Utility Performance and Behavior in Africa Today (UPBEAT)

Update Briefing

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- **This report was drafted by a team comprising David Loew, Arun Singh, and Fabrice Karl Bertholet from the World Bank and Stephen Nash, Tim Morgan Boyd, and Katrina Dasalla from Kuungana Advisory.** The work was carried out under the leadership of Julia Fraser. Data collection and validation was carried out by Alessandra Di Renzo, Rebeca De Bakker Doctors, Muna Abucar Osman, and Irene Hu, who also provided valuable editorial contributions.
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- **This report compliments the publicly available UPBEAT dashboard.** The data platform can be accessed using the following link: https://utilityperformance.energydata.info/.

CONTENTS

Key messages

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KEY MESSAGES

- **This report presents summary findings from an update of the UPBEAT database.** UPBEAT was launched in 2020, presenting data analyzing the performance of Africa's utilities to 2018. This update reflects new data through 2020, where data is available.
- **Most utilities in Sub-Saharan Africa (SSA) still do not fully recover their costs.** The UPBEAT framework includes several indicators that measure cost recovery, comparing the revenues earned by a utility to the costs that these revenues need to cover. While cost recovery has been stable in recent years, median operating cost recovery remains below 100%. This is consistent with another finding of this updated survey: that the median utility is not profitable.
- **Operating subsidies are important for some utilities, but the role of subsidies varies widely across the sample.** Less than half of utilities benefit from subsidies, with utilities with the lowest cost recovery most likely to rely on subsidies. Until 2018, transmission utilities received most subsidies, while distribution utilities received the least. Since 2019, the median subsidy paid to distribution utilities has increased sharply; this is largely the result of a substantial new tariff subsidy received by Nigerian distribution utilities. However, the approach to providing operating subsidies in Nigeria also demonstrates good practice by clearly linking subsidies to efficient cost of supply determined by the regulator and allowing stakeholders to transparently allocate revenue requirements across electricity consumers (via tariffs) and taxpayers (via subsidies).
- **Cost of supply greatly influences whether a utility is able to recover its costs.** Less than 40% of utilities with average cost of supply >20 $c/kWh recover operating costs, and less than 20% recover operating and debt service costs. Reducing cost of supply through better planning and competitive procurement should be a priority for high-cost utilities.
- **Covid had a short, sharp impact on some utilities, but the effects may have been less than feared or may have yet to fully materialize.** Analysis conducted in 2020 for the initial launch of UPBEAT suggested that the Covid-19 pandemic would likely have a detrimental impact on utility performance. Covid did negatively impact the performance of some utilities, often in the form of reduced collection of bills and decreases in demand, but the impacts on utilities appear in many cases to have been short-lived—utility performance was primarily affected in the quarters or half-years most impacted by lockdowns, and the effects have since reversed for utilities examined in more detail as case studies later in this Briefing. Across the sample, the early impact of Covid-19 on cost recovery seems to have been limited.

KEY MESSAGES

- **Utilities' liquidity remains a challenge and has been declining over time.** More than half of all utilities and more than 80% of distribution utilities have a current ratio of less than one, indicating that their short-term assets are insufficient to pay for short-term liabilities. While debtor and creditor days, which measure the extent of a utility's receivables and payables, did not rise as rapidly between 2018 and 2020 as during earlier years covered by the UPBEAT database, there is no obvious improvement in these indicators. Transmission utilities continue to have rising creditor and debtor days, with falling collection rates, suggesting that transmission utilities may be an easy target for governments seeking to keep tariffs low during economically challenging times.
- **Some utilities are taking on more debt, but gearing remains low across UPBEAT utilities.** This could suggest that not all debt raised to finance utility investments is reflected in utility balance sheets, as would be the case if governments raise debt for infrastructure on behalf of state-owned utilities. Distribution utilities generally have the lowest gearing and highest cost-of-debt. Distribution utilities are also most likely to be privatized, which likely means less access to concessional finance, leading to higher cost-of-debt and lower gearing.
- **There has been little noticeable improvement in the operational performance of utilities.** Utilities in SSA are often not billing enough of the power they deliver and are not collecting of the revenue they have billed. There is a significant relationship between higher transmission & distribution losses and lower cost recovery, although the correlation between these variables is weak, indicating that losses are likely just one of many factors involved in cost recovery. Data availability remains poor for operating performance indicators, especially for indicators relating to system reliability.
- **Availability of utility performance data remains poor and may be deteriorating.** While there have been some signs of improved reporting regarding areas such as gender and cyber-security (both of which have benefited from additional attention in recent years), many utilities do not publish financial or operational performance on a timely basis, if at all. This is concerning, not only because UPBEAT depends on timely availability of high-quality data, but also because the analysis suggests that transparency may be associated with improved performance.

Objectives and overview of the indicators

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Recap: Objectives, rationale, and methodology

UPBEAT measures utility performance using financial, operational, and transparency indicators

- **UPBEAT tracks the performance of electrical utilities in Sub-Saharan Africa.** It was launched in 2020, covering data to 2018, by the World Bank, in cooperation with the Association of Power Utilities of Africa (APUA) and African Development Bank (AfDB). The current update incorporates data to 2020.
- **UPBEAT analyzes utilities using indicators that measure financial, operational, and transparency aspects of performance.** Poor performance in any one of these areas can create a vicious cycle resulting in utility under-performance. The UPBEAT framework is designed to help utilities compare their performance to peers and identify areas where performance might be improved. Interventions informed by this analysis can help turn this vicious cycle—shown schematically on the next page—into a virtuous cycle. The database aims to provide a valuable resource for researchers, investors, policymakers and development partners.
- **A data source hierarchy is used to balance the need for robust data with the aim for the database to be extensive.** The hierarchy identifies multiple sources that can be used for data collection, but establishes a clear order of preference, with the preferred source at the top of each list in the figure. Data was validated with World Bank teams, and utilities were invited to a series of workshops to both validate and provide input.

Hierarchy of data sources

FINANCIAL PERFORMANCE

- Audited IFRS/OHADA financial statements
- Audited financial statements using other standards
- Unaudited financial statements
- Other reports

TRANSPARENCY & ACCOUNTABILITY

- Utility annual reports
- Utility information published on its website
- Other utility reports

OPERATIONAL PERFORMANCE

- Technical statistics published by utility
- Performance monitoring data published by regulator
- Utility accounts or annual reports
- Other utility or industry reports

SUPPORTING INFORMATION

- Technical statistics published by utility
- Performance monitoring data published by regulator
- Utility accounts or annual reports
- Other utility or industry reports

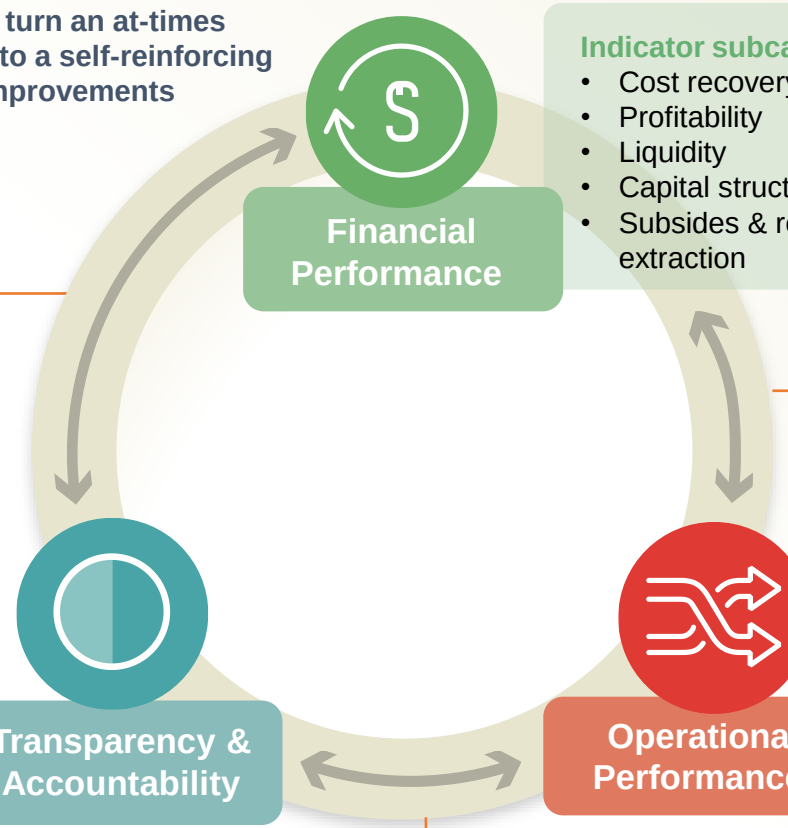
Notes:

- UPBEAT Phase II study comprised 72 utilities, of which 15 had unaudited financial statements. UPBEAT's approach is to include as many utilities as possible, to maximize the data collected, so long as financial statements / annual reports are publicly reported.

Objectives: Supporting the virtuous cycle of utility performance

The three pillars of utility performance are self-reinforcing

Utility performance—UPBEAT aims to turn an at-times vicious cycle of under-performance into a self-reinforcing virtuous cycle, driving performance improvements



Indicator subcategories
- Cost recovery
- Profitability
- Liquidity
- Capital structure
- Subsides & resource extraction

↷ Better financial performance allows utilities to make necessary investments and maintain assets.

↶ Improved operational performance mitigates the risk of revenue leakage, improving financial performance.

Indicator subcategories
- Reliability
- Efficiency

↷ Investment in utility systems improves ability to track and report data.

↶ Transparency can improve accountability and help to identify areas where performance can be improved.

Indicator subcategories
- Performance management and reporting
- Integrity and internal controls
- Financial discipline
- Stakeholder relations

↷ Better communication with stakeholders makes it easier to explain need for tariff increases and/or external funding.

↶ Strong performance improves the incentive to publicize that performance.

Note: Figure reproduced from UPBEAT Phase 1 summary report. Link.

Methodology: What is new in this update?

The indicators analyzed have been refined for this update of the UPBEAT database

1 New indicators focused on analyzing the importance of subsidies

- Analysis of financial performance during the original UPBEAT study highlighted the importance of subsidies.
- New indicators have been added to quantify interactions between Treasuries and utilities:
  - Operating-costs covered by subsidies
  - Capital expenditure covered by subsidies
  - Effective taxation rate
  - Dividend distribution to government

2 New cost recovery indicators

- Cost-recovery was at the heart of the financial analysis in the original UPBEAT study. Cost recovery was measured in different ways:
  - analyzing operating costs or operating and debt service costs,
  - measuring recovery with and without subsidies, and
  - on a cash received or on a billed revenue basis.
- For this update, more cash-based indicators have been added. Measuring cost recovery on a cash basis is more appropriate as the indicator measures a utility's ability to generate enough cash to cover its costs. The range of cost recovery indicators is discussed later.

3 Additional financial indicators to add richness to the database

- EBIT margin is added to complement the existing EBITDA and net profit margin indicators.
- Interest coverage ratio added to replace debt service coverage ratio (DSCR), because DSCR is arguably better suited to project-financed infrastructure projects.
- Debt-to-equity and net-debt-to-sales ratios added to complement existing debt to assets ratio, noting that additional richness can help with analyzing utilities with volatile balance sheets.

4 Reduction in operational performance indicators to reflect lack of data

- In the original UPBEAT study, data availability was particularly poor for some of the operational performance indicators.
- Indicators such as generator availability and time to connect have been dropped to reflect the fact that this is rarely publicly available.

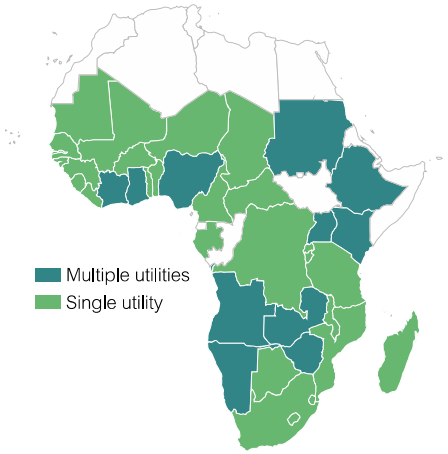
More detail on the changes made to specific indicators in this update is provided in **Annex A.**

Methodology: Utility sample and data availability

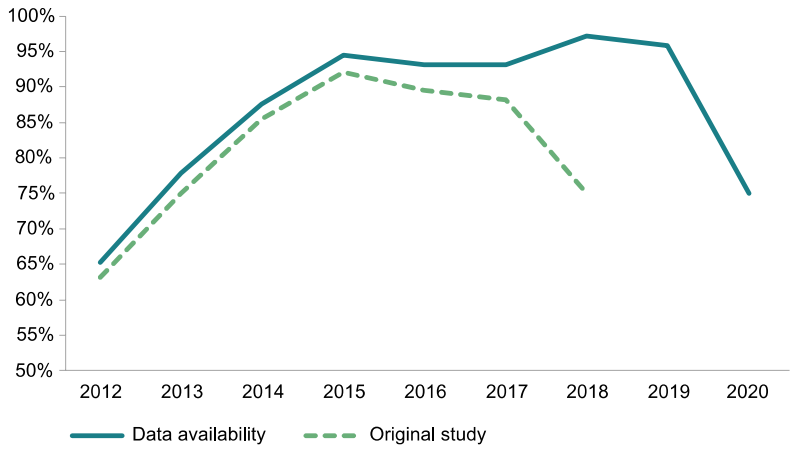
Utilities from most countries in Sub-Saharan Africa feature in the UPBEAT database

- **UPBEAT includes utilities from most countries in Sub-Saharan Africa (SSA),** as shown in the map (figure below, left). For some countries, multiple utilities are included in the sample.
- **Utilities from all SSA power pools (CAPP, EAPP, SAPP, WAPP) are included**. In some cases, regional trends or comparisons are evaluated on the basis of power pools.
- **More than 90% of utilities have published financial statements in most years, but the number falls in 2020,** as shown in the middle figure. This decline in availability mirrors the trend seen in the original study and is a result of many African utilities still taking more than two years to publish financials. It is expected that data availability for 2020 will be improved by the time of the next update.
- **Approximately half of the sample is made up of vertically integrated utilities (VIUs**), as shown in the figure on the right. There are 36 VIUs in the sample, compared with 20 distribution-only utilities, 11 of which are in Nigeria. Additionally, there are 7 generation, 6 transmission, 1 generation/transmission and 2 transmission /distribution utility in the sample. The full list of utilities is provided in Annex B.

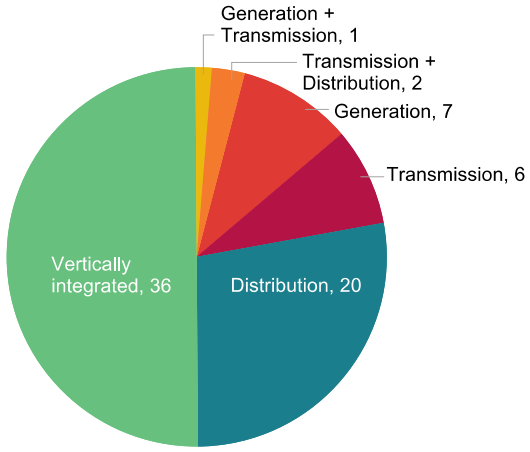
Map of included utilities in SSA



Availability of financial statements



Number of utilities by type



Financial performance

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Overview: Financial performance measurement

UPBEAT measures financial performance across five categories

Cost recovery

- Cost recovery considers the extent to which a utility's income covers its costs.
- Recovery of operating costs and recovery of debt service costs are measured both in terms of billed revenue and cash collected as well as with and without subsidies, as described on the next slide.

Profitability

- A viable business should be profitable over the long-term, to ensure it can meet its costs and pay a return to investors.
- Profitability is measured at several levels; net profit, which considers all costs including interest and taxation, is most frequently used in this analysis.

Subsidies and resource extraction

- New subsidy indicators measure the importance of subsidies in funding operating and capital costs
- Only subsidies recorded directly on utility financial statements are considered. This typically excludes indirect subsidies such as input or consumer transfers.
- Effective taxation is also examined.

1. The first part of this chapter analyses cost recovery as well as its interaction with utility profitability and the role of subsidies.

2. Analysis is then presented on liquidity and capital structure indicators

Liquidity

- Liquidity considers the extent to which a utility has cash (or cash-convertible) assets available to cover short-term obligations.
- A lack of liquidity can result in a utility becoming unviable.
- Key indicators include current ratio, debtor days and creditor days.

Capital structure

- Capital structure considers the composition of utility balance sheets and whether a utility can meet its longer-term financial obligations.
- Key indicators include gearing and the matching of long-term (or non-current) liabilities to long-term assets.

The full list of indicators, together with formulae used to calculate the indicators, is contained in Annex A.

