Final report

Uganda's energy sector

A fiscal risk

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June 2020

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UGANDA'S ENERGY SECTOR: A FISCAL RISK

Report 2 of the LSE International Growth Centre (IGC) funded project
Uganda's energy sector: A fiscal risk

Menno Jan van der Ven
June 2020

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List of abbreviations

A.i.a.	Appropriation in Aid
AFD	Agence Francaise de Developpement
BEL	Bujagali Energy Limited
CSO NRCP	Civil Society Organisations to the National Resources Committee of Parliament
EESL	Eskom Enterprises SOC Limited
ERA	Electricity Regulatory Authority
EUL	Eskom Uganda Limited
FY	Fiscal Year
GDP	Gross Domestic Product
GOGLA	Global Off-Grid Lighting Association
GoU	Government of Uganda
GWh	Gigawatt-hour
HFO	Heavy Fuel Oil
IMF	International Monetary Fund
IPO	Initial Public Offering
IPPs	Independent Power Producers
KWh	Kilowatt-hour
Ltd	Limited
LV	Low Voltage
MoFPED	Ministry of Finance, Planning and Economic Development
MTEF	Medium-Term Expenditure Framework
MV	Medium Voltage
MW	Megawatt
NBFP	National Budget Framework Paper
NDP I	First National Development Plan
NDP II	Second National Development Plan
NDP III	Third National Development Plan
NPA	National Planning Authority
PERD	Public Enterprises Reform and Divestiture Act
PPA	Power Purchase Agreements
PPP	Public Private Partnerships
RCF	Rapid Credit Facility
REA	Rural Electrification Agency
UBOS	Uganda Bureau of Statistics
UEB	Uganda Electricity Board
UEDCL	Uganda Electricity Distribution Company Limited
UEGCL	Uganda Electricity Generation Company Limited
UETCL	Uganda Electricity Transmission Company Limited
UGX	Uganda Shilling
USD	US Dollar
WENRECO	West Nile Rural Electrification Company
ZAR	South African Rand

1. Introduction

The development of the energy sector is high on the political agenda in Uganda. Access to energy is a driver of economic growth, industrial development and an improved business climate. Similarly, the government of Uganda believes that "to shift from a peasantry to an industrialized and largely urban society, it must be propelled by electricity as a form of modern energy" (Vision 2040, NPA, 2007).

The government of Uganda has allocated large proportions of its budget to investments in the energy sector. The government aims to increase power capacity from 943 MW in 2018 to 3,500 MW by 2025 and to more than 40,000 MW by 2040 (Vision 2040, NPA, 2007; NDP III, NPA, 2020). While the coverage of the sector's infrastructure has already critically improved over the past decade, still only a small portion of the population and businesses has access to reliable grid electricity. According to the government, "Uganda currently has one of the lowest electricity consumptions per capita in the world" (NDP III, NPA, 2020, page 8). Therefore, parliament approved a new development program for the energy sector under the third National Development Plan in January 2020. Planned projects include expansions of the transmission grid and distribution networks, as well as further investments in generation capacity.

The progress and ambitions of the government and the energy sector are applaudable, but the investments come at a cost. The Ministry of Energy and Mineral Development funds a large proportion of the investment through borrowing from external sources. In fiscal year 2017/2018, only 25.1 percent of investment was financed through tax and other domestic sources, while the remaining 74.9 percent was borrowed externally (MoFPED, 2018a). The domestic proportion of the budget has further decreased to 23.1 percent and 21.1 percent in the following two fiscal years and is projected to increase to 27 percent in the upcoming fiscal year (MoFPED, 2020a). The Ministry of Finance, Planning and Economic Development (MoFPED) mobilizes the external resources and has in turn lent out the capital to state-owned enterprises in the energy sector. These loans to energy firms have become a significant share of public debt and enterprises struggle to pay them back. Their revenues are constrained by low electricity prices, limited revenues under concession agreements and incomplete transmission infrastructure (NDP III, NPA, 2020; UEGCL, 2015a, 2017; UETCL, 2017). The inability of the sector and its state-owned enterprises to repay their obligations is an understudied fiscal risk for the central government.

The economic impact of Covid-19 amplifies risks and will put more pressure on the performance of the energy sector. Economic activity in Uganda is disrupted due to the domestic lockdown measures and limited trade flows. The worst-case scenario of the Ministry of Finance has become reality, with a country-wide lockdown and closure of borders. Economic growth projections for 2020 have been adjusted downwards and the Ministry of Finance expects around 2.6 million Ugandans to be pushed into poverty (MoFPED, 2020b; IMF, 2020a).

Slowed economic development is anticipated to cause both supply and demand shocks in the energy sector. Electricity demand will likely be below previous estimates and households and businesses will be less able to pay their electricity bills (Puliti, 2020). Reduced foreign

investment and delays in the establishment of industry will leave newly-installed energy generation capacity unused. Furthermore, the containment measures might limit the sector's ability to implement its development programs or construct infrastructure as planned, while the funding for these programs and projects has already been mobilized. The Minister of Finance stated in March 2020 that "there is a likely to be a slowdown in the rate of execution of Government's development projects, especially in the transport and the energy sectors…" (MoFPED, 2020b). Consequently, the government might need to provide additional financial support to the energy sector. Simultaneously, estimates for the sector's revenue might be overvalued, because future income from oil production is uncertain now that the oil price has fallen sharply over de first quarter of 2020. These developments will put more pressure on the country's fiscal position.

This paper explores the fiscal risk posed by the electricity sector. While it will highlight a number of relevant effects, it is not primarily focused on the impact of the Covid-19 health crisis on the energy sector's performance. Firstly, Uganda's economic development over the past two decades and the government's current debt position are introduced. Secondly, the financial performance of the sector and its state-owned enterprises are analysed. Thirdly, the ability of the enterprises to recover their operational costs with the current tariff methodology is studied. This enables an assessment of the fiscal risk posed by the sector. The conclusions of the assessment are presented in chapter 5 together with a proposal for policy reforms to limit and mitigate risks.

Four key sources of fiscal risk from the energy sector are identified. Firstly, ever-increasing budget spending and a continued political push for (large-scale) projects. Secondly, the dependency of the sector on external financing and the stringent conditions of borrowing. Thirdly, the weak financial performance and large debt portfolios of the state-owned enterprises. And lastly, the non-cost recovering tariffs.

