgets relating to remuneration and incentives for the board and executives and ensure these budgets are made public.**
- **Civil society agents should campaign for transparency and public and media access to information about SOE board and CEO appointments and highlight conflicts of interest among board members and politicians,** in order to deal with incompetent boards and executives who engage in noncredible decision-making and nontransparent practices. Civil society organizations should insist on public

participation in SOE board appointments and even push for legislation to make such participation compulsory. In addition, the performance of the board should be arranged on a contractual basis other than political rewards.

- **Civil society and individual citizens should contest irregular board and executive appointments in courts of law.** Failing this, citizen shareholder activists should go to court to challenge such poor SOE board appointments.
- **To curb corruption and irregular and wasteful spending, greater public participation is needed in the awarding of tenders by SOEs. Citizens, civil society, and the media should sit in on tender award deliberations**. Citizens, civil society, and the media must work to get corrupt companies blacklisted from tendering for government services.
- **To address financial mismanagement in utilities, civil society and consumers should demand solid turnaround plans that incorporate governance reforms.** Such reforms, including private sector participation, enforcement of hard budgets, anticorruption measures, recruitment of competent leaders and staff with relevant skills, and introduction of incentive arrangements that promote commercial behavior, will change the political economy of utilities.
- **Civil society groups should call for SOEs to have user forums that include customers, watchdogs, and community groups**. These forums can be used to monitor the quality of SOEs' services, determine whether they fulfill their social obligations, and hold them accountable.
- Regarding the energy transition to the 'utility-of-the-future', this report makes four recommendations:
    - **First, technological integration is key**. The emergence of renewable energy sources such as solar, wind, and hydroelectric power, alongside advances in energy storage technologies, demand response systems, and smart-grid infrastructure, presents opportunities for diversifying the energy mix to realize cost efficiencies and enhancing grid flexibility for consumers. **Governments should prioritize investments in research and development to drive innovation and reduce the costs associated with these technologies, making them more accessible and competitive in the market**. Financial innovations and the increasing adoption of bitcoin and blockchain technologies are increasing avenues through which utility infrastructure systems can access private sector financing, and these need to be supported.
    - **Second, regulatory frameworks must evolve to accommodate the changing landscape of the power sector**. This involves streamlining permitting processes for renewable energy projects, implementing market mechanisms that incentivize clean energy deployment, and ensuring grid operators have the flexibility to effectively manage the intermittent nature of renewables. Moreover, civil society groups should urge regulatory bodies to promote competition and remove barriers to entry for new market players, fostering a dynamic ecosystem that encourages innovation and efficiency.
    - **Third, governance improvements are crucial for fostering transparency, accountability, and stakeholder engagement in the decision-making processes of the power sector in transition**. This is especially the case as various stakeholders see their incumbent roles changing or threatened and others perceive new opportunities. Civil society should demand that governments establish clear policy objectives and frameworks that align with climate targets, enable innovation, and prioritize the interests of consumers and the environment.
    - **Fourth, Civil society intervention plays a pivotal role in holding governments and industry stakeholders accountable for their actions.** By raising awareness, mobilizing public support, and advocating for policies that promote sustainability and social equity, civil society organizations can drive positive change and influence decision-making processes in the power sector. Encouraging public participation in energy planning and decision-making through community-owned renewable energy projects and participatory governance structures can also foster a sense of ownership and empowerment among citizens.

In conclusion, the transition to the utility of the future requires a collaborative effort involving governments, industry stakeholders, and civil society. By embracing technological innovation, reforming regulatory

frameworks, and enhancing governance mechanisms, these actors can together develop a resilient, sustainable, and inclusive energy system that meets the needs of current and future generations.

# APPENDIX: USING THREE-WAY FINANCIAL STATEMENTS AS AN ADVOCACY TOOL FOR IMPROVING PERFORMANCE

Given the state of utilities described above, why do we care about finances? How can advocacy groups use a utility's financial information to demand improvements in a utility's transparency and service delivery? Most utilities currently try to disclose their financial statements based on either a statutory requirement set by the government or governance reporting controls required by shareholders. However, this disclosure often takes place too late, when the public interest in a year's performance results has waned, or the disclosure is made to a small, closed group of stakeholders who have an interest in the utility and not to the public, specifically to avoid public criticism. Advocacy groups need to push for timely disclosure of financial statements to the wider public.