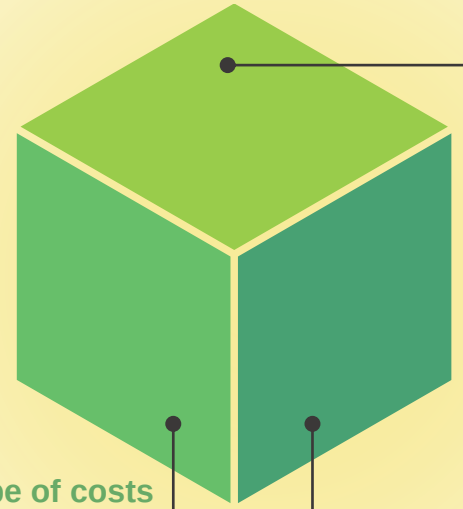
Note: Averages across utilities are reported as medians unless otherwise stated; a more comprehensive ESMAP treatment of subsidies can be found at Link..

Cost recovery: Definition & measurement

Cost recovery is central to UPBEAT's measurement of financial performance

$$\text{Cost recovery} = \frac{\text{Revenue}}{\text{Costs to be covered}}$$

- Cost recovery is a measure of the extent to which a utility's income allows it to cover its costs.
- Multiple versions of this indicator have been developed for UPBEAT. These different permutations of cost recovery simply measure either the numerator or the denominator in the above equation differently.



Revenue basis
Revenue is considered on both a cash collected basis and on a billed revenue (income statement) basis. For many utilities, poor bill collection can result in significant differences between billed revenue and cash collected.

Scope of costs
Cost recovery is calculated (a) considering *only* operating costs, or (b) considering *both* operating and debt service costs

Inclusion of operating subsidies
Cost recovery is measured with and without operating subsidies added to revenues

In the following analyses:

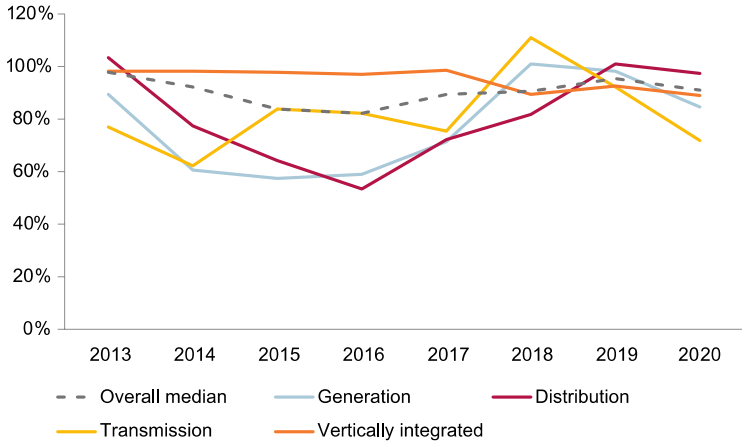
- We focus on two measurements of cost recovery:
  - **Operating cost recovery** on a cash collected basis
  - **Operating and debt service cost recovery** on a cash collected basis
- These versions of cost recovery are **analyzed with and without subsidies**

Cost recovery: Overall trends

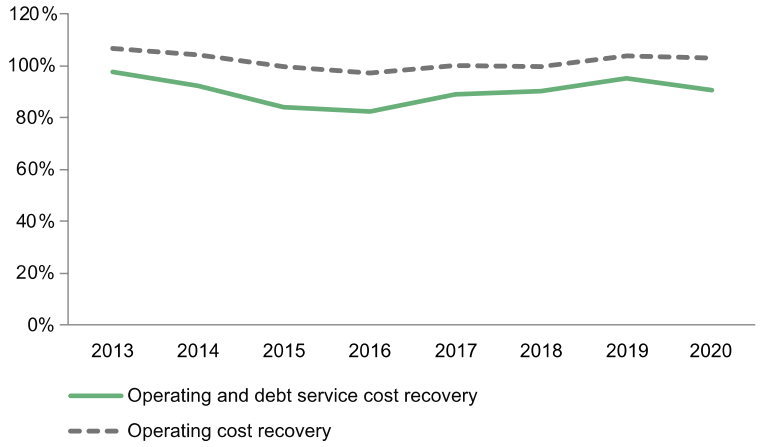
Cost recovery has been stable in recent years, but the median value remains below 100%

- **Cost recovery trends have been stable in recent years.** The graphs show median values across the utility sample and, in the left chart, by type of utility. As noted on the previous slide, cost recovery analyzes operating and debt service costs, on a *cash collected basis* and *including the benefit of subsidies*, unless otherwise stated. Cost recovery has also been stable over time when only operating costs are analyzed, as shown in the central chart.
- **Cost recovery performance has converged across utility types.** The difference in cost recovery across different types of utility is much smaller than has been the case during earlier periods. Cost recovery has improved markedly across distribution utilities, but largely due to a tariff subsidy in Nigeria, described later (UPBEAT contains 10 Nigerian distribution utilities). Volatility in the time series for transmission utilities is largely a result of the small sample size (6).
- **The role of subsidies in supporting cost recovery has increased.** The chart on the right shows cost recovery both with and without subsidies. The gap has widened over time, although the difference is more volatile over recent years.

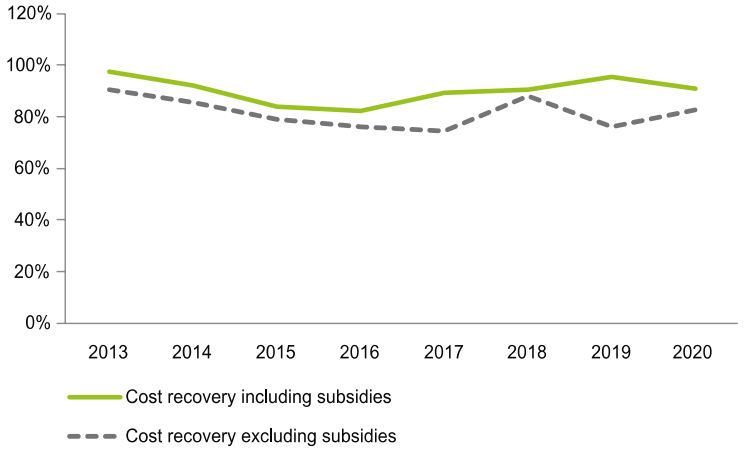
Cost recovery trends, by utility type



Recovery of operating vs. operating and debt service costs



Cost recovery trends, with and without subsidies

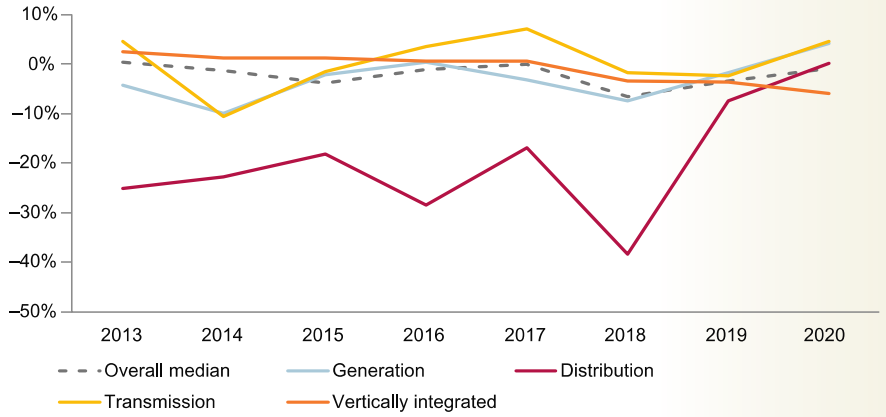


Cost recovery: Implications for profitability

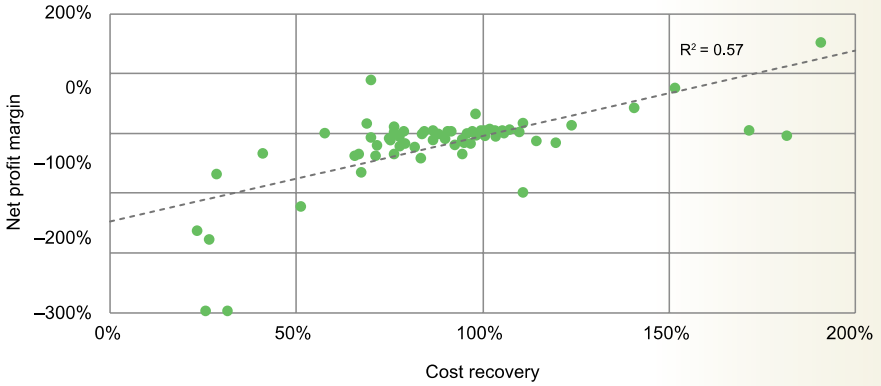
Cost recovery of less than 100% means that the median utility is not profitable

- **Since 2012, the median net profit margin has been mostly negative** and stood at -1% in 2020.
- **A negative median net profit margin is consistent with median operating and debt service cost recovery being below 100%.** Net profit margin and operating and debt servicing cost recovery are correlated (R^2 of 0.57), which is unsurprising: good cost recovery would be expected to be associated with profitability, although some counterexamples do exist. For example, Ghana's GridCo had cost recovery of 69% in 2020 but still achieves a net profit of 15%, as a result of higher transmission revenues that have not been fully converted to cash as receivables build up. Conversely, Sudan's SETC had cost recovery of >100% because of large operating subsidies, but its net profit is persistently negative as a result of high depreciation charges.
- **Distribution-only utilities' median net profit margin has improved sharply.** Most of this recent improvement is due to the Nigerian tariff subsidy, analyzed later.

Net profit margin trends, by utility type



Relationship between net profit margin and cost recovery, latest year for each utility

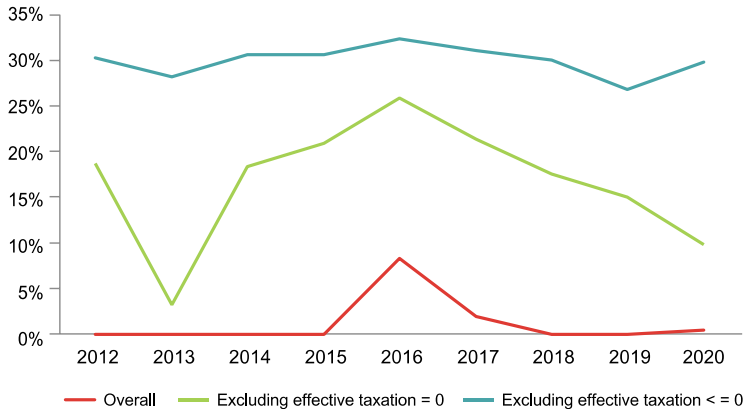


Cost recovery: Implications for effective taxation

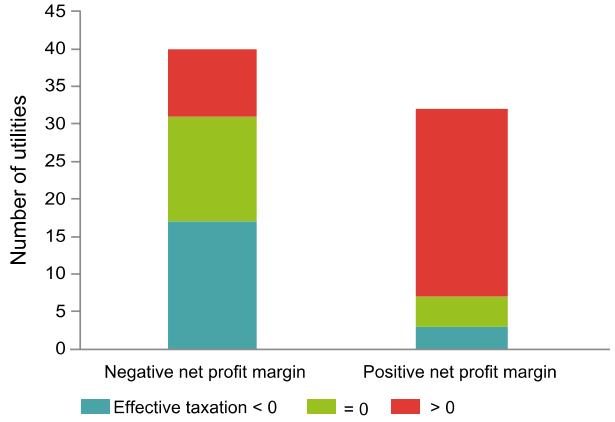
Because many utilities are not profitable, median effective taxation is zero

- **Across the UPBEAT sample, effective taxation is near-zero**, as shown in the figure below left. This is consistent with the median utility having a negative net profit margin.
- **The median tax % for utilities with a positive tax charge has been relatively constant over time, at ~30%**, as shown in the figure below left.
- **Utilities with negative profit margins are less likely to be paying tax,** as shown in the middle figure**.** These utilities typically are either exempt from corporate income tax (indicated by a zero tax value) or are accruing tax losses (indicated by negative effective taxation). Conversely, a majority of profitable utilities pay some income tax.
- **Utilities in SAPP are most likely to be subject to standard tax policies.** Over a 5-year period, there are few utilities in this region with an effective tax rate of <=0. Conversely, in the WAPP and EAPP regions, the median effective tax rate of utilities is zero or near-zero, suggesting that many utilities benefit from favourable tax regimes.

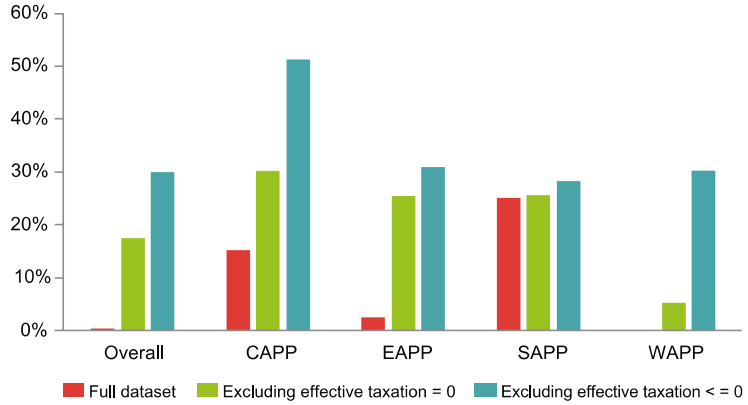
Median effective taxation for different samples



Relationship between profitability and a utility paying income tax, latest year



5-year median effective taxation by power pool



Cost recovery: Top performers

Very few utilities consistently perform well on cost recovery

- **Most utilities do not achieve cost recovery** in the most recent year for which data is available in the UPBEAT database.
- **Few utilities have performed consistently well on cost recovery.** The table below lists the only 4 utilities that have recovered their operating and debt service costs (without subsidies) in all years since 2014.

Utilities with cost recovery (excluding subsidies) of >100% in every year since 2014

Utility	Country	Cost recovery excluding subsidies, 2020
Central Electricity Board (CEB)	Mauritius	107%
Erongo Regional Electricity Distributor (ErongoRED)	Namibia	104%
Public Utilities Corporation (PUC)	Seychelles	120%
UMEME	Uganda	104%

Why do so few utilities perform consistently well on cost recovery, and what are the implications?

The analysis presented over the following slides explores this further, covering:

- The implications of poor cost recovery on the role of subsidies.
- The impact of cost of supply, as a key driver of poor cost recovery.
- The more recent impact of Covid on utility cost recovery.

Cost recovery: Role of operating subsidies (1/2)

Utilities with the lowest cost recovery from revenues are most likely to rely on subsidies

- **Operating subsidies, sometimes referred to as tariff subsidies, should ideally be designed to cover the gap between allowed revenues set by the regulator to recover efficient cost of supply and actual revenues collected after adjusting tariffs for any Government policies (e.g., subsidizing heavy industries).** Yet in several countries subsidy provision is unrelated to regulated revenue. Only a quarter of utilities recovered both operating and debt servicing costs, and many utilities not achieving cost recovery benefit from subsidies. However, most utilities do not fully recover costs even with subsidies.
- **Improvements in cost recovery can reduce pressure on government finances.** Analysis later in this brief shows that investments that reduce cost of supply (e.g., renewables competitively procured in line with a least-cost plan) may improve cost recovery, allow for lower tariffs and reduce the need for subsidies. When assessing potential investments, policy makers should consider the impact on cost recovery and subsidies.

Operating and debt service cost recovery by utility.