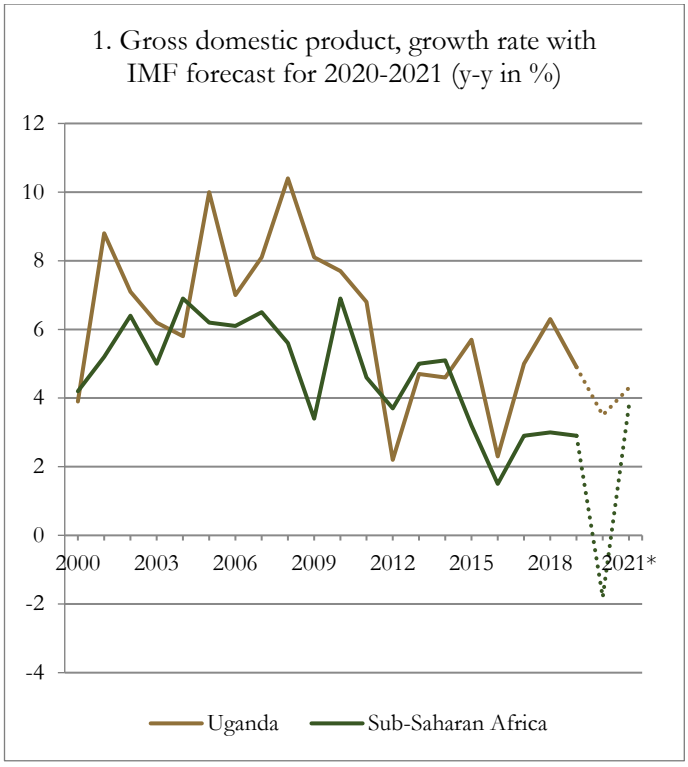
2. Uganda's economic development

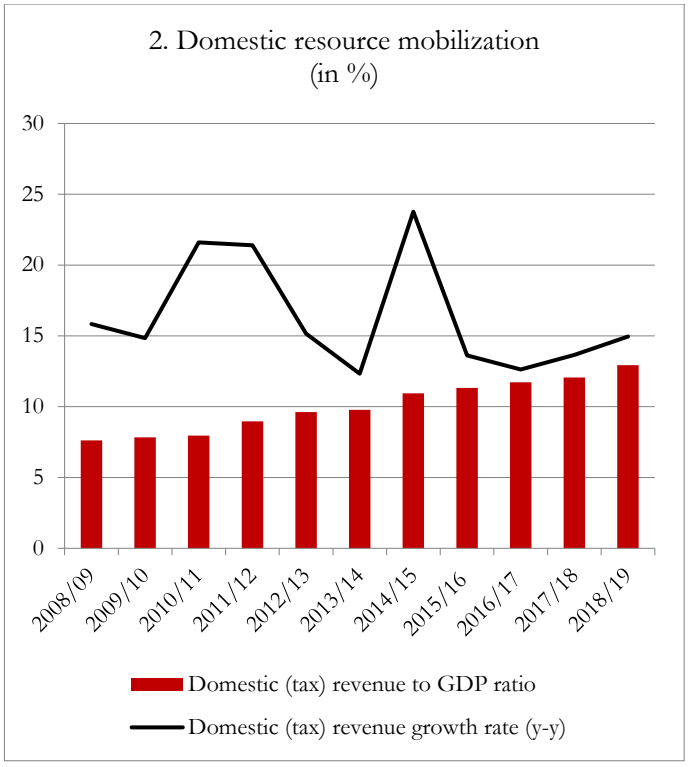
2.1. Macroeconomic background

Uganda has experienced an exceptional path of economic development over the past three decades. After fifteen years of civil war under the regime of Idi Amin, Uganda's population was one of Africa's poorest in 1986 (World Bank, 1993). Following the restoration of peace, the government of President Museveni implemented the Economic Recovery Programme. The Programme proved to be successful. Uganda experienced strong economic growth in the 1980s and poverty fell sharply, thanks in no small part to the government's ability to attract foreign aid. The desire to restore political stability, to reduce poverty, and to take action after the outbreak of the HIV/Aids pandemic, contributed to international partners' willingness-to-donate (Carson, 2005; Robinson, 2005). Aid peaked at 19 percent of GDP in 1992 and averaged 11 percent between 1990 and 2006 (Bwire, et al., 2013). Alongside aid, partners offered loans and grants to finance further development.

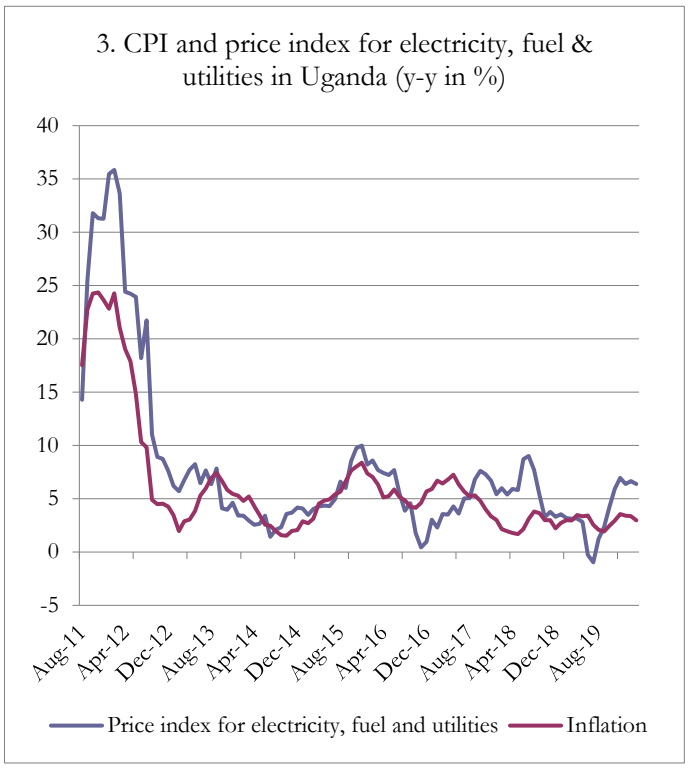
Even though most external financing was concessional, debt repayments burdened the government budget and Uganda called for debt relief. The government of Uganda wanted the budget to be used for social services, education and health, which would contribute to the country's poverty reduction strategy. In 1998, the IMF and the International Development Association proposed debt reduction under the Heavily Indebted Poor Countries (HIPC) initiative (Robinson, 2005). Relief to Uganda amounted to USD 2 billion and debt repayments fell by more than two-thirds. According to the IMF, the relief reduced the debt service payments to USD 71 million and the ratio of debt service to revenue to 11 percent in fiscal year 2000/2001. The IMF estimated that without the relief, debt servicing would have amounted to USD 169 million that year, equivalent to 27 percent of revenue (IMF, 2002). This relief was conditional on further efforts to reduce poverty, which required robust economic growth.

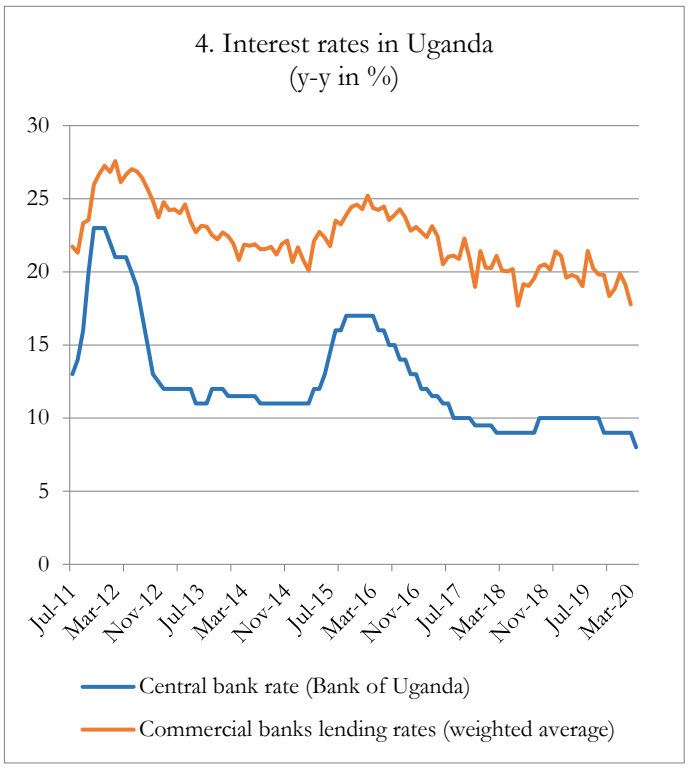
After a decade of high economic growth and relative stability, GDP growth dropped in 2011 (see Figure 1). The sharp deceleration of 4.6 percent was a result of various factors. Primarily, adverse weather events resulted in harvest losses. Moreover, government's external resource inflow diminished as a result of withheld aid due to governance scandals (World Bank, 2013). More fundamentally, the government failed to implement structural reforms, infrastructure projects were delayed or poorly executed, and the mobilization of domestic revenue was with 9 percent well below the minimum desirable tax-to-GDP ratio of 15 percent (IMF, 2016; see Figure 2). Additionally, the country's energy supply proved to be insufficient and had not been developed in parallel with economic growth (IMF, 2010). Inflation peaked at nearly 25 percent in the first quarter of 2012, with prices of electricity, fuel and utilities rising more than 35 percent annually (see Figure 3). The Bank of Uganda raised interest rates to 22 percent to restrain inflation, which drove commercial banks' lending rates to above 25 percent (see Figure 4). These developments depressed consumption and (foreign) investment, including much-needed investment in energy infrastructure.