When people or consumers talk about the financials of a utility or business, they are usually referring to the three main sets of financial statements: the balance sheet, the income statement or profit and loss account, and the cash flow statement, also referred to as a cash waterfall. The three sets help consumers/customers and investors assess the financial health of the utility by shedding light on the following questions:

1. Is the operator commercially viable?
2. Is the operator making and keeping too much money?
3. Is the operator making the required investments?
4. Is the operator following sustainable investment strategies?
5. Is the operator efficient?

Ultimately, the answers to these questions will shed light on whether management and governance arrangements, plus controls on them, work well or are in failure mode. Figure 14 shows a simplistic presentation of a balance sheet, cash flow statement, and income statement.

Figure 14: Simple illustration of three-way linkages across balance sheet, cash flow, and income statement

| BALANCE SHEET | |
|---|---|
| **Current assets** | |
| Cash | 5.00 |
| Accounts receivable | 9.25 |
| Total current assets | 14.25 |
| **Non-current assets** | |
| PP&E | 80.00 |
| Total assets | 94.25 |
| **Liabilities** | |
| Accounts payable | 2.25 |
| Term loan | 45.00 |
| Total liabilities | 47.25 |
| **Equity** | |
| Share capital | 40.00 |
| Retained earnings | 7.00 |
| Total equity | 47.00 |
| **Liabilities plus equity** | 94.25 |

| CASH FLOW STATEMENT | |
|---|---|
| Net income | 7.00 |
| (Increase)/Decrease in accounts receivable | (9.25) |
| Increase/(Decrease) in accounts payable | 2.25 |
| **Net cash from operations** | – |
| Equipment purchase | (80.00) |
| **Net cash from investment** | (80.00) |
| Owner's investment | 40.00 |
| Loan received | 45.00 |
| **Cash available from financing** | 85.00 |
| **Net cash movement** | 5.00 |
| Opening cash balance | – |
| (+) Net cash flow | 5.00 |
| **Closing cash balance** | 5.00 |

| INCOME STATEMENT | |
|---|---|
| Revenue | 110.00 |
| Cost of goods sold | (75.00) |
| Gross margin | **35.00** |
| Other costs and overhead | (23.00) |
| EBITDA | **12.00** |
| Book depreciation | – |
| EBIT | **12.00** |
| Interest payable | (5.00) |
| Net income | **7.00** |

# BALANCE SHEET

The balance sheet (statement of financial position) in principle requires that assets be equal to liabilities plus equity. Assets are what the operator owns, while liabilities belong to third parties who have a legal claim to the assets. The balance sheet helps assess whether the operator/utility is solvent. Is it liquid? Investing? Growing? The balance sheet also measures stocks at a particular point in time. It is preferable for companies to have more assets than liabilities. More liabilities are an indicator of greater financial risk. Figure 15 shows an example of a balance sheet.

Notes to balance sheets and income statements can also help identify trends in the movements in values of assets or liabilities as either increasing or decreasing from one year to another (see Figure 16). These notes may not be readily evident to non-accountants or financial experts, but they are profoundly important as they can reveal vital details about the health of a utility.

Figure 15: Sample balance sheet

| | Note | 2008 | 2007 |
|---|---|---|---|
| | | $ thousand | |
| **Assets** | | | |
| **Non-current assets** | | 121,815 | 106,581 |
| Property, plant, and equipment | 6 | 95,792 | 76,211 |
| Intangible assets | 7 | 457 | 410 |
| Investment in equity accounted investees | 8 | 95 | 96 |
| Investment in subsidiaries | 9 | 2,341 | 2,358 |
| Future fuel supplies | 10 | 2,585 | 2,557 |
| Investment in securities | 12 | 6,136 | 15,115 |
| Derivatives | 12 | 13,985 | 9,294 |
| Receivables | 12 | 424 | 540 |
| **Current assets** | | 45,857 | 31,809 |
| Loans to subsidiaries | 9.1 | 530 | 746 |
| Inventories | 17 | 3,628 | 3,499 |
| Finance lease receivables | 12 | 10 | 15 |
| Trade and other receivables | 12 | 5,332 | 4,566 |
| Taxation | | 50 | – |
| Payments made in advance | 19 | 4,197 | 524 |
| Investment in securities | 12 | 8,379 | 9,892 |
| Financial trading assets | 12 | 2,017 | 2,897 |
| Cash and cash equivalents | 12 | 10,322 | 7,656 |
| Embedded derivatives | 12 | 2,260 | 1,803 |
| Derivatives held for risk management | 12 | 9,132 | 211 |
| **Total assets** | | 167,672 | 138,390 |