Dark shading indicates cost recovery without subsidies

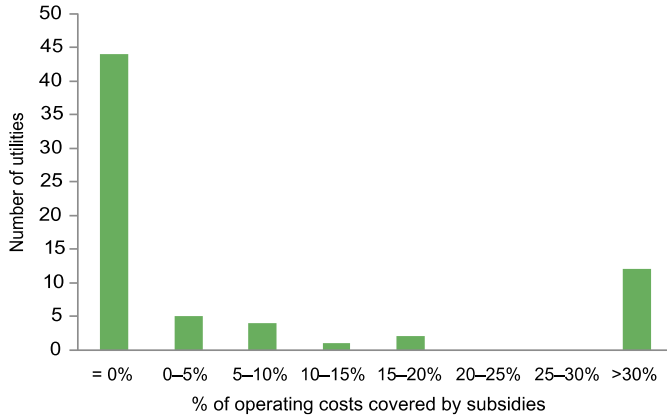
Lighter shading shows the impact of including subsidies

Cost recovery: Role of operating subsidies (2/2)

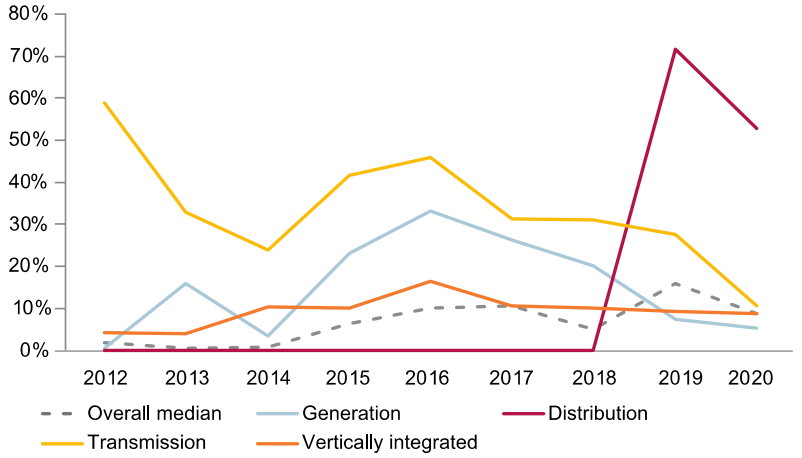
The importance of operating subsidies varies considerably across utilities included in UPBEAT

- **Most utilities did not report receiving any operating subsidies** (see left chart). While median operating subsidies are zero, the upper quartile of the percentage of operating costs covered by subsidies is trending upwards, as shown in the middle chart below.
- **Transmission-only utilities have historically received higher operating subsidies than other utility types.** This suggests transmission-only utilities may be less able to charge a tariff which allows them to recover operating-costs. The apparent reduction in operating subsidies received by transmission-only utilities in 2020 is the result of a smaller samples size: SETC (Sudan) is not included in the 2020 dataset and has received subsidies covering ~60-70% of operating costs in previous years.
- **Distribution utilities generally receive lower levels of operating subsidy**, though there is a sharp increase in the last two years of UPBEAT data. This is mostly explained by high tariff subsidies for Nigerian distribution utilities (DISCOs)—when they are excluded, the increase in operating subsidies to the distribution-only utilities is more modest, as shown in the chart on the right.

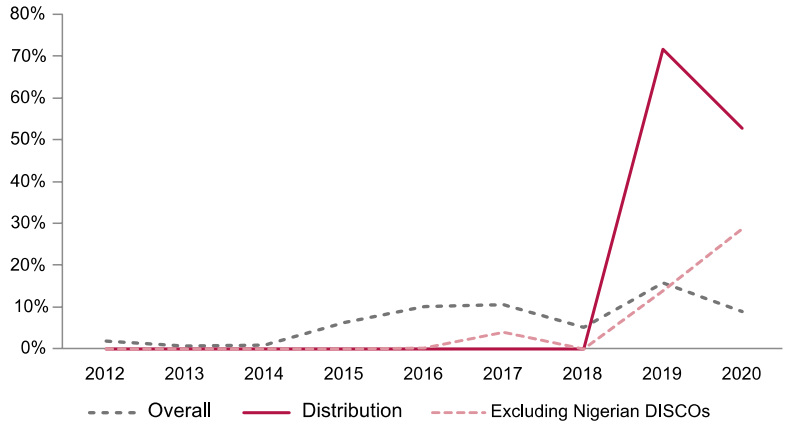
Distribution showing percentage of operating costs covered by subsidies



Upper quartile of percentage of operating costs covered by subsidies, by utility type



Upper quartile of percentage of operating costs covered by subsidies, distribution utilities, with and without Nigerian DISCOs



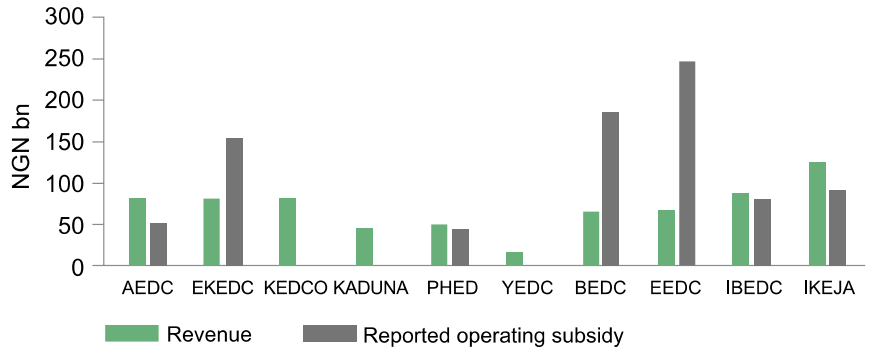
CASE STUDY

Role of operating subsidies: Nigeria case study (1/2)

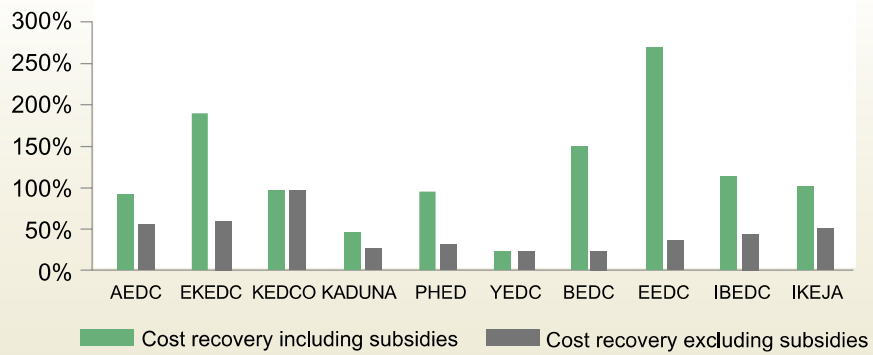
A tariff shortfall subsidy had a material impact on the performance of Nigerian distribution utilities

- **In Nigeria, the regulated electricity tariff has been below cost recovery in previous years.** This means that distribution utilities have not been able to pay all invoices from NBET (the bulk electricity trader) and have accumulated debt on their balance sheets.
- **In recent years, a tariff shortfall subsidy has been introduced to address the gap between costs and revenues.** These operating subsidies are clearly linked with tariff shortfalls assessed based on the regulator's methodology. This is part of the Nigerian power sector recovery plan (PSRP), intended to restore the financial viability of the power sector in Nigeria. There are two components to the subsidy paid to DISCOs:
  - **Historical Tariff Shortfall:** the PSRP aims to fully fund the shortfall covering the period 2015–2019 to remove the debt burden from the DISCOs' balance sheets.
  - **Ongoing Tariff Shortfall:** Annual financing of tariff shortfalls of the sector from 2020 onwards so that no new arrears are accumulated.
- **For many of the distribution utilities, this subsidy exceeds revenues**, as shown in the graph on the far left. This is a result of the historical tariff shortfall component of the subsidy, highlighted above. The subsidy has a significant impact on cost recovery, as shown in the second graph.
- **In September 2020, end-user tariffs were substantially adjusted for the DISCOs to more closely reflect efficient cost of service**. This adjustment significantly reduced the tariff shortfall in subsequent years. Introducing transparency and the discipline that efficient revenue requirement not covered by consumers are passed on to taxpayers provided a strong incentive to adequately adjust electricity tariffs.

Revenue compared to operating subsidy for Nigerian DISCOs (latest year available)



Cost recovery, with and without subsidy, for Nigerian DISCOs (latest year available)



CASE STUDY

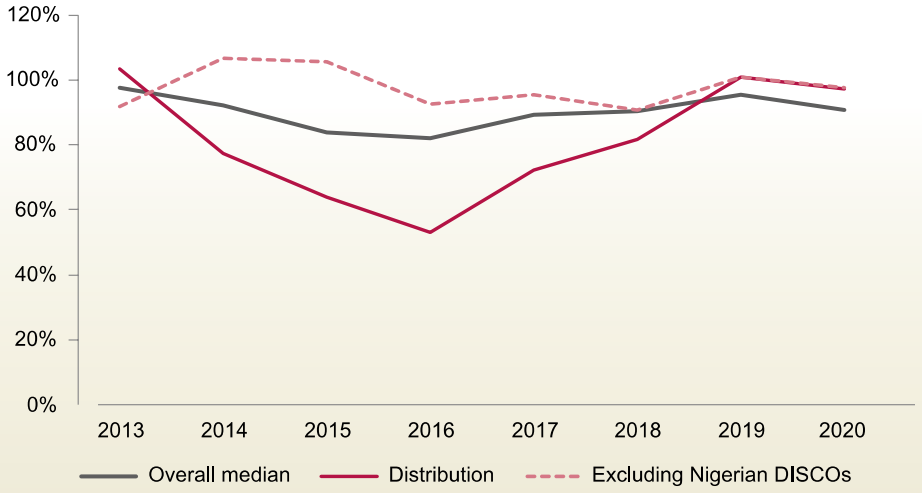
Role of operating subsidies: Nigeria case study (2/2)

Nigerian distribution utilities receiving the tariff shortfall subsidy skew the overall analysis on distribution utilities

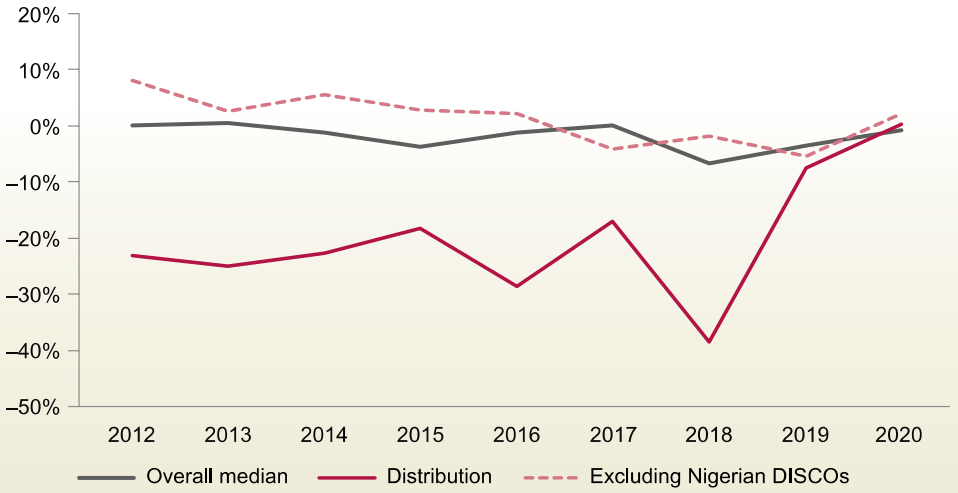
- **Many of the results for distribution utilities shown in this brief are impacted by the Nigerian tariff subsidy,** as shown in the graphs on cost recovery and net profit below. As noted earlier, distribution utilities' overall cost recovery has improved and is now ~100%, and overall net profit margin has also improved. However, the biggest driver of these improvements is the NERC tariff subsidy to Nigerian distribution utilities.

- **When Nigerian utilities are removed from the sample, cost recovery for distribution-only utilities has been more stable over time, though net profit margins have been declining.** The graphs below show median cost recovery for distribution utilities excluding Nigerian utilities hovering below 100% in recent years, and median net profit margins declining below 0% before recovering slightly in 2020.

Operating and debt service cost recovery for distribution utilities, with and without Nigerian DISCOs



Net profit for distribution utilities, with and without Nigerian DISCOs

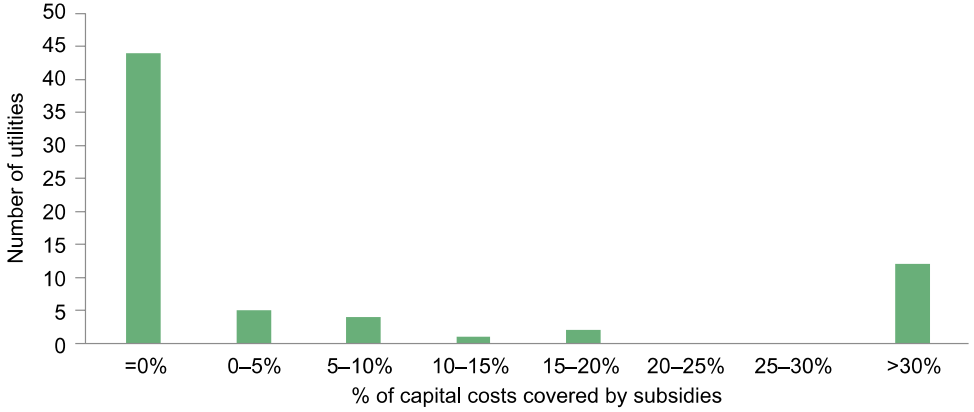


Role of capital subsidies

The importance of capital subsidies also varies; most utilities do not report any capital subsidies

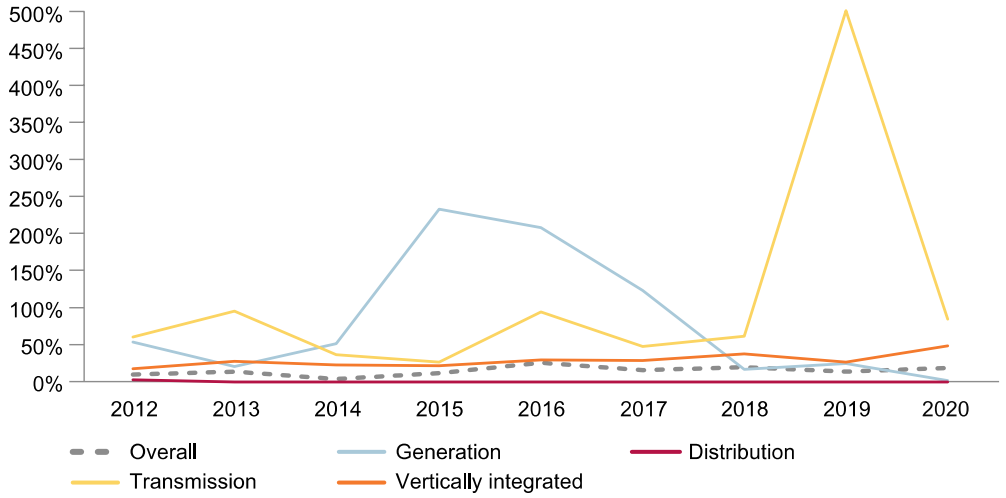
- **Most utilities did not report receiving any capital subsidies**, as shown in the figure below left**.** Capital subsidy values are highly variable, largely because capital expenditure itself is often volatile; it is also not always the case that the cash inflow associated with a subsidy aligns with the cash outflow associated with capital expenditure. Upper quartiles have been used to focus the analysis on utilities reporting subsidies. The figure below right indicates a slightly upward trend in the upper quartile values.
- **This data only covers subsidies reported in the financial statements.** There are many forms of unreported subsidies which this data does not capture.

Number of utilities by extent of reported capital subsidy



- **Distribution utilities generally report lower levels of capital subsidy.** Many of the distribution utilities included in the sample are private utilities and tend to benefit from lower levels of subsidy.
- **Transmission-only utilities typically have had the highest level of capital subsidy.** Transmission infrastructure is frequently funded through subsidy, rather than the cost being fully recovered through tariffs. The 2019 peak in capital subsidies is driven by a large subsidy inflow for the Angolan transmission utility (RNT), likely prior to construction of the subsidized assets being complete.

Upper quartile capital expenditure covered by subsidies

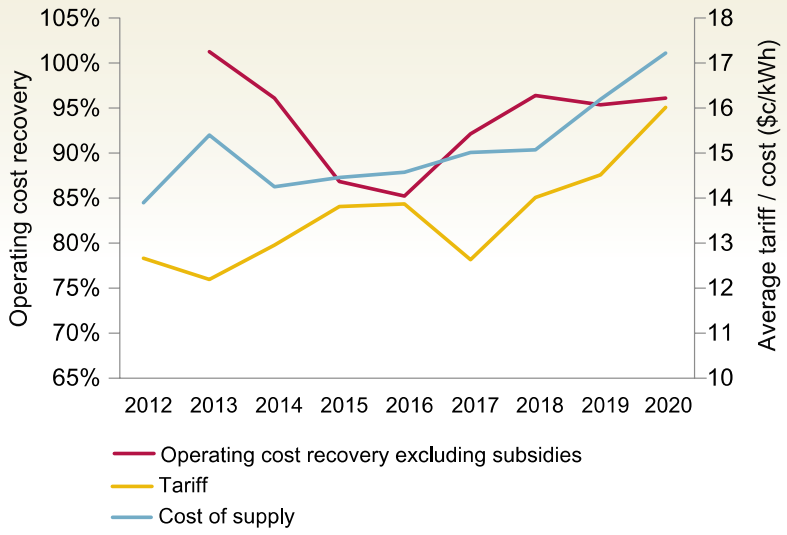


Cost recovery: Impact of cost of supply

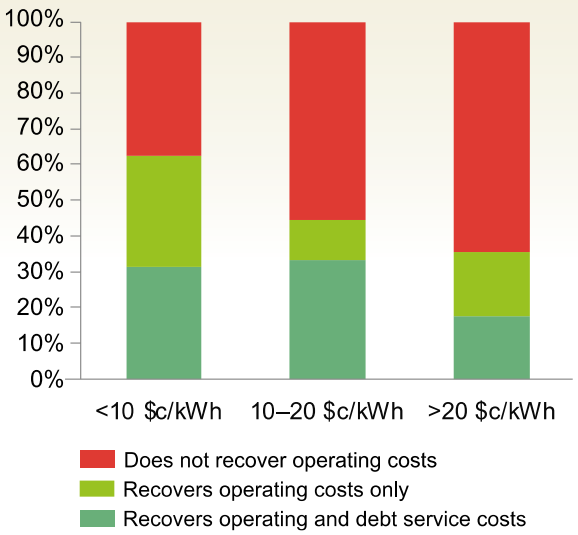
High-cost utilities are much less likely to recover their costs than those with lower costs

- **Median cost of supply remains above the median tariff charged.** This is consistent with cost recovery being lower than 100%, and subsidies being required by many utilities, as already discussed.
- **Utilities with high cost of supply are less likely to recover costs.** As shown in the chart on the right, less than 40% of utilities with average cost of supply >20 $c/kWh recover operating costs and less than 20% recover operating and debt service costs.
- **Reducing cost of supply should be a priority for high-cost utilities.** Reducing cost of supply, for instance through improved procurement practices or shifts to lower-cost generation sources, can help improve the financial viability of utilities and improve affordability. High costs of supply cannot always be passed through to consumers where ability or willingness to pay for power is low, especially without commensurate quality of service.