Source Figure 1: IMF, IMF DataMapper, World Economic Outlook April 2020. Source Figure 2: Uganda Revenue Authority (for domestic (tax) revenue statistics) and Uganda Bureau of Statistics (UBOS, for GDP statistics). Growth rates and ratios are author's own calculations.





Source Figure 3 and 4: Bank of Uganda.

Growth has strengthened since and peaked in fiscal year 2017/18 with an economic expansion of 6.1 percent (MoFPED, 2018a).[1] Before the outbreak of the Covid-19 health crisis, the IMF expected the economy to grow around 6 percent per annum for the next five years, while the Ugandan authorities projected growth rates of 6.5 percent as a result of domestic demand growth, returns on transport and energy infrastructure investments, improved agricultural productivity and a recovery of foreign direct investment (IMF, 2019; Bank of Uganda, 2018).

However, the Covid-19 health crisis has severely impacted the Ugandan economy and the country's economic development has slowed down. During the first quarter of 2020, business conditions deteriorated, the Ugandan Shilling depreciated against the US dollar and the government's funding costs increased (MoFPED, 2020c). Indicators show a negative trend in the medium term and the economic projections have been adjusted downwards. The IMF now expects the domestic economy to expand by 3.5 and 3.8 percent in 2020 and 2021 respectively (IMF, 2020a). The Ugandan Ministry of Finance is more optimistic in its worst-case scenario and expects the economy to grow between 4.6 and 5.1 percent in 2020 (MoFPED, 2020b).

The virus impacts government's fiscal position, both directly and indirectly. The government faces acute unforeseen expenditures, especially for emergency health care and social protection. In addition, the Ministry of Finance estimated a tax collection shortfall of UGX 638 billion (equivalent to USD 172.5 million[2]) until June 2021 as a result of lower economic activity, which equals a loss of around a third of the government's annual revenue. The increased spending and limited tax collection result in an immediate financing gap of around UGX 720 billion (equivalent to USD 195 million) (MoFPED, 2020b). Simultaneously, the government's financing rate on the domestic market has increased and foreign investors' appetite for government securities decreased. Fortunately, the IMF agreed to provide Uganda with USD 491.5 million in emergency support under the Rapid Credit Facility (RCF) to reduce fiscal pressures (IMF, 2020b). However, disbursed credit under the facility will add to Uganda's public debt position as it will need to repay the credit to the IMF eventually. Fortunately, the terms and conditions are - with a zero-interest rate and a grace period of 5.5 years - highly concessional (IMF, 2020c).

2.2. Debt evolution and risk exposures from the loan portfolio

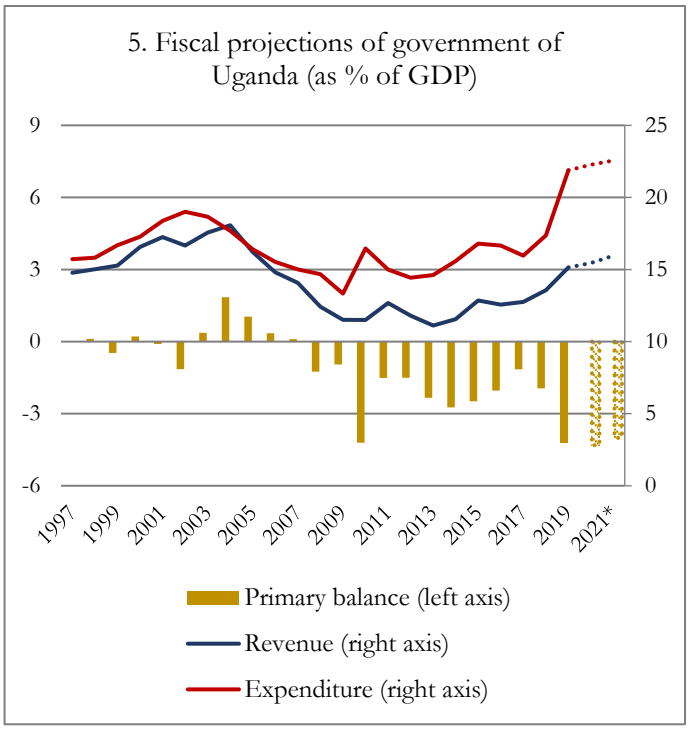
Already before the Covid-19 crisis, the IMF warned repeatedly about debt dynamics in low-income countries (IMF, 2020a; IMF, 2018b). Half of the low-income countries are at high risk or already in debt distress. Altogether, public debt as a percentage of GDP surpassed 50 percent in Sub-Saharan Africa, which is a threshold for debt distress in most countries in the region. The impact of the Covid-19 health crisis adds further pressure and amplifies risks.

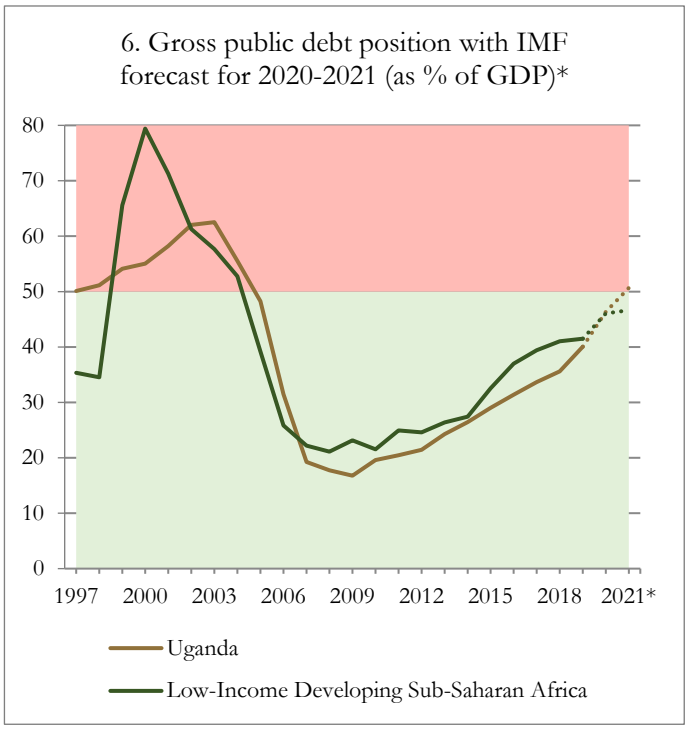
Outstanding public debt has also increased in Uganda over the past decade. The government increased expenditure and the primary balance declined (see Figure 5). This resulted in the public debt position to increase to 40 percent to GDP in 2019 from less than 17 percent in

[1] According to the IMF, the economy expanded with 6.3 percent in 2018 (IMF, 2019). The MoFPED reported a GDP growth rate of 6.1 percent for fiscal year 2017/2018.