| | Note | 2008 | 2007 |
|---|---|---|---|
| | | $ thousand | |
| **Liabilities** | | | |
| **Non-current liabilities** | | 72,451 | 60,875 |
| Debt securities issued | 12 | 39,788 | 34,561 |
| Borrowings | 12 | 1,224 | 1,063 |
| Derivatives | 12 | 6,024 | 2,283 |
| Deferred tax liabilities | 11 | 8,322 | 7,081 |
| Deferred income | 21 | 4,913 | 3,863 |
| Retirement benefit obligations | 22 | 5,286 | 4,922 |
| Provisions | 23 | 5,540 | 6,026 |
| Finance lease liabilities | 12 | 678 | 656 |
| **Current liabilities** | | 32,891 | 21,934 |
| Amounts owing to subsidiaries | 9.2 | 1,300 | 820 |
| Trade and other payables | 12 | 11,160 | 8,061 |
| Taxation | | – | 437 |
| Debt securities issued | 12 | 2,491 | 583 |
| Borrowings | 12 | 7,465 | 4,164 |
| Financial trading liabilities | 12 | 4,087 | 3,701 |
| Derivatives | 12 | 1,482 | 592 |
| Deferred tax liabilities | 11 | 3,300 | 2,213 |
| Deferred income | 21 | 269 | 193 |
| Retirement benefit obligations | 22 | 161 | 144 |
| Provisions | 23 | 1,176 | 1,026 |
| **Total liabilities** | | 105,342 | 82,809 |
| **Total equity** | | 62,330 | 55,581 |
| **Total equity and liabilities** | | 167,672 | 138,390 |

Figure 16: Balance sheet notes (showing movements in values)

| | Cost | Accumulated depreciation and impairment losses | Carrying value |
|---|---|---|---|
| | $ thousands | | |
| **Property, plant, and equipment** | | | |
| **2008** | | | |
| **Owned assets** | | | |
| Land | 371 | – | 371 |
| Buildings and facilities | 3,066 | (1,301) | 1,807 |
| Plant-Generation | 64,767 | (27,873) | 36,894 |
| -Transmission | 13,706 | (5,631) | 8,075 |
| - Distribution | 39,121 | (15,847) | 23,274 |
| - Regular distribution | 26,301 | (9,645) | 16,656 |
| - Electrification | 12,820 | (6,202) | 6,618 |
| - Test, telecoms, and other plant | 449 | (305) | 144 |
| Equipment and vehicles | 5,198 | (3,010) | 2,188 |
| Total in commission | 126,678 | (53,967) | 72,753 |
| Works under construction | 22,029 | – | 22,029 |
| Construction materials | 573 | – | 573 |
| | 149,280 | (53,967) | 95,355 |
| ***Leased assets*** | | | |
| Mining assets | 573 | (296) | 277 |
| Plant | 12 | (3) | 9 |
| Equipment and vehicles | 249 | (98) | 151 |
| | 834 | (397) | 437 |
| Total property, plant, and equipment | 150,114 | (54,364) | 95,792 |

| | Cost | Accumulated depreciation and impairment losses | Carrying value |
|---|---|---|---|
| | $ thousands | | |
| **Property, plant, and equipment** | | | |
| **2007** | | | |
| **Owned assets** | | | |
| Land | 281 | – | 281 |
| Buildings and facilities | 2,831 | (1,225) | 1,606 |
| Plant-Generation | 56,732 | (26,779) | 29,953 |
| -Transmission | 12,520 | (5,222) | 7,298 |
| - Distribution | 35,048 | (14,309) | 20,739 |
| - Regular distribution | 23,271 | (8,614) | 14,657 |
| - Electrification | 11,777 | (5,695) | 6,082 |
| - Test, telecoms, and other plant | 437 | (284) | 153 |
| Equipment and vehicles | 4,664 | (2,876) | 1,878 |
| Total in commission | 112,513 | (50,695) | 61,908 |
| Works under construction | 13,562 | – | 13,562 |
| Construction materials | 331 | – | 331 |
| | 126,406 | (50,695) | 75,801 |
| ***Leased assets*** | | | |
| Mining assets | 573 | (281) | 292 |
| Plant | 12 | (2) | 10 |
| Equipment and vehicles | 197 | (89) | 108 |
| | 782 | (372) | 410 |
| Total property, plant, and equipment | 127,188 | (51,067) | 76,211 |