Trends in cost recovery, tariff and cost of supply



Ability of utilities to recover costs by cost of supply



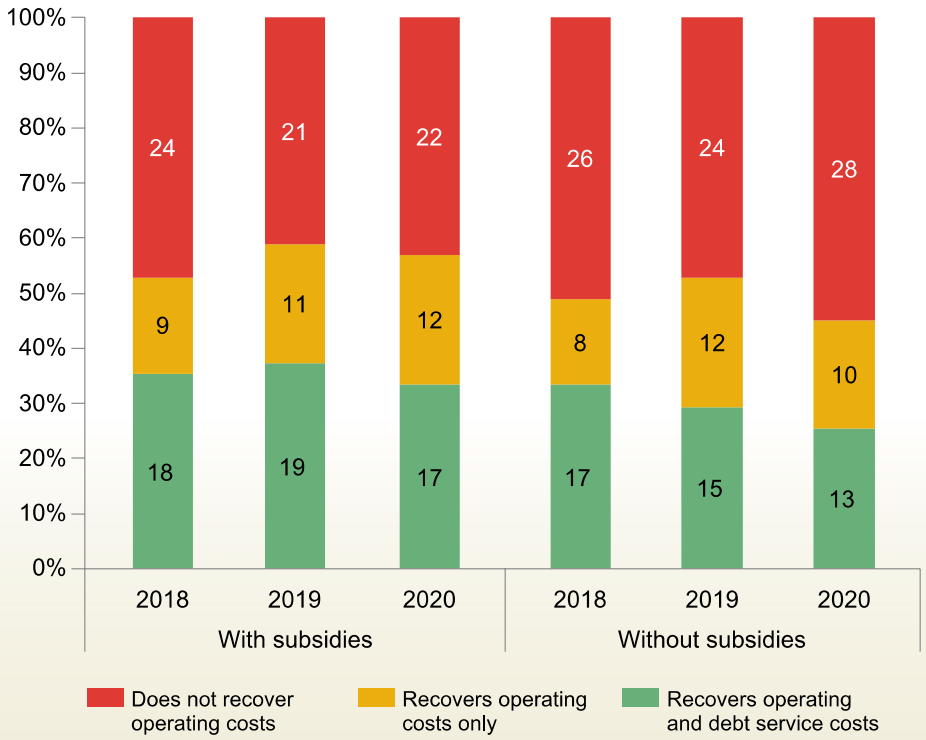
Cost recovery during Covid

Covid had a short, sharp impact on some utilities, but the overall impact has been less than feared

- **The Covid-19 pandemic, combined with policies implemented to mitigate its effects, was expected to have a detrimental impact on utility performance.** Analysis of the pandemic's expected impact, prepared in the spring/summer of 2020, was published alongside the original launch of UPBEAT. The analysis did not cover the full UPBEAT sample, but it did project a severe impact on some utilities. The analysis suggested that while the pressure on utilities would ease (after lockdowns), the cumulative impact could affect utility financial performance for many years.
- **The actual impact on utilities has been more nuanced.** For specific utilities, some of the expected effects can indeed be observed in financial data. However, the effects are mostly visible in quarterly or half-year results; any deterioration in performance has in many cases swiftly reversed. Case studies over the next few slides indicate the impact on a small number of utilities in more detail.
- **Across the sample, the impact on cost recovery has been limited.** The graph on the right shows how many utilities recovered their costs in 2018, 2019 and 2020. The most noticeable trend is that fewer utilities achieved the 'gold standard' of recovering both operating and debt service costs without subsidies. This exclusive group shrank from 17 in 2018 to 13 in 2020. However, it is unclear whether this can be attributed to Covid. More analysis will be possible in future as data from the post-Covid period becomes available.

Share of utilities recovering their costs

Data only shown for utilities with data for 2018, 2019, and 2020



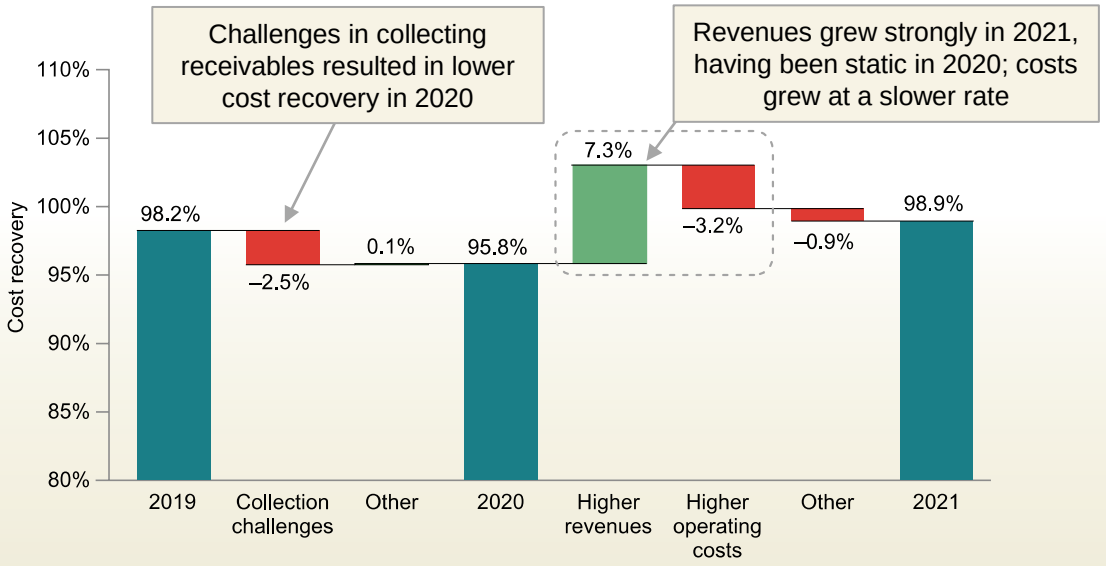
CASE STUDY

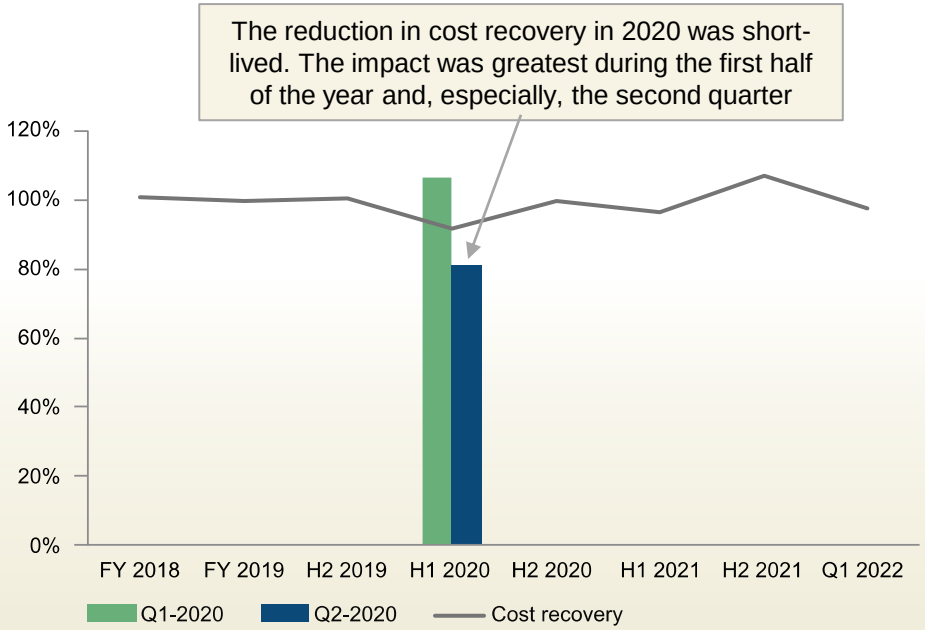
Impact of Covid: KPLC (Kenya; Transmission & distribution) case study

The pandemic impacted Kenya's utilities, but the impacts were shorter lived than expected

- **KPLC's cost recovery was adversely impacted by collection issues during the early stage of the Covid crisis.** Receivables increased sharply at the start of the pandemic but stabilized by year-end. Bad debt costs, however, were higher in FY2020 compared to either FY2019 or FY2021.
- **KPLC (T&D) delayed payment to KenGen (G),** with payables to KenGen increasing from 148 to 194 days between 2019 to 2020. The next slide analyzes the impact of the pandemic on KenGen.
- **Cost recovery improved in 2021** as revenue grew sharply as electricity demand recovered.

Drivers of operating and debt service cost recovery changes at KPLC





Notes:
- KPLC's financial year is July to June.
- Cost recovery on this slide has been adjusted to remove the impact of corporation tax rate changes on deferred tax charges. This results in better visibility of the impact of Covid, but means the values shown differ slightly from the UPBEAT database.

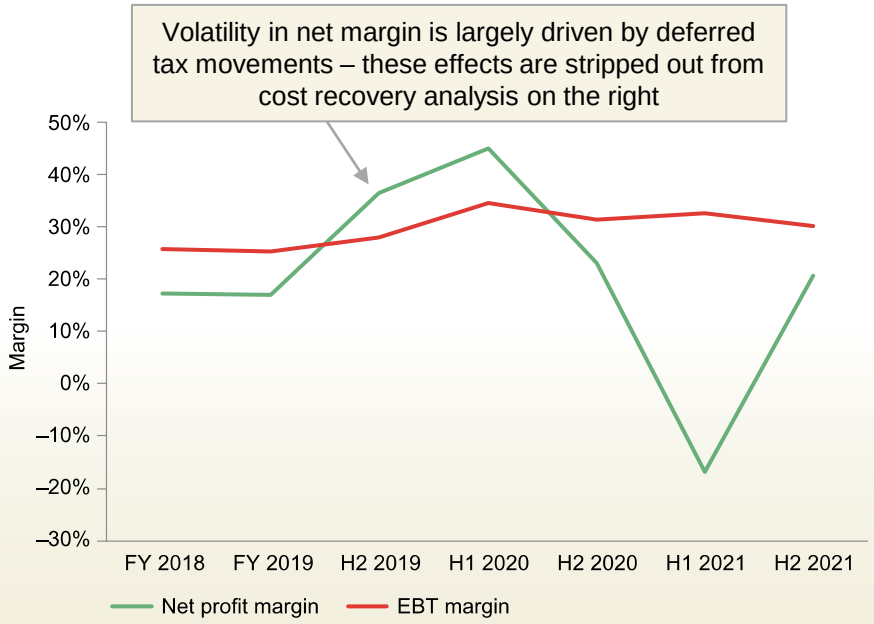
CASE STUDY

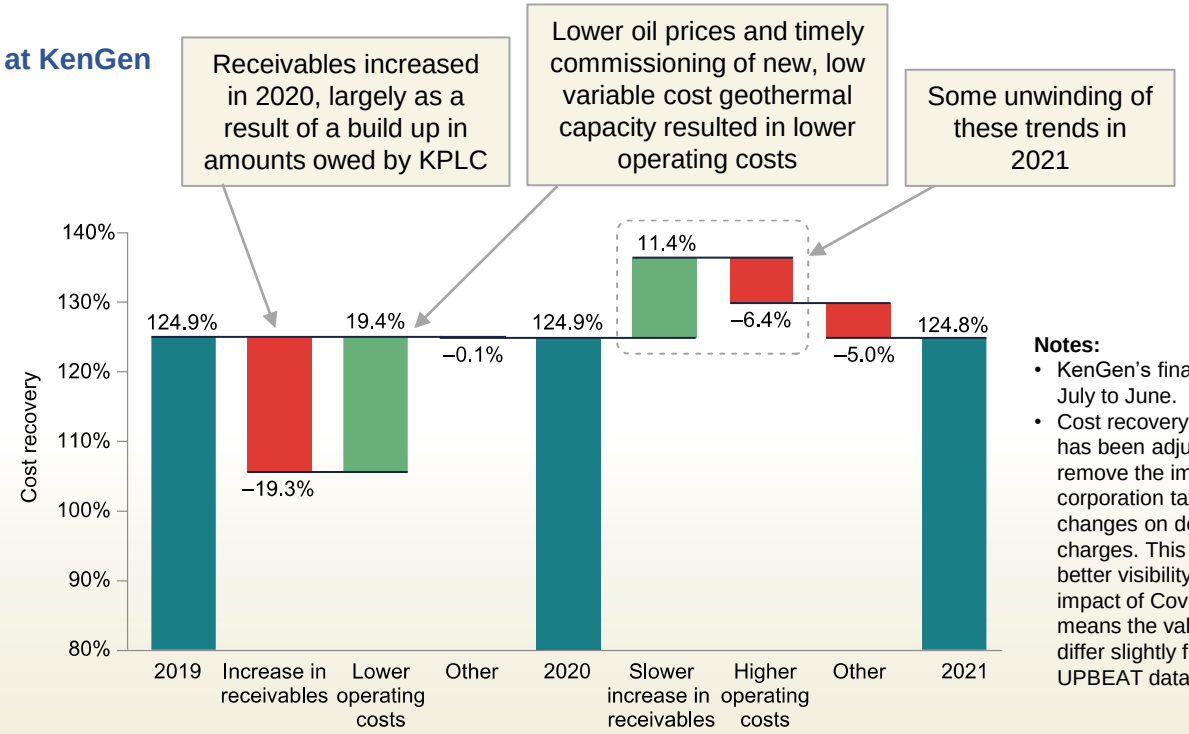
Impact of Covid: KenGen (Kenya; Generation) case study

KenGen's underlying cost recovery remained stable, mostly as a result of favorable operating cost movements

- **At the start of the pandemic, KenGen saw a large increase in receivables from KPLC.** This was offset by a reduction in operating costs, driven by lower oil prices combined with KenGen's commissioning of new, low variable cost geothermal capacity. This coincidental evolution of the generation mix had a material impact in helping to cushion the impact of Covid on Kenya's power sector.
- **In 2021, some pandemic-era trends reversed—receivables stabilized, but operating costs climbed.** Receivables from KPLC stabilized at higher pandemic levels, while operating costs climbed a little with higher fuel prices.

Changes in profitability and operating and debt service cost recovery at KenGen





Notes:

- KenGen's financial year is July to June.
- Cost recovery on this slide has been adjusted to remove the impact of corporation tax rate changes on deferred tax charges. This results in better visibility of the impact of Covid, but means the values shown differ slightly from the UPBEAT database.