[2] The exchange rate used throughout the paper is 3700 UGX for 1 USD.

2009 (see Figure 6). However, this level is still below the debt sustainability threshold of 50 percent to GDP as set in the Public Debt Management Framework and as reconfirmed in NDP III (MoFPED, 2019a; NPA, 2020, page xviii). The government of Uganda estimated that the public debt trajectory will remain below this threshold in the medium-term (see Table 1). However, future estimates for interest payments to revenue and domestic debt to private sector credit are higher than the government's sustainability thresholds (15 percent and 75 percent respectively).





* In the Public Debt Management Framework FY2018/19-FY2022/23, MoFPED set the threshold for debt sustainability at 50% debt-to-GDP: "to ensure the sustainability of Uganda's debt, Government shall ensure that the present value of government debt as a proportion of GDP does not exceed 50%" (MoFPED, 2019a, page 6). Therefore, the debt sustainability threshold of 50% is used in Figure 6 instead of the sustainability levels of 55% and 70% for countries with a medium and strong debt carrying capacity in the IMF/World Bank Debt Sustainability Framework (IMF, 2018a).

Source Figure 5 and 6: IMF, IMF DataMapper, Fiscal Monitor April 2020.

Table 1. Macroeconomic and public debt projections. In percentage of GDP unless indicated differently.

	18/19	19/20	20/21	21/22	22/23	23/24	24/25
Real GDP growth (y-y)	6.5	6.3	6.2	6.0	6.5	6.9	7.0
Revenue including grants	13.5	15.3	15.2	15.3	15.9	16.1	17.0
Tax revenue	12.6	12.8	13.2	13.6	14.0	14.5	15.0
Expenditure	18.8	21.5	21.7	21.2	20.9	20.2	20.0
Recurrent	9.9	10.4	10.4	10.3	10.3	10.4	10.5
Development	7.8	10.5	10.7	10.9	10.5	9.8	9.1
Primary balance	-3.4	-3.9	-4.4	-3.8	-3.2	-2.0	-1.0
Public debt	35.8	39.3	41.6	43.8	45.3	44.7	41.4
External debt	23.6	26.3	28.5	31.0	33.2	33.5	31.0
Domestic debt	12.2	13.0	13.1	12.7	12.1	11.3	10.4
Interest payment/total revenue	14.8	17.3	15.8	15.0	14.4	13.6	12.3
Domestic debt stock/private sector credit	98.5	101.5	100.5	94.9	88.3	79.8	70.7

Source Table 1: third National Development Plan (NDP III, NPA, 2020).

Still, both the IMF and the Ugandan Ministry of Finance assessed Uganda to be at a low risk of debt distress (IMF, 2019, page 14; MoFPED, 2019b). Before the Covid-19 outbreak, the IMF and the Ministry of Finance expected that increased revenues – partly as a result of future oil income – would contribute to the government's capacity to service its debt. An analysis of Uganda's public debt portfolio reveals six noteworthy developments.

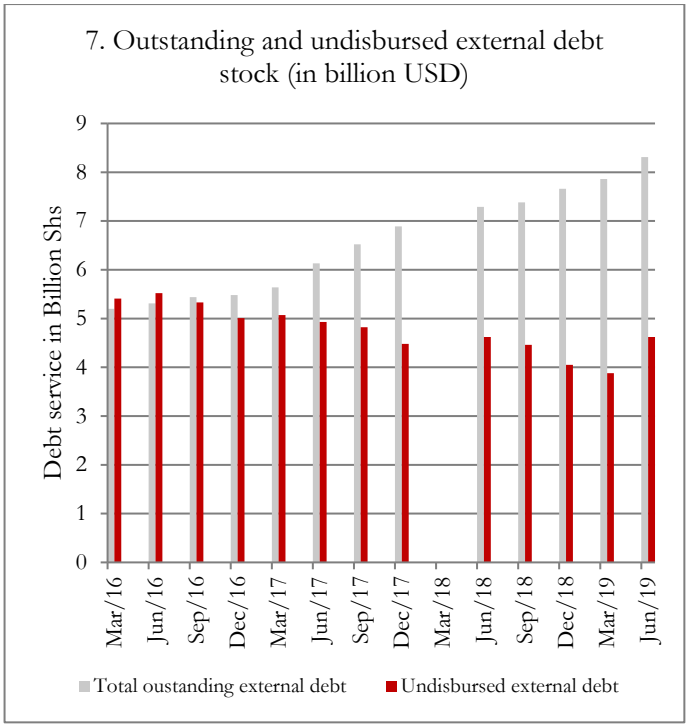
Firstly, the government has shown a strong borrowing appetite since debt relief under HIPC. Total disbursed and outstanding debt increased by 60 percent in 3.5 years, from USD 7.8 billion in December 2015 to USD 12.5 billion in June 2019. Furthermore, the government's budget for fiscal year 2019/20 reveals a continuous appetite. It plans to borrow UGX 535 billion (USD 145 million) and UGX 7,704 billion (USD 2.1 billion) from the domestic and external market respectively, increasing the debt stock by 18 percent in one fiscal year (MoFPED, 2019c). Moreover, 36 percent of the contracted external debt has not been disbursed yet and will significantly increase the public debt position once drawn (see Figure 7).[3] The debt position is likely to rise further in the medium term, as "more debt is incurred to finance government infrastructure priorities" (IMF, 2019).[4] The increasing debt position is consistent with the government's aspiration to close the infrastructure gap to enhance the country's productive capacities. Uganda expects borrowing is to decline after the planned infrastructure projects are finalized (IMF, 2019; NDP III, NPA, 2020; MoFPED, 2019b). However, in January 2020, parliament approved new programs under NDP III with total costs over the 5-year period amounting to UGX 342.6 trillion (USD 92.5 billion). The government aims to ensure that "the main source of the public resources for financing the Plan will be tax revenue" (NDP III, NPA, 2020, page 203) and that borrowing is limited. This requires government to implement projects timely and effectively. Furthermore, the 2019/20 Domestic Revenue Mobilization Strategy - which aims to increase tax revenue – will need to be implemented in time (MoFPED, 2019d).[5]