Figure 17: Notes to the balance sheet

| | **Carrying value** | **Fair value** | Carrying value | Fair value |
|---|---|---|---|---|
| | **2008** | **2008** | 2007 | 2007 |
| | *$ thousands* | | | |
| **Debt securities issued** | **42,279** | 40,889 | 35,144 | 40,345 |
| Bonds | **32,703** | 30,667 | 27,219 | 30,120 |
| Electrification participation notes | **1,351** | 1,418 | 1,467 | 1,597 |
| Promissory notes | **117** | 161 | 100 | 165 |
| Zero coupon bonds | **1,664** | 2,865 | 1,471 | 3,742 |
| Foreign bonds | **6,444** | 5,778 | 4,887 | 4,721 |
| **Maturity analysis** | **42,279** | **40,889** | 35,144 | 35,144 |
| Non-current | **39,788** | 39,254 | 34,561 | 39,760 |
| Current | **2,491** | 1,635 | 583 | 585 |

# INCOME STATEMENT

The income statement (statement of comprehensive income) can be used to enable consumers to ask management questions like, How much money is the operator/utility making? It shows the operating revenue, operating expenses, depreciation, other expenses, and profit or loss for a given year. Operating revenue is revenue that the operator actually received. Therefore, the income statement can be used to answer the question, How much money is the utility spending on operations, taxes, and financing costs, and what profit is made in a particular year? Unlike the balance sheet, the income statement measures inflows of income over a particular time period. Figure 18 shows a sample income statement, and Figure 19 shows how notes to financial statements can be used to interpret the financial health of a utility.

Figure 18: Sample income statement

| | | 2008 | 2007 |
|---|---|---|---|
| | Note | $ thousands | |
| **Continuing operations** | | | |
| Revenue | 27 | 43,584 | 39,399 |
| Other income | 28 | 1,744 | 1,315 |
| Embedded derivatives | 29 | (729) | (862) |
| Primary energy | | (18,314) | (13,040) |
| Employee benefit expense | 30 | (10,576) | (8,997) |
| Depreciation and amortization expense | 31 | (4,118) | (4,597) |
| Net impairment (loss)/reversal | 32 | (440) | (50) |
| Other operating expenses | 33 | (8,019) | (7,353) |
| Operating profit before net fair value (loss)/gain on embedded Derivatives and net finance cost | | 3,132 | 5,815 |
| Net fair value (loss)/gain on embedded derivatives | | (149) | 4,131 |
| Operating profit before net finance cost | | 2,983 | 9,946 |
| Net finance cost | | (2,004) | (1,509) |
| - Finance income | 34 | 2,811 | 2,814 |
| - Finance cost | 35 | (4,185) | (4,323) |
| Share of profit of equity accounted investees | 8 | – | – |
| Profit before tax | | 979 | 8,437 |
| Income tax expense | 36 | 354 | (2,407) |
| Profit for the year from continuing operations | | 1,333 | 6,030 |
| **Discontinued operations** | | | |
| Loss for the year from discontinued operations | 20 | – | – |
| Profit for the year | | 1,333 | 6,030 |
| Attributable to: | | | |
| Equity holder of the company | | 1,333 | 6,030 |
| Minority interest | | - | - |
| | | 1,333 | 6,030 |