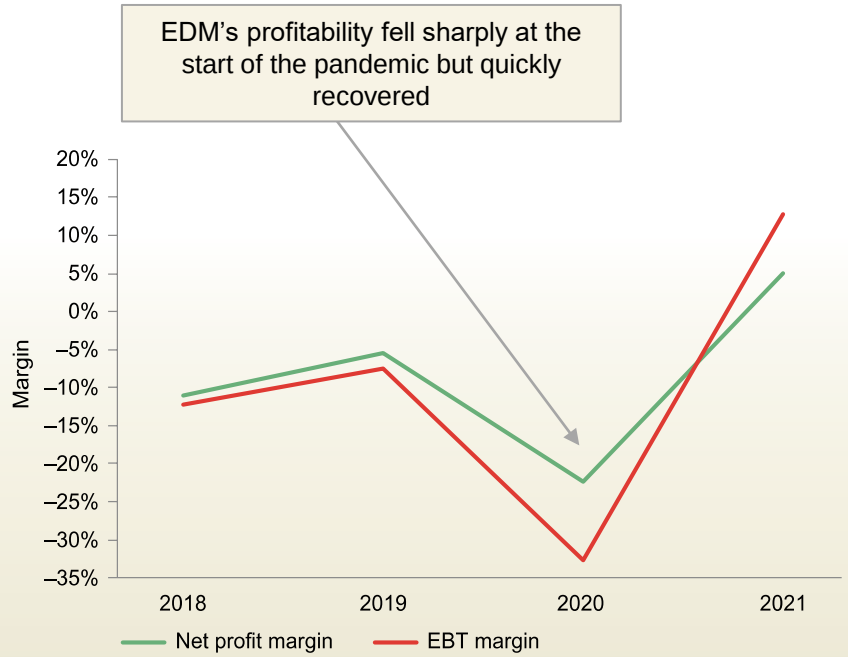
CASE STUDY

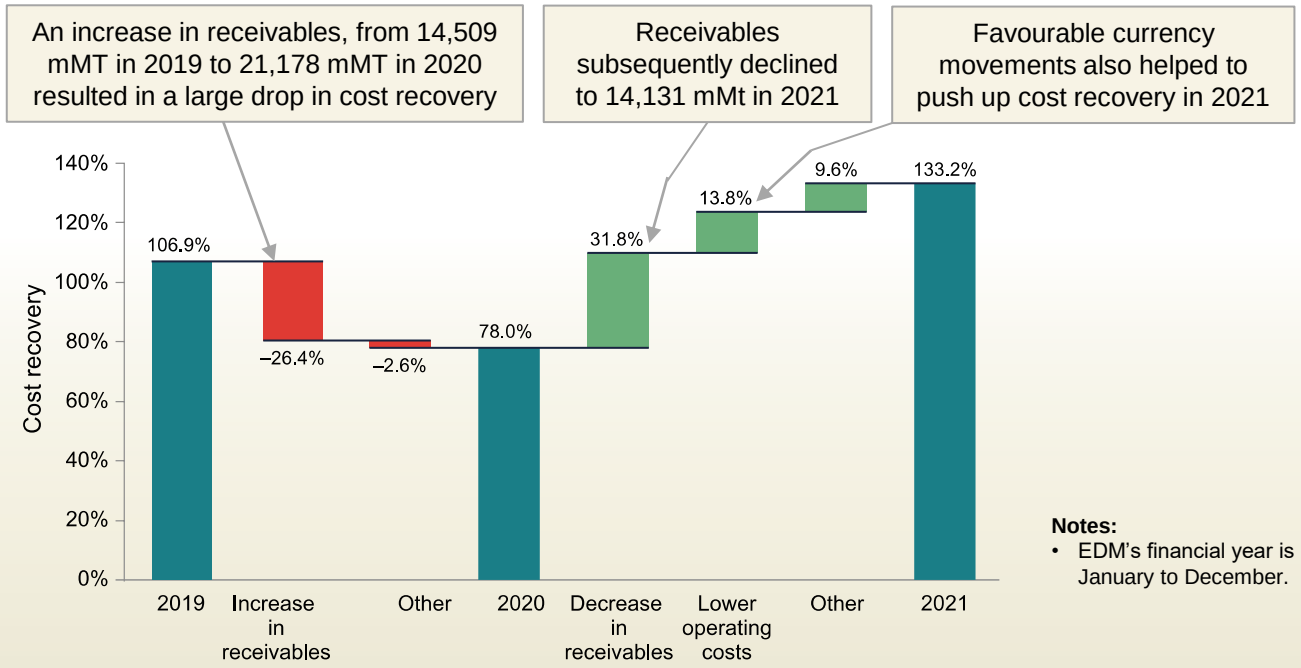
Impact of Covid: EDM (Mozambique; Vertically integrated) case study

Receivables increased sharply at EDM in 2020, but this impact was reversed in 2021

- **Profitability and cost recovery were both hit hard at EDM during the first year of the pandemic.** A build up of receivables resulted in reduced cost recovery, but this effect was reversed in 2021.
- **EDM benefited from favorable currency movements in 2021.** Payments to IPPs fell as a result of a strengthening of the Metical versus the US Dollar. The appreciation led to lower operating-costs in 2021, despite the total amount of energy acquired increasing from 7,264 GWh in 2020 to 7,694 GWh in 2021. An interest rate hike and appreciating commodity prices are thought to have contributed to the currency appreciation, which was sustained through most of 2022.

Changes in profitability and operating and debt service cost recovery at EDM (Mozambique)





Notes:
- EDM's financial year is January to December.

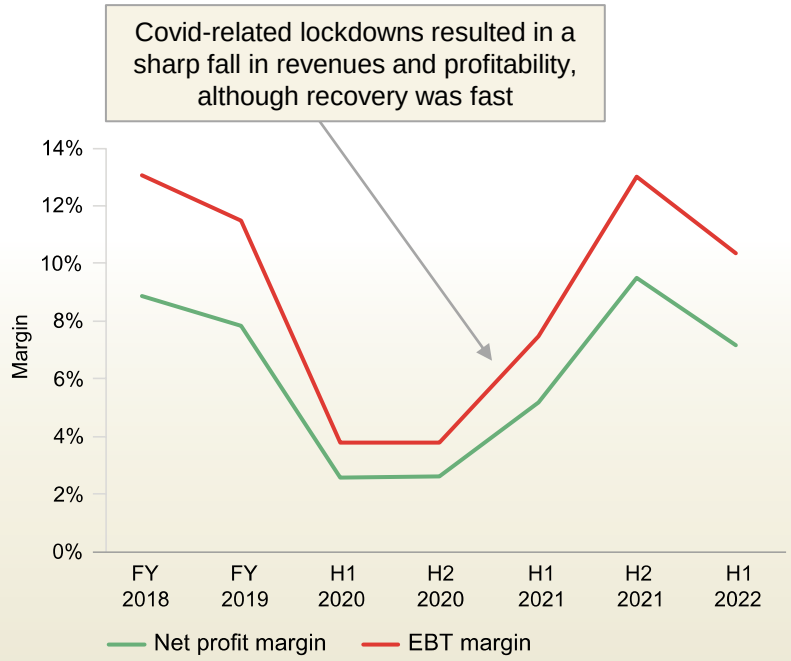
CASE STUDY

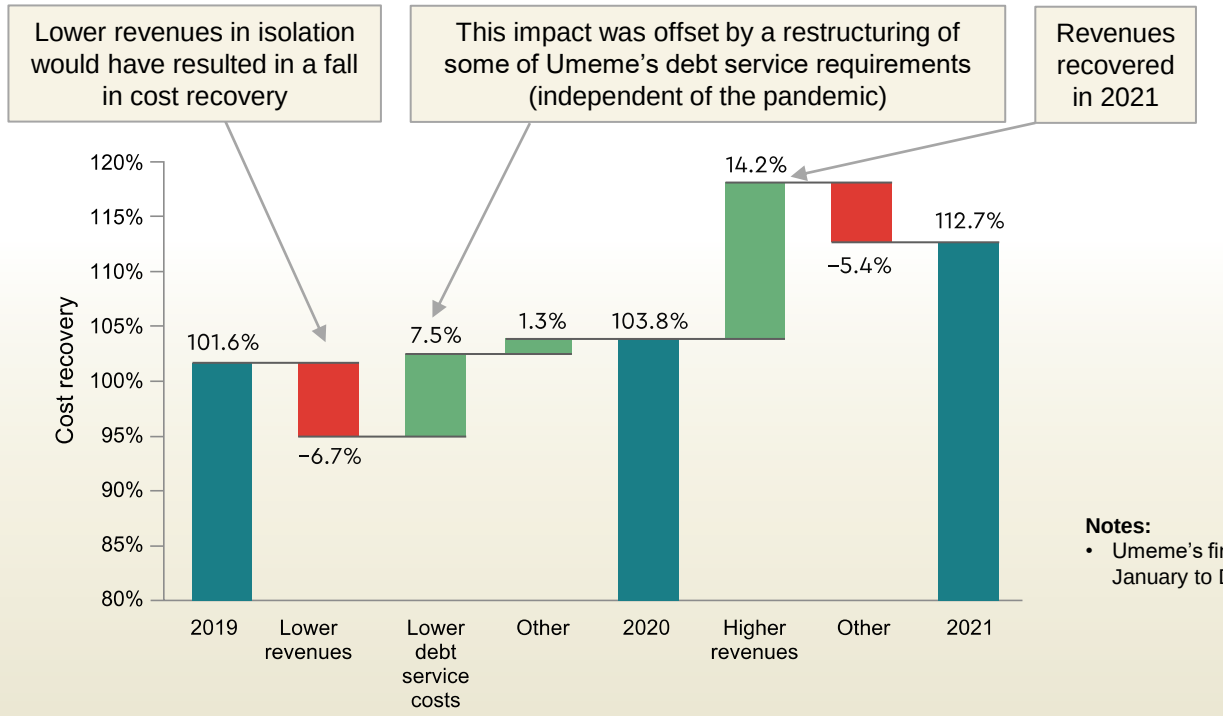
Impact of Covid: Umeme (Uganda; Distribution) case study

Demand reduction affected Umeme's financial performance in 2020, but with a swift recovery in 2021

- **UMEME's revenues contracted in 2020.** Electricity sales volumes increased, but more modestly than might otherwise have been the case because of the impact of Covid-related lockdowns. However, much of the demand growth was in Umeme's large industrial tariff category, which attracts a lower tariff than other customer categories, while demand from higher-tariff categories fell.
- **Less revenue was also received from Uganda's Electricity Connections Policy**, which pays Umeme for connecting new customers. Work to add new connections was impacted by lockdown restrictions. A restructuring of some of Umeme's debt reduced debt servicing costs in 2020, offsetting the impact of revenue reduction.

Changes in profitability and operating and debt service cost recovery at Umeme





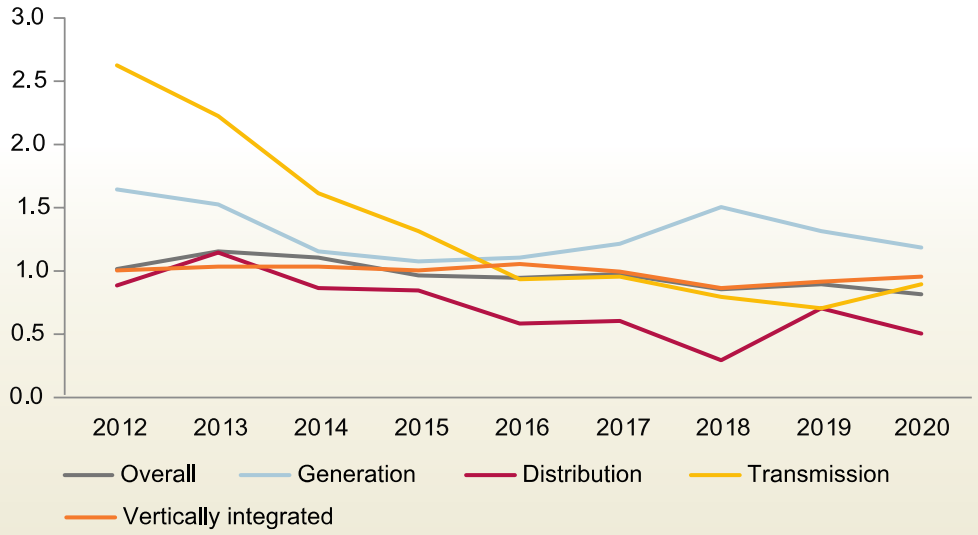
Notes:
- Umeme's financial year is January to December.

Liquidity: Current ratio

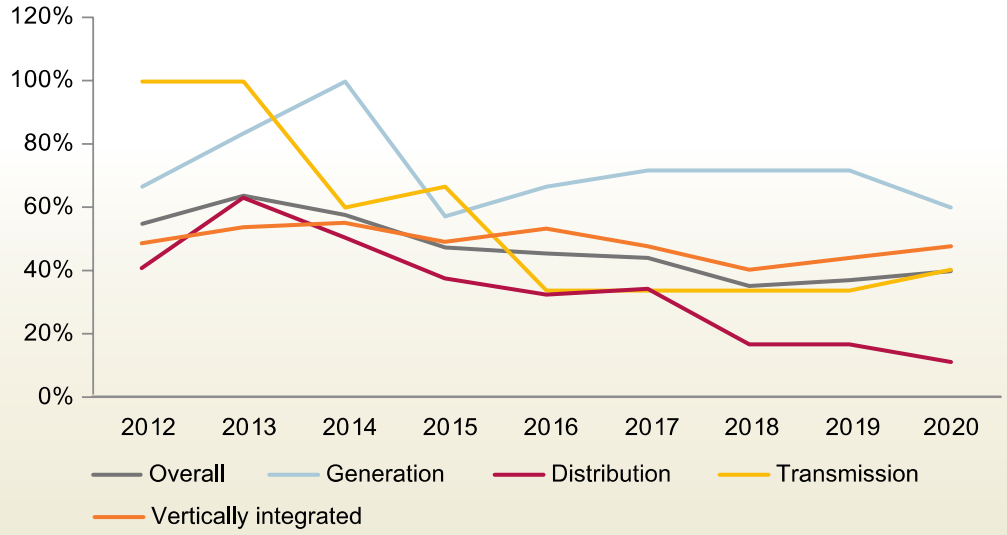
Utilities' liquidity remains a challenge in SSA, with less than half having a current ratio greater than one

- **The liquidity of utilities has been declining.** Both the median current ratio (left figure) and the proportion of utilities with current ratios >1 (right figure) have been falling over time. However, these indicators have stabilized (though not improved) in the last few years.
- **More than half of utilities have current ratios <1.** These utilities have more current liabilities than assets, suggesting that they experience difficulties in meeting short-term payment obligations.
- **Distribution utilities have particularly low current ratios.** This highlights the challenges that many distribution utilities have in paying bulk suppliers of electricity – normally a result of low cost recovery. Only one distribution utility in the sample has a current ratio >1 in 2020.

Median current ratio by utility type



Proportion of utilities with current ratios >1

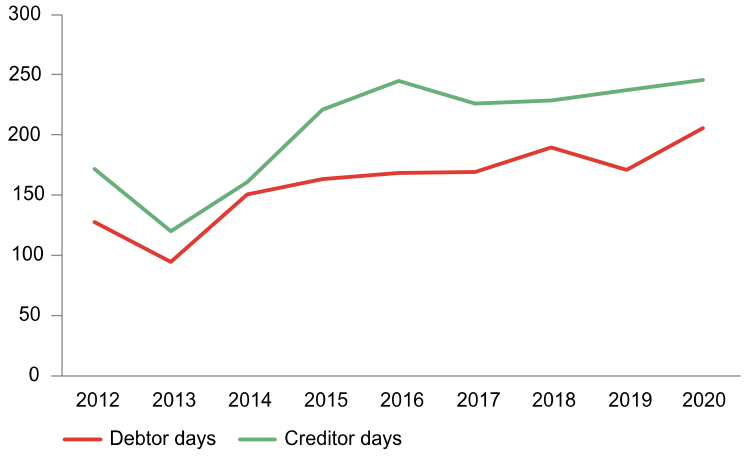


Liquidity: Debtor and creditor days

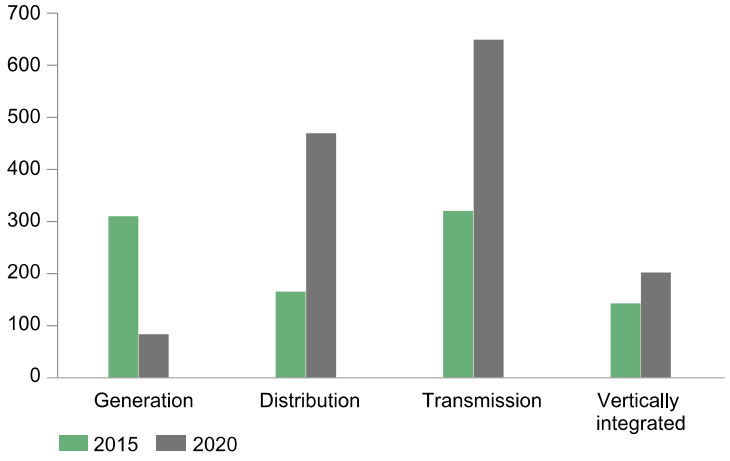
Debtor and creditor days have started to stabilize, but working capital management remains a challenge for utilities in SSA

- **High debtor days (receivables) and creditor days (payables) remain a concern.** These indicators are not increasing as fast as in recent years, and in some cases have stabilized, but there is no obvious improvement, as shown in the left figure. The increase in debtor days shown in 2020 is partly caused by a smaller sample size, but may also be a result of Covid-related pressure on cash collection for some utilities.
- **Creditor days for distribution utilities have fallen, but largely due to the impact of the tariff subsidy for Nigerian distribution utilities.** Payables balances for Nigerian distribution utilities had built up because of low cost recovery, and the subsidy has been backdated to clear some of the arrears. However, debtor days has continued to rise (middle figure) and collection rate has continued to fall (right figure), for these utilities, suggesting that long-term issues remain.
- **Transmission-only utilities have rising creditor and debtor days and falling collection rates.** It is possible that state-owned transmission utilities are an easy target as governments seek to keep tariffs low during challenging economic periods.