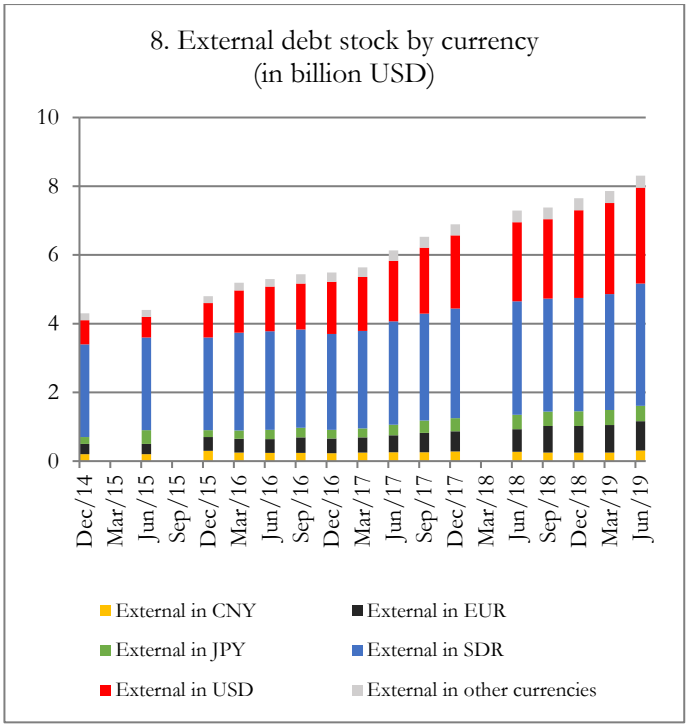
Secondly, the government has increasingly borrowed from bilateral non-Paris Club creditors (such as the Export-Import Bank of China) and private banks (see Figure 9). Over the past decade, the concessional resources from multilateral institutions proved to be insufficient to meet the government's development aspirations. The government therefore increasingly accepted non-concessional terms from bilateral creditors (MoFPED, 2019b). However, the multilateral institutions and domestic market remain the most important creditors. Most of the new debt disbursements between end-2014 and mid-2019 were in US dollars, doubling the proportion of US dollar debt from 17 percent to 34 percent as a share of the total external debt portfolio (see Figure 8; MoFPED, 2017). While the diversification of the debt portfolio is positive from a development perspective, it comes with foreign exchange risks. It also makes it harder to keep an overview of overall risk and requires the government to develop capacity to analyse new financing instruments with differing terms and conditions. More importantly, negotiations on debt restructuring become more difficult with more players involved.

[3] All these estimates do not cover the USD 491.5 million IMF emergency funding in response to the Covid-19 outbreak, which will increase the public debt position with another 4 percent.

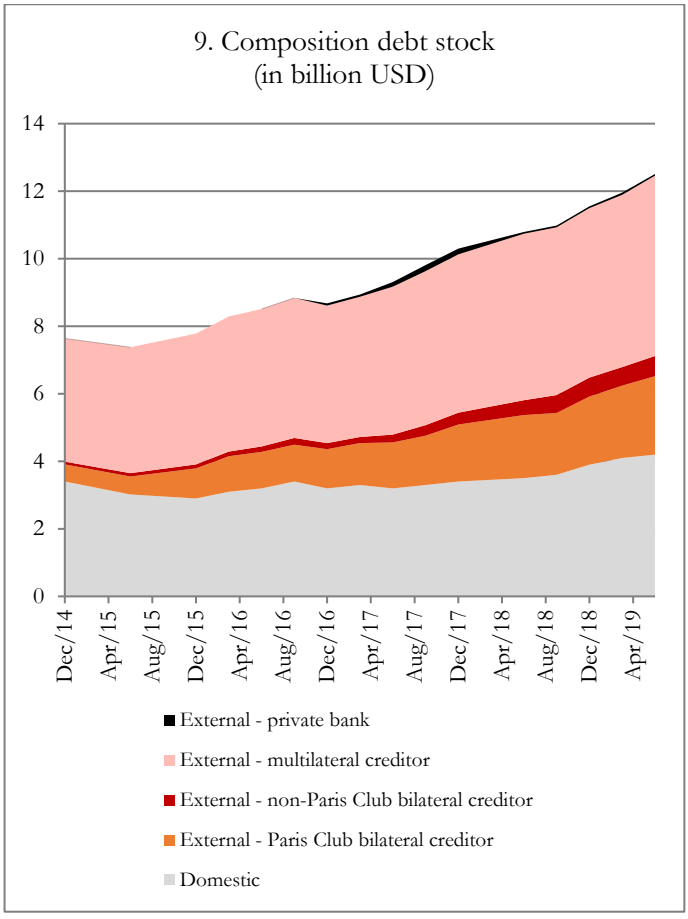
[4] Statement of the IMF Executive Director for Uganda in response to the 2019 IMF Article IV assessment.

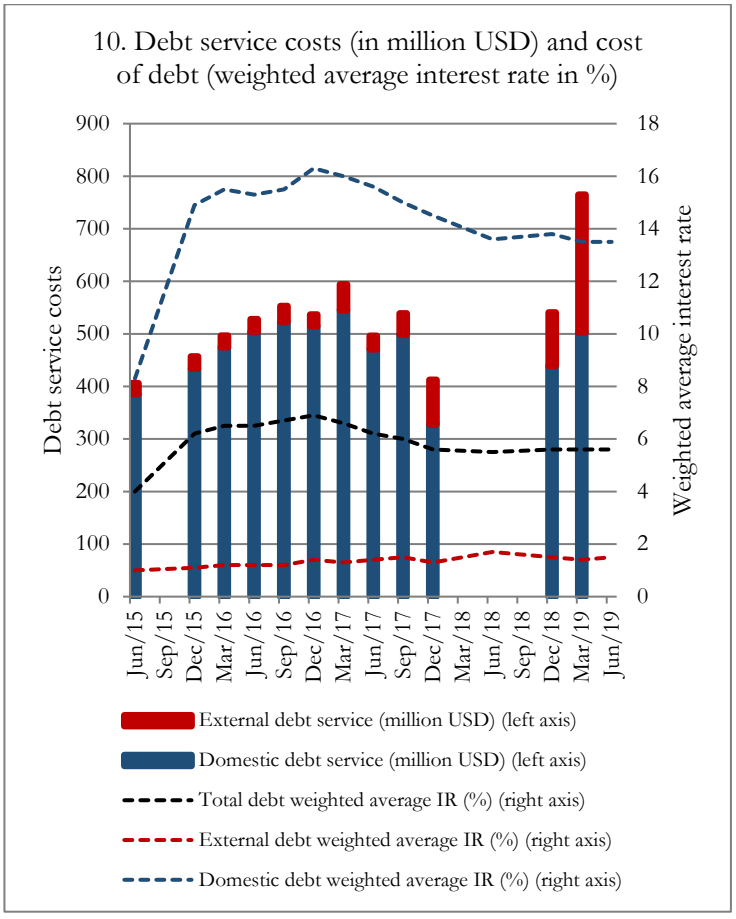
[5] The government plans to cover 62.4 percent of the financing - amounting to UGX 214 trillion (USD 57.8 billion) - and expects the private sector to finance the remaining 38.6 percent (NDP III, NPA, 2020).





Source Figure 7 and 8: MoFPED, GoU, Debt Statistical Bulletins (quarterly editions for September 2016, December 2016, March 2017, June 2017, September 2017, December 2017, March 2019 and annual edition for FY2018-19).