Figure 19: Income statement notes showing annual movements in values

| | Note | Company | |
|---|---|---|---|
| | | **2008** | 2007 |
| | | **$ thousands** | |
| **Finance income** | | | |
| Held-to-maturity investments | | 211 | 309 |
| Loans and receivables | | 1,206 | 975 |
| Interest income | | 1,098 | 802 |
| Exchange differences | | 108 | 173 |
| Available-for-sale financial assets | | 1,246 | 1,337 |
| Interest received from subsidiaries | | 123 | 117 |
| Interest earned on finance lease receivables | | 25 | 76 |
| | | 2,811 | 2,814 |
| **Finance cost** | | | |
| Debt securities issued | | 3,587 | 3,325 |
| Interest expense | | 3,584 | 3,325 |
| Exchange differences | | 1,550 | 1,138 |
| Cash flow hedges recycled to profit or loss | | (1,547) | (1,138) |
| Borrowings | | 439 | 106 |
| Interest expense | | 115 | 100 |
| Exchange differences | | 324 | 6 |
| Amounts capitalized to property, plant, and equipment | 6 | (727) | (174) |
| Unwinding of discount on provisions | | 1,231 | 814 |
| Post-retirement medical benefits | 22 | 387 | 368 |
| Provisions | 23 | 844 | 446 |
| Interest paid to subsidiaries | | 173 | 140 |
| Interest paid on finance leases | | 112 | 112 |
| | | 4,815 | 4,323 |

## CASH FLOW STATEMENT

The cash flow statement shows cash inflows and outflows by source. It is similar to the income statement but considers only income and expenses that are cash related; it does not include depreciation. It is an important tool as it enables us to ask questions like, Where does the operator's money come from, and where does it go? A cash flow statement shows how well a business uses its cash and how healthy its operations are. A good cash flow analysis will tell customers and civil society whether a company can pay its bills on time and whether it has enough cash to sustain operations in the future.

Both the income statement and the cash flow statement are important to give a sense of whether the utility's operations are generating cash. Cash is important for investment. Stakeholders therefore can use these two statements to hold utility executives accountable by demanding answers to questions like the following:

- Is the utility efficient?
- How much cash could become available if the utility improved efficiency?
- Are operations viable in the long run?

By looking at the cash flow statement, consumers should be able to ask about the following:

- Cash from operations
    - Is the business healthy?
    - Is the business generating cash for its growth?
- Cash from investment
    - Is the operator investing for the future?
- Cash from financing
    - How dependent is the operator on outside financing?

Figure 20 is a simplistic example of a cash flow statement and illustrates movements in flows between two years.

Figure 20: Sample cash flow statement

| | Note | 2008 | 2007 |
|---|---|---|---|
| | | $ thousands | |
| **Cash flows from operating activities** | | | |
| Cash generated from operations | 37 | 6,960 | 14,187 |
| Net cash flows from financial trading assets | | 1,204 | 8,175 |
| Net cash flows from financial trading liabilities | | 65 | (8,285) |
| Net cash flows from derivative instruments | | (347) | (79) |
| Income taxes paid | | (417) | (1,377) |
| Net cash from operating activities | | 7,465 | 12,621 |
| **Cash flows from investing activities** | | | |
| Proceeds from disposal of property, plant, and equipment | | 145 | 151 |
| Expenditure on property, plant, and equipment | | (23,891) | (17,088) |
| Expenditure on intangible assets | | (208) | (168) |
| Expenditure on future fuel supplies | | (658) | (382) |
| Subsidiary companies | | 17 | (200) |
| Non-current trade and other receivables | | (5) | 8 |
| Decrease (increase) in financial lease receivables | | 126 | (8) |
| Loans granted to related parties—subsidiaries | | 216 | 1,565 |
| Dividends received | | 800 | 202 |
| Increase in long-term trade and other payables | | 256 | 420 |
| Net cash used in investing activities | | (23,202) | (15,500) |
| **Cash flows from financing activities** | | | |
| Debt raised | | 17,060 | 13,633 |
| Debt securities borrowed | | 11,327 | 12,197 |
| Borrowings | | 5,733 | 1,436 |
| Debt repaid | | (9,073) | (5,166) |
| Debt securities issued | | (6,414) | (2,032) |
| Borrowings | | (2,659) | (3,134) |

| | | | |
|---|---|---|---|
| Decrease (increase) in investment in securities | | 10,215 | (4,942) |
| Increase in amounts owing to subsidiaries | | 480 | 79 |
| (Decrease) increase in finance lease liabilities | | 30 | 52 |
| Interest received | | 2,939 | 1,909 |
| Interest paid | | (3,248) | (2,095) |
| Net cash from financing activities | | 18,403 | 3,470 |
| Net cash increase (decrease) in cash and cash equivalents | | 2,666 | 591 |
| Cash and cash equivalents at beginning of the year | | 7,656 | 7,065 |
| Cash and cash equivalents at end of the year | 12.1 | 10,322 | 7,656 |

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