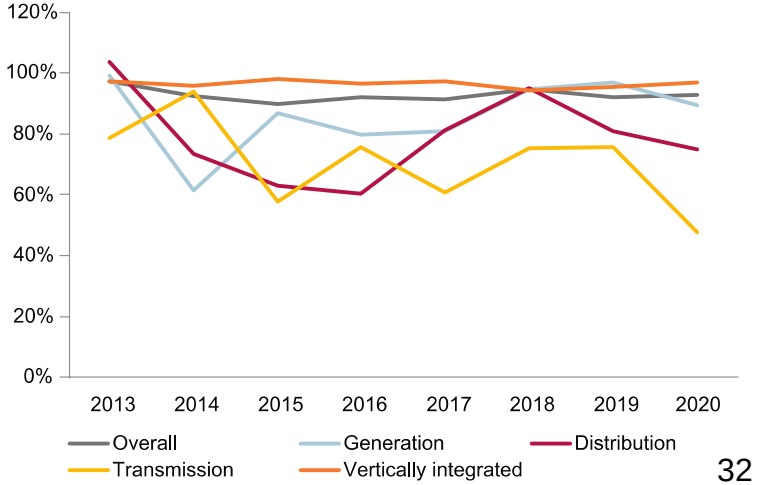
Debtor and creditor days, overall median



Debtor days by utility type



Collection rate by utility type

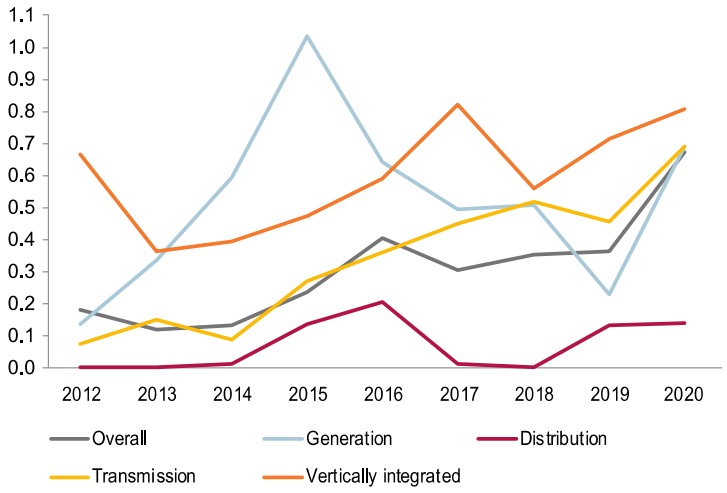


Capital structure: Overall trends

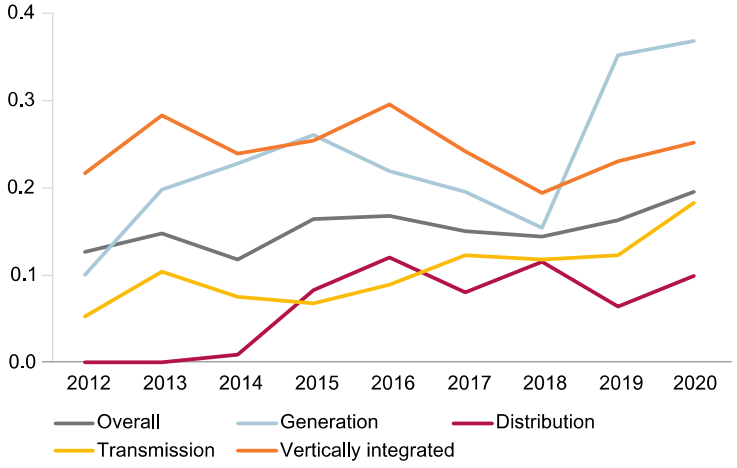
Some utilities are taking on more debt, but gearing remains quite low across the UPBEAT database

- **Gearing (indebtedness) is increasing for some utility types, likely as a result of increased investment in fixed assets.** Increased debt-to-equity ratios (left figure) indicate increased gearing, although this is somewhat distorted by the impact of utilities with negative equity. The debt-to-assets ratio is not impacted by this effect and does not show the same upward trend (middle figure). For some utilities, this could be explained by debt being deployed to fund new fixed assets, but in other cases debt might have been used to fund current assets (cash shortfalls, increasing debtor days).
- **Distribution utilities have the lowest gearing and highest cost-of-debt,** as reflected in the debt-to-assets and debt-to-equity ratios in the left and middle figures, and the cost-of-debt figure on the right. This is especially true for Nigerian distribution utilities, likely due to cost recovery challenges resulting in difficulties accessing finance and a high cost-of-debt when finance can be obtained. Distribution utilities are also most likely to be privatised (the UPBEAT sample does not include IPPs), which likely means less access to concessional finance, leading to higher cost-of-debt and lower gearing.

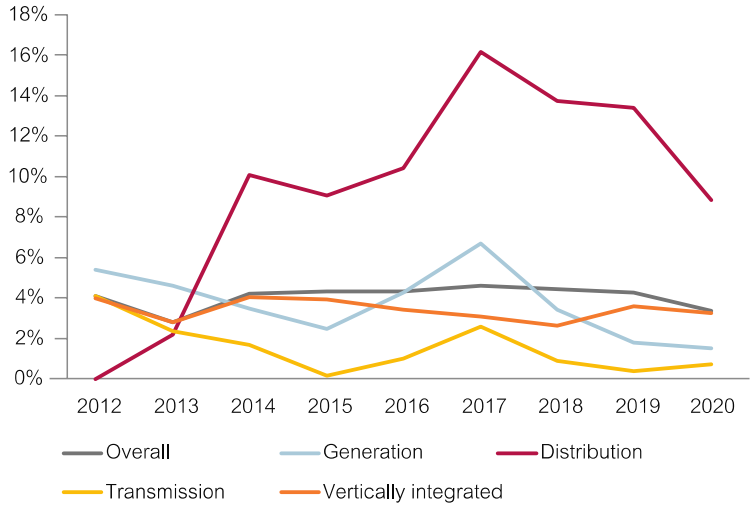
Debt-to-equity by utility type



Debt-to-assets by utility type



Cost-of-debt by utility type

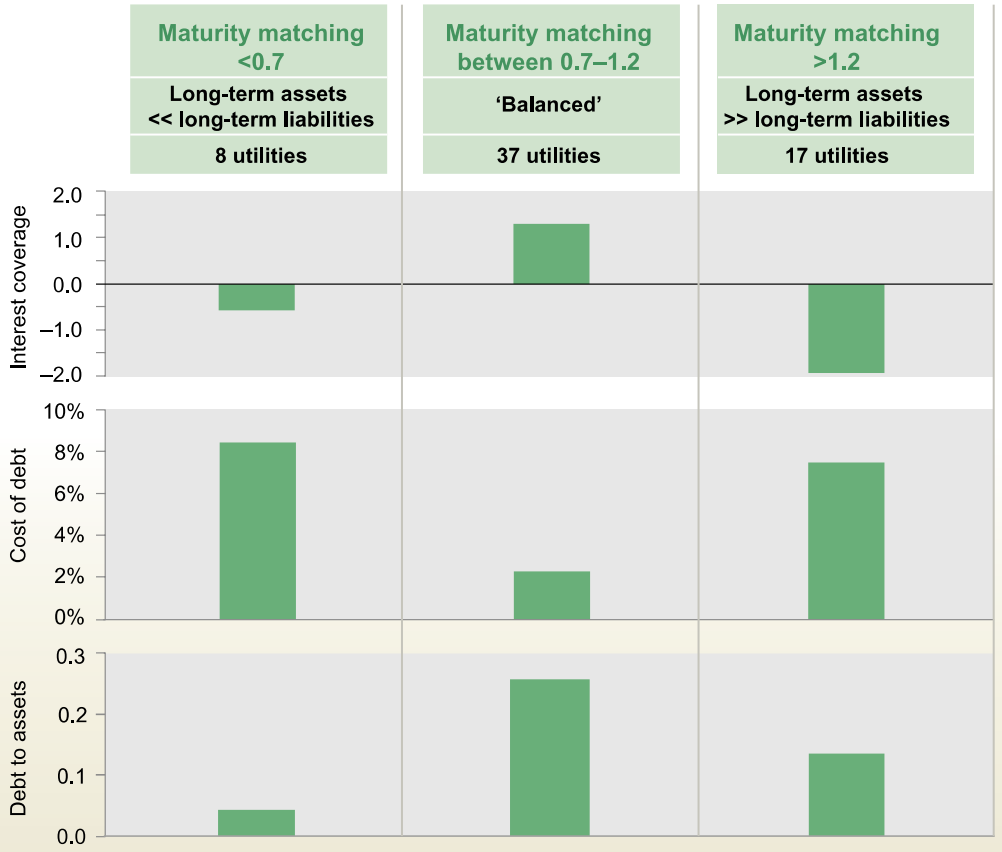


Capital structure: Balance between long-term assets and liabilities

Maintaining a ‘balanced’ capital structure is key to being able to finance investment in new infrastructure

- **Maturity matching compares utilities’ non-current assets to non-current liabilities and equity.** A value close to one is generally considered favorable as it suggests that utilities have financed long-term assets with long-term liabilities or equity. A low value indicates that a utility might find it difficult to service its long-term debt (e.g., if debt is being used to fund short-term cash requirements). A high value indicates that short-term liabilities may have been used to fund investment in assets, resulting in a constant need to refinance.
- **Utilities with maturity matching closer to one are more likely to have lower cost of debt and positive interest coverage ratio.** With a ‘balanced’ capital structure, these utilities are able to take on, and sustainably service, a larger amount of debt.
- **The Nigerian distribution utilities have large mismatches between non-current assets and liabilities.** Many of these utilities have very high (3 of the 11 Nigerian distributors) or very low (4 utilities) maturity matching ratios. Tariffs have been well below the levels required for these utilities to recover their costs. The resulting shortfall in cash has either been funded by debt (resulting in low maturity matching) or has resulted in equity being depleted (resulting in high maturity matching).

Analysis of maturity matching and interaction with other financial performance indicators



Summary of financial performance: Overall performance

Some performance indicators that were previously deteriorating have stabilized

- **Some performance indicators, such as cost recovery, have improved modestly since UPBEAT was first launched.** Some of this modest improvement can be attributed to the tariff subsidy that has improved cost recovery in Nigerian distribution utilities. As noted on previous pages, some utilities were impacted negatively by the effects of the Covid-19 pandemic, but the impact was less than feared for most utilities.
- **However, in most cases, the trends observed in the original UPBEAT study (2012-2018) have not changed materially.**

Dimension	Financial performance indicators	Median value (most recent year)	Trend (2012–2018)	Trend (2015–2020)
Cost recovery	Operating and debt service cost recovery (cash collected), including subsidies	91%	↓	↑
	Operating and debt service cost recovery (cash collected), excluding subsidies	77%	↓	↔
Liquidity	Collection Rate	92%	↔	↔
	Debtor days	203	↑	↑
	Creditor days	248	↑	↑
	Current ratio	82%	↓	↓
	Interest coverage ratio	0.78	↓	↔
Capital structure	Debt to assets ratio	17%	↔	↔
	Cost of debt	4%	↑	↔
Profitability	Net profit margin	–3%	↓	↓

Notes:

- Medians in this table are calculated using the most recent year of data reported by each utility.
- The trends are calculated by deriving the line-of-best-fit through the selected years. The color of the arrow indicates where a trend is favorable (green) or unfavorable (red). No color is used where there is no trend.

Summary of financial performance: Top performing utilities

Few utilities perform consistently well across financial performance indicators

- **Cost recovery, collection rate, and net profit margin are used to evaluate utilities' broad financial performance.** These indicators were selected as providing a good overall measure of financial performance during the original UPBEAT study. The following thresholds are used to define good performance:
  - At least 100% **cost recovery** (excluding subsidies) in each year since 2014. Utilities that only achieve good cost recovery through subsidies are not included.
  - At least 97% **collection rate** in each year since 2014. Collection rate is a good indicator of a utility's ability to recover cash.
  - Positive **net profit margin** in each year since 2014.

  No capital structure indicators are included as it is less appropriate to define a threshold for good / bad performance.
- **Few utilities perform consistently well across these 3 financial indicators.** The table to the right identifies utilities that have performed consistently well.
- **UMEME is now the only utility to meet these thresholds for all three indicators.** This is a decline in the number of utilities meeting this threshold since the previous UPBEAT report, when three utilities qualified.

Top performing utilities across financial indicators

Utility	Country	Operating and debt service cost recovery, excluding subsidies
Central Electricity Board (CEB)	Mauritius	107%
Erongo Regional Electricity Distributor (ErongoRED)	Namibia	104%
Public Utilities Corporation (PUC)	Seychelles	120%
UMEME	Uganda	104%

Utility	Country	Collection Rate
Eswatini Electricity Company (EEC)	Eswatini	101%
Eskom (ESKOM)	South Africa	99%
UMEME	Uganda	98%

Utility –	Country	Net Profit Margin
Botswana Power Corporation (BPC)	Botswana	3%
Central Electricity Board (CEB)	Mauritius	5%
Compagnie Ivoirienne d'Electricité (CIE)	Côte d'Ivoire	2%
Eswatini Electricity Company (EEC)	Eswatini	15%
Erongo Regional Electricity Distributor (ErongoRED)	Namibia	2%
Kenya Electricity Generation Company (KenGen)	Kenya	42%[1]
Societe d'Energie et d'Eau du Gabon (SEEG)	Gabon	2%
UMEME	Uganda	3%

Key Strong performance in **one** category; Strong performance in **two** categories; Strong performance in **three** categories

[1] KenGen's unusually high net profit margin is largely the result of a significant one-off tax credit received in 2020

Summary of financial performance: Role of subsidies

A minority of utilities benefit from subsidies (resulting in zero median values), but subsidies are trending upwards

- **The median value of all subsidy indicators is zero, but this may not present an accurate picture.** Some utilities do not receive subsidies, but others do not report subsidies clearly or in line with international accounting standards in their financial statements, meaning that subsidies may not be captured by the analysis. In other cases, indirect subsidies such as consumer cash subsidies or fuel (or other input) subsidies do not appear in financials but still affect performance.
- **Analysis of the upper quartile value shows that operating subsidies have increased over time.** The upper quartile values are analyzed, because they provide a better indication of how subsidies evolve over time for utilities where subsidies are recorded. The values can be volatile from one year to the next, but operating subsidies in particular have increased in recent years.

Dimension	Financial performance indicators	Median value (most recent year)	Upper quartile value (most recent year)	Trend (2015–2020)
Subsidies and resource extraction	Operating-costs covered by subsidies	0%	13%	↑
	Capital expenditure covered by subsidies	0%	8%	↔
	Effective taxation rate	0%	28%	↔
	Dividend distribution to government	0%	0%	↔

Notes:
- Medians in this table are calculated using the most recent year of data reported by each utility.
- The trends are calculated by deriving the line-of-best-fit through the selected years. The color of the arrow indicates where a trend is favorable (green) or unfavorable (red). No color is used where there is no trend.

Operational performance

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Overview: Operational performance measurement

UPBEAT indicators capture operational performance through efficiency and reliability

Efficiency

- Efficiency indicators are focused on losses. Losses include transmission losses and distribution losses, and account for both technical and commercial losses.
- For utilities with a transmission and distribution function, system losses combine transmission and distribution losses.

Reliability

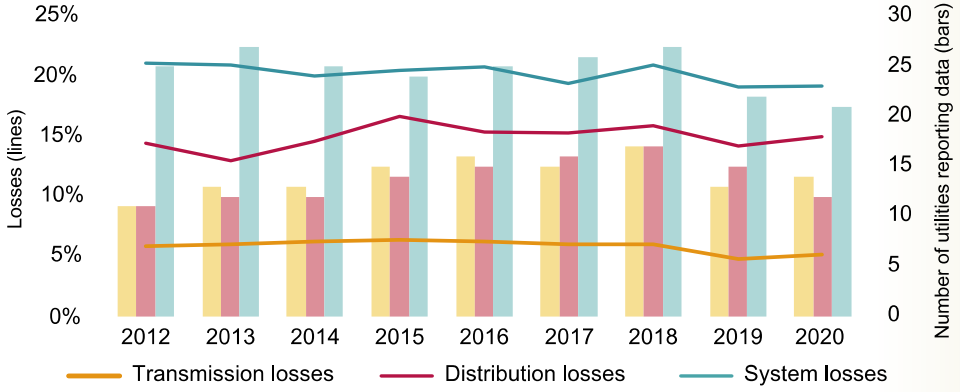
- SAIDI and SAIFI provide measures of system reliability by measuring the average duration and frequency of outages, respectively.