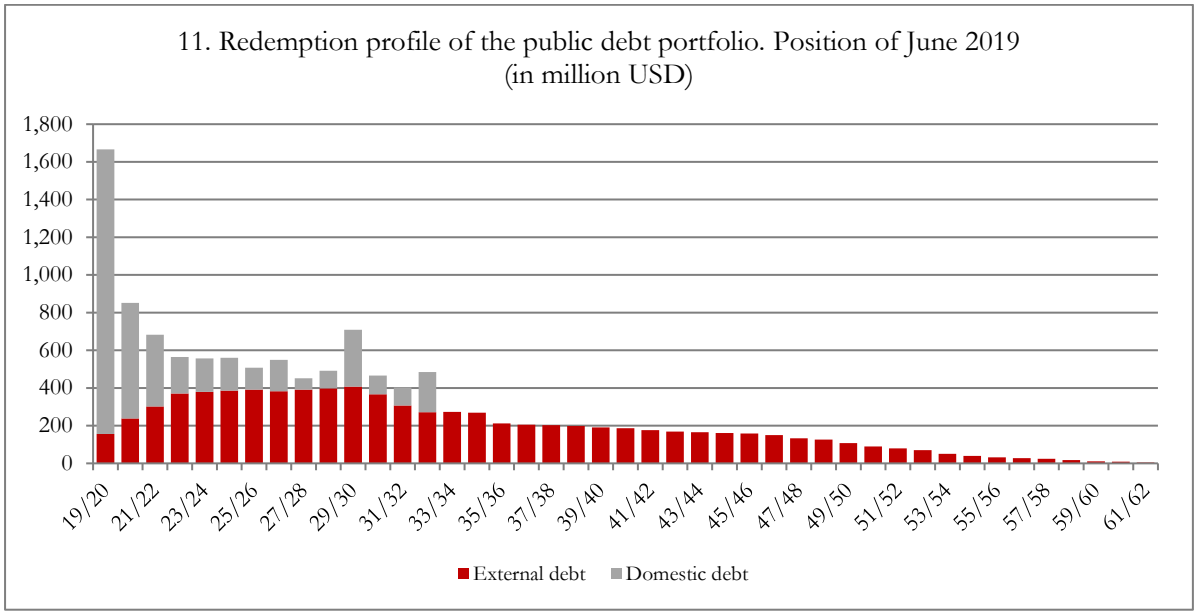




Source Figure 9 and 10: MoFPED, GoU, Debt Statistical Bulletins (quarterly editions for September 2016, December 2016, March 2017, June 2017, September 2017, December 2017, March 2019 and annual edition for FY2018-19). The conversion of domestic debt service costs in million USD (from billion UGX) is author's own calculation. The USD/UGX exchange rates as reported in the Debt Statistical Bulletins is used.

Thirdly, the Auditor General in a recent report highlights three examples of new financing conditions that can potentially have a large impact on political stability (Office of the Auditor General Uganda, 2019c). Firstly, government has agreed on sovereign immunity waivers for itself or its property. This has put the government's assets at risk of being seized by creditors. Secondly, government approved the use of foreign law in proceedings to enforce borrowing agreements. In some agreements, the law of the foreign creditor's home country is adopted, whereas best practice is for agreements to be governed by third-party jurisdiction. Thirdly, the government agreed on stringent security arrangements. For some projects, Escrow accounts have been opened which have to be used for all revenue collections from the project.[6] This limits the ability of the government to use the project revenues for other investments or to service other loans that might have been contracted to finance a project.

Furthermore, the government has engaged in loan agreements that have made funding available to finance a specific commercial contract. Through these commercial contracts, foreign companies are contracted to develop an asset. These practices limit the added value of the projects to the Ugandan economy, because it only benefits from the asset that is created and not from its construction and development. The Karuma and Isimba hydropower dams, Uganda's largest energy infrastructure projects, are cases in point. Both projects are (partly) financed with loans offered by the Export-Import Bank of China and the Ugandan government contracted Chinese construction companies for both projects (Biryabarema, 2013).



Source Figure 11: MoFPED, GoU, Debt Statistical Bulletins (March 2019 and annual edition for FY2018-19).

Fourthly, the weighted average interest rate of the government's debt portfolio has decreased, mainly driven by lower domestic interest rates (see Figure 10). However, the 2019 Debt Sustainability Analysis of the Ministry of Finance found that risk emerged in the public debt portfolio as the debt service burden increased (MoFPED, 2019b). Domestic rates are still

[6] An escrow account is an account managed by a third party in which revenues are secured while two parties complete a transaction.

nine times higher than external rates. This is due to the fact that a large portion of external borrowing occurs at concessional rates and because of high financing costs in Uganda, where the central bank rate has been floating around 10 percent.[7] While the cost of domestic debt is high, the advantage is that it does not carry foreign exchange risks and is issued relatively quickly. Whereas borrowing from external creditors generally involves a negotiation process, domestic debt is accessed directly through regular auctions. The Ministry of Finance targets to increase the maturity profile of the domestic debt portfolio, because the duration is currently short which exposes the government to significant refinance risks (see Figure 11; MoFPED, 2019e). In fiscal year 2019/20, the Ministry of Finance has to roll-over USD 1.5 billion domestic debt, which equals 12 percent of total public debt. The government aims to develop the domestic market further through continued engagement, to bring down interest rates, to decrease dependency on external creditors and limit refinancing risk (MoFPED, 2018b).

Fifthly, the government has entered into several borrowing arrangements with floating interest rates, reflecting the government's increased risk appetite. This has exposed the government to interest rate risk, because not all of the floating rates have been hedged. Notably, in 2014 the government obtained a loan with a value of USD 1.44 billion from the Export-Import Bank of China to finance the development of its largest (energy) infrastructure project: the Karuma hydropower dam. Part of that loan, USD 645 million, came with a floating LIBOR-linked commercial rate. After two years of exposure to fiscal risks due to the floating interest rate, the Ministry of Finance hedged the loan by swapping the floating interest rate for a fixed rate of 6.08 percent in 2016 (Biryabarema, 2016). However, Uganda still has several loans with floating interest rates (MoFPED, 2019f).

Finally, the government has agreed in numerous loan arrangements to pay commitment fees to undrawn loan balances (MoFPED, 2019f). While these fees are common practice globally, they have turned out to be a fiscal risk as well, as a result of poor project implementation and low loan absorption. In the Budget Execution Circular for Financial Year 2019/2020, the Permanent Secretary and Secretary to the Treasury states that "it has been observed that implementation of Government continues to be undermined by lack of readiness, delays in procurements, late acquisition of right of way, poor contract management and inadequate capacity to implement and evaluate on-going projects. These have resulted into delays in completion of key projects, cost overruns and higher commitment fees on foreign debt" (MoFPED, 2019g). Mid-2019, only 64 percent of all contracted external debt is disbursed and the other 36 percent - with a value of USD 4.6 billion - has remain undrawn. The Ministry of Finance expects postponements of up to 50 percent in planned loan disbursements during the first half of 2020 due to delays in project execution as a result of the Covid-19 crisis (MoFPED, 2020b). These latest developments increase the estimated commitment fee costs for the government further.

[7] More recently, the Bank of Uganda lowered interest rates and in March 2020 the central bank rate declined to 8 percent in response to the Covid-19 virus outbreak (see Figure 4).

3. The financial health of the energy sector

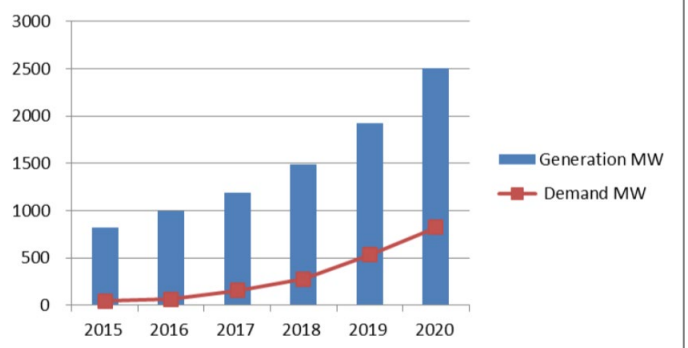
The next three sections analyse the financial health of the energy sector in Uganda. First, political demands and government interference in the energy sector are considered. Second, the financial performance of the three state-owned enterprises and their debt portfolio are reviewed. In chapter 4, the ability of the enterprises to recover their operational costs with the current tariff methodology is studied.

3.1. Political demands and government interference

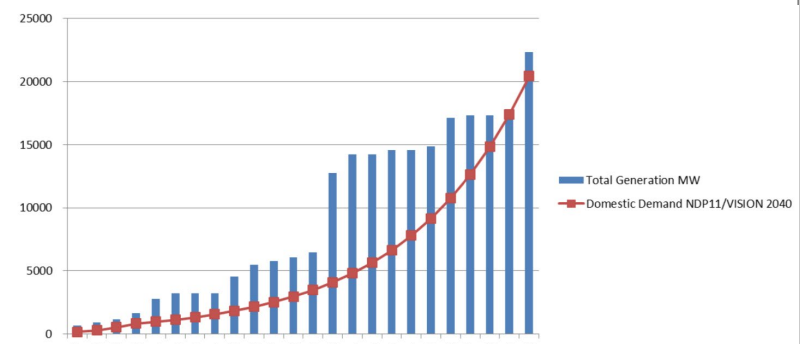
The performance of the state-owned enterprises in the energy sector is often central to public debate in Uganda. Their large losses, unsustainable debt burdens and inadequate planning dominate the debate. Political demands and government interventions have negatively influenced state-owned enterprise performance. This section presents some of the more substantial political demands and interventions of the past decade.

While the enterprises themselves are often criticized for their inability to plan, the government is a major driver of myopic thinking in the energy sector. Firstly, the government did not prioritize the development of the distribution and transmission networks in line with expanding generation capacity, leaving generated electricity non-evacuated.[8] Secondly, large-scale expansion of generation capacity did not match the lower growth in demand for electricity. Both issues have resulted in unused installed capacity, for which UETCL, depending on the conditions in the power purchase agreement (PPA), often still has to pay. These payments are referred to as deemed energy purchases, amounting to UGX 11.57 billion (USD 3.1 million) in 2015. Illustrative are the steep capacity payments that UETCL has made to two producers operating thermal plants, while demand for the power of these producers has dropped to almost zero since 2012. Perhaps ill-advisedly, the government plans to continue the expansion of generation capacity, which will further widen the gap between demand and installed capacity, and requires massive public investment (see Figures 12 and 13 for the NDP II and Vision 2040 scenarios).

12. NDP II scenario for electricity generation and demand



13. Vision 2040 scenario for electricity generation and demand



Source: Grid Development Plan UETCL 2018-2040.

[8] As discussed in chapter 3 of the first report of this research project: "An overview of recent developments and the current state of the Ugandan energy sector" (van der Ven, 2020).

The government believes that excess supply in combination with low end-user tariffs will drive future demand. Moreover, the government has planned the construction of several industrial parks across the country and has provided financial incentives to increase electricity demand. While the government does not subsidize the end-user tariff directly (see section 3.3 for more on subsidized tariffs), it has offered tax exemptions to industries that require large amounts of electricity for their production, such as the steel industry, and has agreed to settle electricity bills on behalf of manufacturing firms. The current demand is therefore driven by government intervention instead of market forces, making future demand for electricity dependent on the continuation of the government's financial support. The government provided these incentives without fully provisioning for them, which has resulted in domestic arrears. Arrears related to these incentives have increased rapidly to UGX 153 billion (USD 41 million) as of mid-2018, with a remarkable growth rate of 83 percent over fiscal year 2017/2018. These domestic arrears reflect a weak fiscal and budgetary institutional framework and generally undermine trust in the Ugandan government.

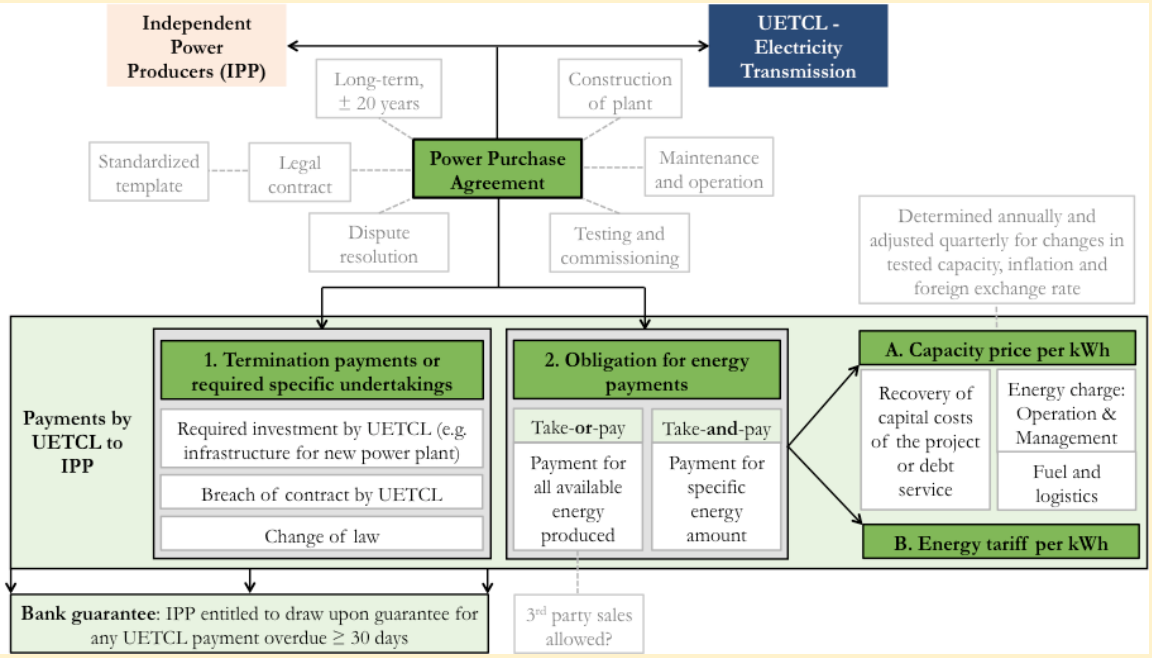
Government entities lack coordination in contract design and approval, which undermines investor confidence in the energy sector. Especially the involvement of the President and his decisions to approve or fast-track projects, sometimes contravening agreements of government entities with other potential partners, have led to business uncertainty and discouraged investors. The contracts related to the Isimba and Karuma dams are exemplary. The loan agreements between the government of Uganda and the Export-Import Bank of China required UEGCL to enter into an agreement with UETCL in which UETCL agrees to pay for all available electricity capacity (a so-called take-or-pay agreement, see Box 1 for an explanation of these PPAs). This agreement implies that UEGCL needs to collect full capacity payments to cover its costs (including the large debt service repayments). Due to oversupply, distribution companies are unlikely to want to buy all this electricity and this puts financial pressure on UETCL. Furthermore, the government of Uganda guaranteed UETCL's payments to UEGCL – as also required by the Chinese creditor – legally binding itself to cover any payment gaps of UETCL to UEGCL.

In contravention of the PPA, the ERA issued a license to UEGCL for the operationalization of the Isimba and Karuma dams. The license only authorizes UEGCL to charge UETCL for electricity demanded (in line with a take-and-pay agreement). Under the license, UEGCL is not authorized to charge UETCL for the electricity that it does not require, which would leave UEGCL with unsold capacity. The guarantee under the PPA will materialise when UETCL does not pay the full capacity payment, requiring the government to bridge the gap between the capacity and actual payment. The conflicting contracts have created ambiguity about whether UEGCL or UETCL will carry the risk of demand being lower than capacity, with government possibly having to step in to cover costs of either party. The lack of coordination between the various government entities in the energy sector has exposed the government to fiscal risks, including from contingent liabilities.

Box 1. Power purchase agreements explained.