Efficiency: Trends over time and link to financial performance

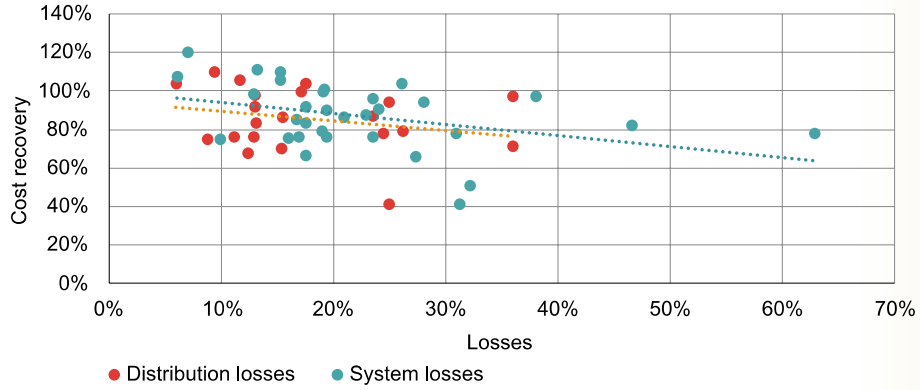
Little improvement in losses in recent years, with high operational losses contributing to poor cost recovery

- **Any improvement in operating losses in recent years has been modest.** The figure on the top shows the median transmission, distribution, and total system losses over time. A small improvement is visible in the last 2-3 years, but this is likely a result of lower data availability during these year—utilities that are slow in reporting data are typically less likely to be top performers.
- **Higher losses are correlated with lower cost recovery,** as shown in the figure on the bottom. This correlation is statistically significant ($p<10^{-11}$), although the correlation is weak ($r^2=0.14$ for system losses, 0.06 for distribution losses). This indicates that while losses can be an important factor affecting financial performance, there are many other factors that also impact cost recovery. A similar negative correlation is seen between losses and net profit margin.
- **High losses increase cost of supply for a utility, which lowers cost recovery.** More generation is required to serve the same electricity demand. And as shown earlier, there is a strong relationship between high cost of supply and lower cost recovery.

Trends in losses and number of utilities reporting data



Relationship between losses and cost recovery



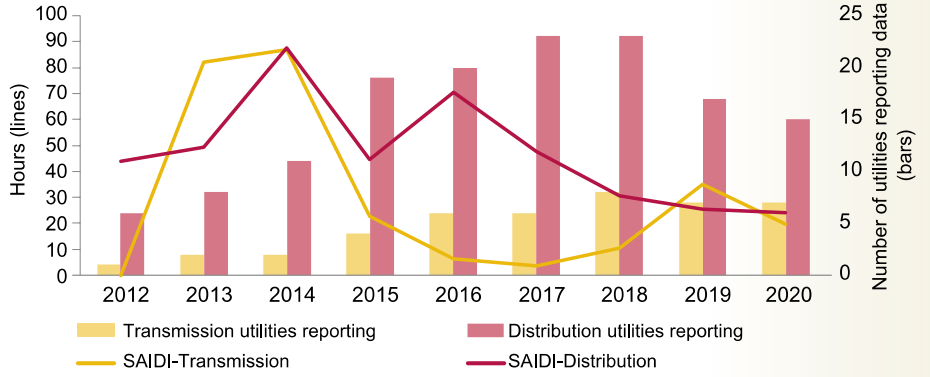
Notes:
Two outlier values have been removed from the scatter plot shown on the right. These outliers are the result of one-off accounting entries. The relationship remains significant at the 1% level when these results are included.

Reliability: Trends over time

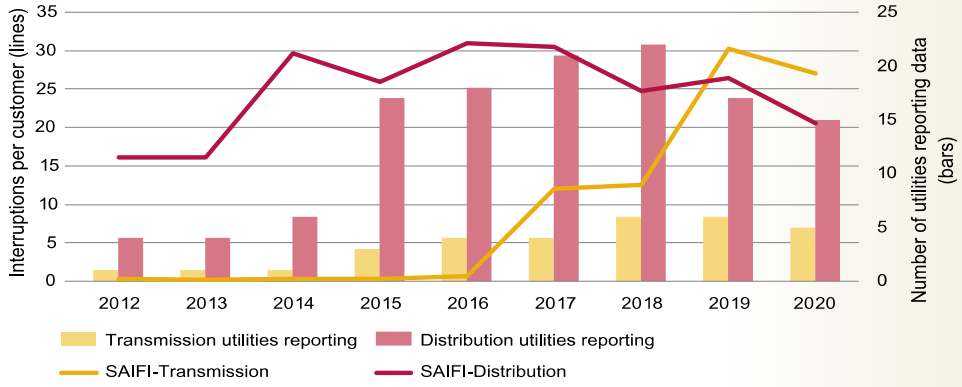
Median SAIDI has declined while SAIFI has increased, but data availability is poor for these indicators

- **Reliability indicators suggest that performance is mixed across the sample.** SAIDI trended down (top figure), suggesting shorter duration of outages, while SAIFI trended up or remained stable (bottom figure), suggesting more frequent outages.
- **The decrease in SAIDI and increase in SAIFI may be due to better measurement rather than any changes in performance.** Shorter duration outages may have been better observed using improved data collection methods. However, it is difficult to draw any clear conclusions from this data given the limited sample size and the likely variation in methodologies applied by utilities in calculating these indicators.
- **Less data is available in 2019 and 2020, but reporting has improved over the medium-term,** as shown by the bars in the figures. In many cases, lower data availability in 2019 and 2020 is likely due to a delay in publishing rather than reduced reporting. The figures suggest that the number of utilities reporting reliability indicators has been improving over the medium-term.

Trends in SAIDI and number of utilities reporting data



Trends in SAIFI and number of utilities reporting data



Summary of operational performance: Overall performance

Data availability remains a limiting factor in drawing firm conclusions on the operating performance of utilities

- **Data availability remains low for many operating performance indicators.** This is especially the case for reliability indicators, as shown in the table below and on the previous page. The number of utilities reporting reliability indicators has declined. However, this may simply reflect a delay rather than a reduction in reporting.
- **Overall, operating performance appears to be stable across the database.** The original UPBEAT publication identified some deterioration in reliability indicators, albeit again noting that data availability was poor. Data collected for this update suggest that these trends have stabilized.
- **Efficiency indicators show some signs of improvement, with reductions in transmission and system losses over time.** As noted previously, this apparent improvement is modest and again could simply be a result of a delay in reporting by some utilities.

	Operational performance indicator	Previous UPBEAT report			This update		
		Utilities Reporting	Reported Range	Trend (2012–2018)	Utilities Reporting	Reported Range	Trend (2015–2020)
Reliability	SAIDI/Transmission	5	0.01–45.9 h	↑	7	0.01–232 h	↔
	SAIFI/Transmission	4	0.2–22.2	↑	5	0.21–56.5	↑
	SAIDI/Distribution	20	0.4–353 h	↑	14	0.35–140.6 h	↓
	SAIFI/Distribution	20	0.1–3,658	↑	14	1.72–3,326	↔
Efficiency	Transmission Losses	12	1.5–15.0%	↓	14	2–14%	↓
	Distribution Losses	14	8.5–51.0%	↑	12	6–36%	↔
	System Losses	17	10.5–58%	↑	21	6–63%	↓

Transparency and accountability

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Overview: Transparency and accountability (T&A) measurement

Performance on T&A is measured across four key dimensions

Performance management and reporting

- These indicators measure whether the utility publishes performance data, especially financial statements.
- Some indicators also focus on the quality and timeliness of the information made available.

Integrity and internal controls

- These indicators observe whether basic internal controls (internal audit, eProcurement, advertising vacancies) exist.
- Reporting on governance (e.g., within a utility's annual report) is also covered.

Financial discipline

- This section covers whether there are factors that would hold the utility's financial reporting to enhanced standards, e.g., public listing or maintaining a formal credit rating.

Stakeholder relations

- These indicators measure the ease with which the utility can be contacted; e.g., to obtain a connection or to report a fault.
- Reporting on areas of interest to different stakeholder groups (CSR, environment, gender) is also covered.

Summary of T&A performance: Overall performance

Publishing of timely accounts has deteriorated, while coverage of areas such as gender and cyber-security has improved

- **Many performance management indicators suffer from delays in publishing.** For example, the “financial statements published on website” indicator trends downward due to delays in publication.
- **However, other indicators show an improvement.** An example is a sharp increase in the publishing of gender statistics. Reporting on cyber-security has also improved. These are both areas that have benefited from additional attention in recent years.

Dimension	Transparency and Accountability	Utilities reporting			
		2016	2018	2020	Trend
Performance management and reporting	Publicly available performance agreement with government or regulator	9	10	11	
	Publicly available regular performance reports from regulator	17	22	12	
	Financial statements published on website	32	27	19	
	Annual report published on website	25	21	17	
	Financial statements use IFRS/OHADA; independently audited	47	35	29	
	Audit opinion unqualified	29	25	20	
	Annual report covers actions taken to address cybersecurity	3	4	6	
	Up-to-date corporate strategy publicly available	10	15	15	
	Annual report confirms performance management system in place	16	14	11	
	AR includes relevant operational and financial KPIs	21	22	15	
Integrity and internal controls	Annual report includes a governance section	18	13	15	
	Board is organized into sub-committees (including an Audit Committee); annual report includes a charter on each	17	12	11	
	Annual report provides information on Audit Committee activities	12	10	14	
	Internal controls exist; internal audit function reporting directly to Board	25	22	22	
	Vacancies advertised on company website		38	22	
	Utility uses eProcurement		10	7	
Financial discipline	Utility is listed	3	4	3	
	Utility maintains a credit rating	3	3	4	
Stakeholder Relations	Utility website provides connection procedures		27	21	
	SMS/app/call center supports service interruption reporting and billing inquiries		30	22	
	Annual report includes Corporate Social Responsibility narrative	20	17	14	
	Annual report includes an environmental narrative	20	17	12	
	Annual report includes gender statistics	13	12	19	

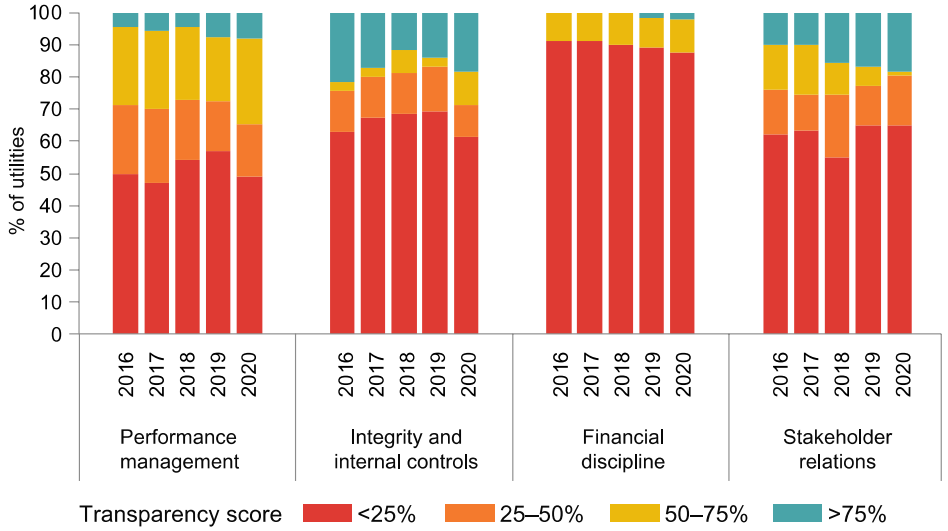
Notes:
Grey cells are web-based indicators which could not be collected before for years prior to launch of the first UPBEAT database in 2018

Summary of T&A performance: Link to financial & operational performance

Utilities reporting more performance management indicators have more consistent cost recovery

- **The number of utilities meeting the requirements of the UPBEAT transparency and accountability indicators remains low.** No clear trend is observable, as shown in the figure on the left
- **Utilities publishing more performance management indicators are less likely to have very low cost recovery.** The middle figure shows operating cost recovery excluding subsides against the percentage of reported performance management indicators. The data appears heteroskedastic — utilities with a low number of P&M indicators reported have a wide spread in cost recoveries reported while those scoring well on performance management have more consistent (and generally higher) cost recoveries. Greater transparency increases pressure upon utilities to publish accurate financial statements, which increases the usability of published data.
- **There is no clear correlation between performance management scores and losses** (right figure). While the relationship between performance management and distribution losses is significant ($p<0.01$), the correlation is very weak ($r^2=0.03$). The relationship for system losses is not significant.

Transparency indicator trends



Relationship between performance management and cost recovery

Relationship between performance management and losses

ANNEX A

UPBEAT performance indicators

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Financial performance indicators

Cost recovery indicators have been updated to focus more on cashflow

- **Cost recovery indicators provide information on the ability of utilities to recover their recurring obligations.** Three main variants have been explored in analyzing cost recovery, as described earlier:
  - Recovery of **operating costs** only, and recovery of both **operating and debt service costs**.
  - Cost recovery on a **cashflow** basis and a **billed revenue** basis.
  - Measure of cost recovery **with and without subsidies**.

- In this update, the focus is on cost recovery indicators that are calculated on the basis of cash collected. In particular, operating and debt service cost recovery is only calculated on the basis of cash collected as these indicators are more informative compared to indicators calculated on the basis of billed revenue. Unless stated otherwise, analysis presented in this brief shows cost recovery indicators on a cash collected basis.

Dimension	Financial performance indicators	Description	Calculation	New in this UPBEAT update
Cost recovery	Operating cost recovery (cash collected), including subsidies	Ability to cover recurrent operating obligations through cash collected, including operating subsidies.	[**Revenue** plus **Operating Subsidies** minus Cashflow from Net Trade Receivables (**Net Trade Receivables—Net Trade Receivables Previous Year**) plus **Bad Debt Expense** plus (**Deferred Income on Prepaid Sales** minus **Deferred Income on Prepaid Sales Previous Year**)] divided by Operating Costs [-(**Cost of Sales** plus **Other Operating Expenses** minus **Bad Debt Expense** plus **Income Tax**)]	✓
	Operating cost recovery (cash collected), excluding subsidies	Ability to cover recurrent operating obligations through cash collected, excluding operating subsidies	[**Revenue** minus Cashflow from Net Trade Receivables (**Net Trade Receivables—Net Trade Receivables Previous Year**) plus **Bad Debt Expense** plus (**Deferred Income on Prepaid Sales** minus **Deferred Income on Prepaid Sales Previous Year**)] divided by Operating Costs [– (**Cost of Sales** plus **Other Operating Expenses** minus **Bad Debt Expense** plus **Income Tax**)]	✓
	Operating and debt service cost recovery (cash collected), including subsidies	Ability to cover recurrent payment obligations and service existing debt through cash collected, including operating subsidies.	[**Revenue** plus **Operating Subsidies** minus Cashflow from Net Trade Receivables (**Net Trade Receivables** minus **Net Trade Receivables Previous Year**) plus **Bad Debt Expense** plus (**Deferred Income on Prepaid Sales** minus **Deferred Income on Prepaid Sales Previous Year**)] divided by Operating Costs [—(**Cost of Sales** plus **Other Operating Expenses** minus **Bad Debt Expense** plus **Income Tax**)] plus Debt Service [**Interest Paid** plus **Repayment Component of Debt Servicing Cashflows**]	

Financial performance indicators

Cost recovery indicators have been updated to focus more on cashflow

Dimension	Financial performance indicators	Description	Calculation	New in this UPBEAT update
Cost recovery	Operating and debt service cost recovery (cash collected), excluding subsidies	Ability to cover recurrent payment obligations and service existing debt through cash collected, excluding operating subsidies.	[**Revenue** minus Cashflow from Net Trade Receivables (**Net Trade Receivables** minus **Net Trade Receivables Previous Year**) plus **Bad Debt Expense** plus (**Deferred Income on Prepaid Sales** minus **Deferred Income on Prepaid Sales Previous Year**)]divided by Operating Costs [– (**Cost of Sales** plus **Other Operating Expenses** minus **Bad Debt Expense** plus **Income Tax**)] plus Debt Service [**Interest Paid** plus (**Repayment Component of Debt Servicing Cashflows** plus **Negative Net Proceeds**)]	
	Operating cost recovery (billed revenue), including subsidies	Ability to cover recurrent operating obligations through revenues, including operating subsidies.	[**Revenue** plus **Operating Subsidies**] divided by Operating Costs [– (**Cost of Sales** plus **Other Operating Expenses** minus **Bad Debt Expense** plus **Income Tax**)] plus Debt Service [**Interest Paid** plus **Repayment Component of Debt Servicing Cashflows**]	
	Operating cost recovery (billed revenue), excluding subsidies	Ability to cover recurrent operating obligations through revenues, excluding operating subsidies.	**Revenue** divided by Operating Costs [– (**Cost of Sales** plus **Other Operating Expenses** minus **Bad Debt Expense** plus **Income Tax**)] plus Debt Service [**Interest Paid** plus (**Repayment Component of Debt Servicing Cashflows** plus **Negative Net Proceeds**)]	

Financial performance indicators

Liquidity and capital structure indicators largely remain unchanged with a few additional indicators added

- **Liquidity indicators detail the utility's ability to convert assets to cash.** The utility's ability to collect receivables, delay payments and generate cash to cover debt repayments are covered by these indicators.
- **Interest coverage ratio is a new liquidity indicator.** This indicator examines whether operating income covers interest obligations, without considering debt repayments. This replaces the DSCR indicator, which is better suited to a project financed entity (with a finite investment lifetime) than to a utility business.
- **Capital structure indicators detail the mix of debt and equity used to finance utilities' activities.** This looks at both the gearing used by utilities as well as the cost of debt financing available. Debt to equity and net debt to sales ratios are new indicators for UPBEAT this update. These indicators add richness to the database, supplementing the previous debt to assets ratio, which is useful for understanding the capital structure of utilities with a volatile balance sheet.

Dimension	Financial performance indicators	Description	Calculation	New in this UPBEAT update
Liquidity	Collection Rate	Percentage of billed revenue collected.	[**Revenue** minus Cashflow from Net Trade Receivables (**Net Trade Receivables** minus **Net Trade Receivables Previous Year**) plus **Bad Debt Expense** plus (**Deferred Income on Prepaid Sales** minus **Deferred Income on Prepaid Sales Previous Year**)] divided by **Revenue**	
	Current ratio	Ability to use current assets to meet current liability.	**Current Assets** divided by **Current Liabilities**	
	Debtor days	Average number of days required to receive payments from customers.	**Gross Trade Receivables** divided by **Revenue** multiplied by 365	
	Creditor days	Average number of days required to pay suppliers.	—**Gross Trade Payables** divided by **Cost of Sales** multiplied by 365	
	Interest coverage ratio	Ability to use operating income to repay interest obligations without including debt repayments (which could simply be refinanced)	—**Earnings Before Interest and Tax** divided by **Interest Expense**	✓

Financial performance indicators

Liquidity and capital structure indicators largely remain unchanged with a few additional indicators added

Dimension	Financial performance indicators	Description	Calculation	New in this UPBEAT update
Capital structure	Debt to assets ratio	Ability to use debt to finance assets.	Debt [**Long Term Debt** plus **Current Portion of Long Term Debt** plus **Short Term Borrowings** plus **Bank Overdraft**] divided by **Total Assets**	
	Debt to equity ratio	Additional indicators to examine utility gearing. These two additional measures can be helpful for understanding capital structure, especially if a utility's balance sheet is volatile.	Debt [**Long Term Debt** plus **Current Portion of Long Term Debt** plus **Short Term Borrowings** plus **Bank Overdraft**] divided by **Total Equity**	✓
	Net debt to sales ratio		Net Debt [**Long Term Debt** plus **Current Portion of Long Term Debt** plus **Short Term Borrowings** plus **Bank Overdraft** minus **Cash and Cash Equivalents**] divided by **Revenue**	✓
	Maturity matching	Non-current assets to non-current liabilities and equity. This provides an indication of whether non-current liabilities are balanced with non-current assets.	**Total Non-current Assets** divided by [**Total Non-Current Liabilities** plus **Total Equity**]	
	Cost of debt	Effective interest rate paid on debts.	— **Interest Expense** divided by Debt [**Long Term Debt** plus **Current Portion of Long Term Debt** plus **Short Term Borrowings** plus **Bank Overdraft**]	

Financial performance indicators

A new category of indicator analyzing the role of subsidies has been included

- **Profitability indicators examine the ability of utilities to turn revenues into profit.** In UPBEAT the first analysis, net profit margin and EBITDA margin were calculated. In this update, EBIT margin is also calculated. This indicator was added for completeness, supplementing the other measures of profitability.
- **A new category of financial indicators analyzing subsidies and resource extraction has been added to the UPBEAT database.** The aim of these indicators is to help examine how much of utilities' activities are financed by subsidies.

Dimension	Financial performance indicators	Description	Calculation	New in this UPBEAT update
Profitability	Net profit margin	Ratio of net profits to revenues.	**Profit for the Year** divided by **Revenue**	
	EBIT margin	Ratio of Earning Before Interest and Tax (EBIT) to revenues.	**Earnings Before Interest and Tax** divided by **Revenue**	✓
	EBITDA margin	Ratio of earning before Interest, Tax, Depreciation and Amortisation (EBITDA) to revenues.	**Earnings Before Interest and Tax Depreciation Amortization** divided by **Revenue**	
Subsidies and/or resource extraction	Operating-costs covered by subsidies	Proportion of operating-costs that are met by operating subsidies. This indicator is calculated on income statement data.	**Operating Subsidies** divided by Operating Costs [– (**Cost of Sales** plus **Other Operating Expenses** minus **Bad Debt Expense** plus **Income Tax**)]	✓
	Capital expenditure covered by subsidies	Cashflow capital expenditure covered by cashflow capital subsidies.	— **Cash Flow from Capital Subsidies** divided by **Cash Invested in Fixed Assets**	✓
	Effective taxation rate	Ratio of income tax expense to earnings before tax.	— **Income Tax** divided by **Earnings Before Tax**	✓
	Dividend distribution to government	Dividends paid to government divided by net profits.	— [**Dividend Paid** multiplied by **Percent of Shares Owned by Government**] divided by **Profit for the Year**	✓

Operational performance indicators

Time to connect and generator availability are no longer included in UPBEAT

- **Technical performance indicators are split into two categories: reliability and efficiency.** Reliability indicators cover the frequency and duration of outages, while efficiency indicators analyze losses.
- **Time to connect and generator availability have been removed from the UPBEAT database.** Availability was removed due to poor data availability. Time to connect came from World Bank Doing Business, which has been discontinued.
- **A range of supporting technical data was also collected.** This includes analysis of generation volumes by technology and volumes of sales. This data is used to calculate several supporting indicators such as average cost of sales.

Dimension	Technical performance indicators	Description	New in this UPBEAT update
Reliability	SAIDI/transmission	System Average Interruption Duration Index: the average outage duration for each customer served.	
	SAIFI/transmission	System Average Interruption Frequency Index: average number of interruptions a customer experienced over the year.	
	SAIDI/distribution	System Average Interruption Duration Index: the average outage duration for each customer served.	
	SAIFI/distribution	System Average Interruption Frequency Index: average number of interruptions a customer experienced over the year.	
Efficiency	Transmission losses	Percentage of electricity lost from transmission grid.	
	Distribution losses	Percentage of electricity lost from distribution grid.	
	System losses	Percentage of electricity lost from total electricity network (transmission and distribution).	

Notes:

- Where utilities report system losses directly the reported values are used, where utilities report T&D losses separately but not combined system losses were combined according 1-(1-T)(1-D)
- The following indicators were discontinued in this version of UPBEAT:
  - Availability of generation plants by type
  - Time to connect

Transparency and accountability indicators

Indicators are also used to assess the transparency of each utility

- **A wide range of transparency and accountability indicators are assessed.** These indicators are simple “yes”/”no” questions. Collectively, the indicators are intended to reflect a best practice benchmark for utility transparency. Examples of the indicators included in this category are shown in the table.
- **Utilities are scored across each of four dimensions of transparency:** performance management and reporting, integrity and internal controls, financial discipline, and stakeholder relations. Average scores are calculated across each category and overall. Utilities meeting the requirements of more of the indicators in a given category achieve a higher score.

Dimension	T&A performance indicators
Performance management and reporting	Publicly available performance agreement with government or regulator
	Publicly available regular performance reports from regulator
	Financial statements published on website
	Annual report published on website
	Financial statements use IFRS/OHADA; independently audited
	Audit opinion unqualified
	Annual report covers actions taken to address cybersecurity
	Up-to-date corporate strategy publicly available
	Annual report confirms performance management system in place
	Annual report includes relevant operational and financial KPIs
Integrity and internal controls	Annual report includes a governance section
	Board is organized into sub-committees (including an Audit Committee); annual report includes a charter on each
	Annual report provides information on Audit Committee activities
	Internal controls exist; there is an internal audit function reporting directly to Board
	Vacancies advertised on company website
	Utility uses eProcurement
Financial discipline	Utility is listed
	Utility maintains a credit rating
Stakeholder relations	Utility website provides connection procedures
	SMS/app/call center supports service interruption reporting and billing inquiries
	Annual report includes Corporate Social Responsibility narrative
	Annual report includes an environmental narrative
	Annual report includes gender statistics

ANNEX B

Utility list

UPBEAT

List of utilities included in UPBEAT

Utility name	Shortform	Country	Power pool	Type	Public utility (majority ownership)
Empresa Pública de Produção de Electricidade	PRODEL	Angola XX	CAPP, SAPP	G	✓
Empresa Nacional de Distribução de Electricidade	ENDE	Angola	CAPP, SAPP	D	✓
Empresa Rede Nacional de Transporte de Electricidade	RNT	Angola	CAPP, SAPP	T	✓
Société Béninoise d'Energie Electrique	SBEE	Benin	WAPP	G/T/D	✓
Botswana Power Corporation	BPC	Botswana	SAPP	G/T/D	✓
Société Nationale d'électricité du Burkina Faso	SONABEL	Burkina Faso	WAPP	G/T/D	✓
Régie de Production et de Distribution d'Eau et d'Electricité	REGIDESO	Burundi	CAPP, EAPP	G/T/D	✓
Empresa de Electricidade e Àqua	ELECTRA	Cabo Verde	None	G/T/D	✓
Eneo Cameroun S.A.	Eneo	Cameroon	CAPP	G/T/D	x
Energie Centrafricaine	ENERCA	Central African Republic	CAPP	G/T/D	✓
Société Nationale d'Electricité	SNE	Chad	CAPP	G/T/D	✓
SONELEC	SONELEC	Comoros	None	G/T/D	✓
Société des Energies de Cote d'Ivoire	CIENERGIES	Côte d'Ivoire	WAPP	G/T/D	✓
Compagnie Ivoirienne d'Electricité	CIE	Côte d'Ivoire	WAPP	G/T/D	x
Société Nationale d'Electricité	SNEL	Democratic Republic of the Congo	CAPP, EAPP, SAPP	G/T/D	✓
Ethiopian Electric Power	EEP	Ethiopia	EAPP	G/T	✓
Ethiopian Electric Utility	EEU	Ethiopia	EAPP	D	✓

G = Generation
T = Transmission
D = Distribution

List of utilities included in UPBEAT

Utility name	Shortform	Country	Power pool	Type	Public utility (majority ownership)
Eswatini Electricity Company	EEC	Eswatini	SAPP	G/T/D	✓
Société d'Energie et d'Eau du Gabon	SEEG	Gabon	CAPP	G/T/D	x
Gambia Water & Electricity Company	NAWEC	Gambia,The	WAPP	G/T/D	✓
Electricity Company of Ghana	ECG	Ghana	WAPP	D	✓
Ghana Grid Company	GRIDCo	Ghana	WAPP	T	✓
Volta River Authority	VRA	Ghana	WAPP	G	✓
Electricité de Guinée	EDG	Guinea	WAPP	G/T/D	✓
Electricidade e Alguas de Guine-Bissa	EAGB	Guinea-Bissau	WAPP	G/T/D	✓
Kenya Electricity Generation Company	KenGen	Kenya	EAPP	G	✓
Kenya Electricity Transmission Co.	KETRACO	Kenya	EAPP	T	✓
Kenya Power and Lighting Company	KPLC	Kenya	EAPP	T/D	✓
Lesotho Electricity Company	LEC	Lesotho	SAPP	G/T/D	✓
Liberia Electricity Corporation	LEC	Liberia	WAPP	G/T/D	✓
Jiro Sy Rano Malagasy	JIRAMA	Madagascar	None	G/T/D	✓
Electricity Supply Corporation of Malawi	ESCOM	Malawi	SAPP	G/T/D	✓
Energie du Mali	EDM	Mali	WAPP	G/T/D	✓
Société Mauritanienne d'Électricité	SOMELEC	Mauritania	None	G/T/D	✓

G = Generation
T = Transmission
D = Distribution

List of utilities included in UPBEAT

Utility name	Shortform	Country	Power pool	Type	Public utility (majority ownership)
Central Electricity Board	CEB	Mauritius	None	G/T/D	✓
Electricidade de Moçambique	EDM	Mozambique	SAPP	G/T/D	✓
NamPower	NamPower	Namibia	SAPP	G/T/D	✓
Central North Regional Electricity Distributor	CENORED	Namibia	SAPP	D	✓
Erongo Regional Electricity Distributor	ErongoRED	Namibia	SAPP	D	✓
Northern Regions Electricity Distributor	NORED	Namibia	SAPP	D	✓
Société Nigérienne d'Electricité	NIGELEC	Niger	WAPP	G/T/D	✓
Abuja Electricity Distribution Company	AEDC	Nigeria	WAPP	D	x
Eko Electricity Distribution Company	EKEDC	Nigeria	WAPP	D	x
Transmission Company of Nigeria	TCN	Nigeria	WAPP	T	✓
Jos Electricity Distribution	Jos	Nigeria	WAPP	D	x
Kano Electricity Distribution Company	KEDCO	Nigeria	WAPP	D	x
Kaduna Electricity Distribution Company	KADUNA	Nigeria	WAPP	D	x
Port Harcourt Electricity Distribution Company	PHED	Nigeria	WAPP	D	x
Yola Electricity Distribution Company	YEDC	Nigeria	WAPP	D	x
Benin Electricity Distribution Company	BEDC	Nigeria	WAPP	D	x
Enugu Electricity Distribution Company	EEDC	Nigeria	WAPP	D	x

G = Generation
T = Transmission
D = Distribution

List of utilities included in UPBEAT

Utility name	Shortform	Country	Power pool	Type	Public utility (majority ownership)
Ibadan Electricity Distribution Company	IBEDC	Nigeria	WAPP	D	x
Ikeja Electricity Distribution Company	IKEJA	Nigeria	WAPP	D	x
Energy Utility Corporation Limited	EUCL	Rwanda	EAPP	G/T/D	✓
Empresa de Água e Electricidade	EMAE	São Tomé and Príncipe	CAPP	G/T/D	✓
Société Nationale d'Électricité du Sénégal	Senelec	Senegal	WAPP	G/T/D	✓
Public Utilities Corporation	PUC	Seychelles	None	G/T/D	✓
Electricity Distribution and Supply Authority	EDSA	Sierra Leone	WAPP	D	✓
Eskom	ESKOM	South Africa	SAPP	G/T/D	✓
Sudanese Electricity Distribution Company	SEDC	Sudan	EAPP	D	✓
Sudanese Electricity Transmission Company	SETC	Sudan	EAPP	T	✓
Sudanese Hydro and Renewable Energy Generation Company	SHREG	Sudan	EAPP	G	✓
Sudanese Thermal Power Generating Company	STPGC	Sudan	EAPP	G	✓
Tanzania Electric Supply Company	TANESCO	Tanzania	EAPP,SAPP	G/T/D	✓
Electric Power Company of Togo	CEET	Togo	WAPP	G/T/D	✓
Uganda Electricity Transmission Company	UETCL	Uganda	EAPP	T	✓
Uganda Electricity Generation Company	UEGCL	Uganda	EAPP	G	✓
Umeme	UMEME	Uganda	EAPP	D	x

G = Generation
T = Transmission
D = Distribution

List of utilities included in UPBEAT

Utility name	Shortform	Country	Power pool	Type	Public utility (majority ownership)
Umeme	UMEME	Uganda	EAPP	D	x
Copperbelt Energy Corporation	CEC	Zambia	SAPP	G/T/D	x
Zambia Electricity Supply Corporation	ZESCO	Zambia	SAPP	G/T/D	✓
Zimbabwe Electricity Transmission and Distribution Company	ZETDC	Zimbabwe	SAPP	T/D	✓
Zimbabwe Power Company	ZPC	Zimbabwe	SAPP	G	✓

G = Generation
T = Transmission
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