Power purchase agreements (PPAs) detail the obligations and expectations between power producers and UETCL for the generation and sale of electricity.[9] They often have a tenor of 20 years. The PPA provides demand certainty for the (independent) power producers and supply certainty for UETCL. Moreover, the PPA allocates risks between the power producers and UETCL, with regards to the construction, operations and commodity supply, maintenance, legal framework and political developments. Typically, the PPAs cover two sets of financial obligations for UETCL to the producers (see the diagram below for the main characteristics and structure of PPAs).

First, the PPAs contain termination and financial compensation clauses for specific undertakings. In some cases, an agreement is signed at a time when UETCL still has to develop transmission infrastructure to evacuate the generated power. In those cases, the PPA can define compensation for delays, because these delays would result in leaving the power producers with non-transmitted power. Also, a breach of contract or change of law or policy that affects the operations of the power producer can result in a financial compensation. This to prevent that the government would take advantage of its rule-making authority and change the rules in its favour during the term of the contract.



Second, the obligations for electricity transactions are defined. UETCL is either required to purchase all available electricity from the producers (referred to as *take-or-pay* agree-

[9] The Ugandan government uses a standardized template for the PPA design. However, the government and ERA can allow UETCL to deviate from the template. The standardized template has been developed as part of the framework for the Global Energy Transfer Feed-in Tariff programme.

ments) or UETCL remains flexible to purchase a specific amount, which can fluctuate depending on demand (referred to as *take-and-pay* agreements).[10] UETCL pays a tariff for the electricity (often referred to as the PPA tariff), which it sets during negotiations with the power producer. The tariff generally consists out of three charges:

1. The **capacity charge** is a fixed payment for the installed or available capacity (charge per kilowatt). The charge does not fluctuate with the actual dispatched capacity during a given period. It covers fixed costs for the producers, during the construction, operation and maintenance of the plant, including debt service costs, return on equity, operation and maintenance costs (e.g. staff, administrative and insurance costs), as well as fixed costs related to fuel supply and logistics. The charge can also cover minimum take-or-pay obligations.
2. The **energy charge** is a payment per kilowatt hour of delivered and dispatched electricity during a given period. It covers more flexible costs for the producer during the operation and maintenance of the plant, including commodity charges (cost of fuel) and more variable operation and maintenance costs.
3. The **supplementary charge** can cover any other costs for the producers.

In addition, a guarantee arrangement with a commercial bank is often established. This arrangement entitles the power producer to draw funds in case UETCL has any payments overdue. In case of the Isimba and Karuma dams, the creditor of the projects (the Export-Import Bank of China) required the government of Uganda to guarantee UETCL's payments to UEGCL under the PPAs.

Another issue relates to the billing of costs under concession and lease agreements. Both UEGCL and UEDCL do not charge their counterparts for all costs that they are entitled to recover under the agreements. The full billing would result in a higher tariff for the end-consumer, which is politically sensitive. The government of Uganda aims to increase accessibility and wants to connect more households to the grid. The ERA is under political pressure to keep the tariff low and, therefore, limits the billing of UEGCL and UEDCL through its policies and regulation. The limited billing due to political demands has had a significant impact on the financial performance of UEGCL and UEDCL.

The concession fee billed by UEGCL to Eskom for the use of the Nalubaale and Kiira dams has only covered administrative costs for more than a decade while under the agreement UEGCL is also entitled to bill for debt service costs, depreciation of the two assets and return on equity. According to UEGCL, the Nalubaale and Kiira hydropower dams have depreciated with more than UGX 12 billion (USD 3.2 million) per year between 2015 and 2017. These depreciation costs alone are already higher than the fee that UEGCL has billed to Eskom.[11] Moreover, the PPA allows Eskom to fully recover any modification costs to

[10] In case of take-and-pay, the agreement often specifies whether the power producer is also allowed to sell the generated electricity to a third party.

[11] UEGCL uses a depreciation rate of 8.30 percent per year for the two dams.

the Kiira and Nalubaale dams from UETCL (plus a 12 percent return-on-investment charge).[12] In other words, while Eskom can recover any modification costs with a mark-up (and the modifications can off-set depreciation), it did not have to cover any depreciation costs. UEGCL and UETCL carry all financial risks related to maintenance and depreciation costs of the Kiira and Nalubaale dams, while Eskom seems to get the operational benefits.

UEDCL has faced similar issues under the lease agreement with Umeme Ltd. for the operation of most of its distribution infrastructure. The Lease Assignment Agreement entitles UEDCL to bill depreciation costs and a return on investment on the leased assets. According to a report of the Auditor General, UEDCL has not billed any of these costs, amounting to a total amount of UGX 129 billion (USD 34.9 million) between 2004 and 2017. In addition, UEDCL has continued to invest in maintenance, while it is not able to generate revenue from the leased assets. Similar to the under-billing by UEGCL under the concession agreement with Eskom Uganda Ltd, UEDCL and UEGCL blame the tariff structure and methodology of the Electricity Regulatory Authority for lower revenues.

In addition, the government's legal and policy framework for land acquisition has caused large and frequent delays in project implementation. According to a study by the Overseas Development Institute (2014), "businesses deem the acquisition of land with a clean title as one of the biggest challenges in Uganda, with stakeholders raising issues of bureaucracy, slow processes and lack of transparency". Land acquisition is often delayed due to disagreements and disputes related to compensation. Difficulties stem from inadequate available funds for financial compensation, delays between the feasibility assessment and actual compensation (which causes prices to hike in the meantime due to speculation), as well as disagreements about valuation rates. Consequently, land does not get acquired in time and vast compensation amounts remain outstanding. In 2012 in his annual report to Parliament, the Auditor General raised this issue in relation to UETCL's grid expansion efforts. He argued that government does not have the "adequate" authority under the current land laws to implement projects "expeditiously". Furthermore, the grid expansions have been unnecessarily expensive and energy losses unnecessarily large, because UETCL circumvents difficult landowners by making a detour and by not choosing the shortest grid connections.

Finally, politicians and government officials have recently discussed far-reaching reforms of the energy sector, following a discussion on the effectiveness and public costs of state-owned enterprises. Cabinet decided on the 10th of September 2018 to rationalize government agencies, commissions and authorities (Cabinet of Uganda, 2018). According to cabinet, their functions, mandates, plans and budgets have to be better aligned to increase efficiency and eliminate wasteful expenditure. One of the "rationalizations" that was mentioned in the

[12] As at 30 June 2017, EUL invested a total of UGX 7.34 billion (USD 2 million) in modifying the two dams (UGX 8.7 billion in 2015). However, UEGCL found that Eskom is non-compliant to the maintenance requirements and that turbines are non-operational due to delayed repairs. UEGCL also found worrying cracks in the construction of the Nalubaale dam. UEGCL did not enforce compliance by Eskom. The Auditor General expressed his worries that the Nalubaale and Kiira dams may not be in proper working condition by the end of the concession period.

cabinet's press statement is a UEGCL, UETCL and UEDCL merger back into one state monopoly. Cabinet seems willing to take bold actions to win public support and show that it is stepping up its action against wasteful expenditure by state-owned enterprises. In the country's third national development, released in January 2020, the government announced reforms that are supportive of the rebundling of the three state-owned enterprises in the energy sector as well.

While action against wasteful spending is laudable, the willingness to reform the energy sector seems, however, not backed by proper analysis of the different options. Also, the benefits of the unbundling of the former Uganda Electricity Board (UEB) and the progress that has been made since seem to be undervalued. Before the unbundling, "the UEB was not able to meet the growing demand partly because of weak financial conditions […] Owing to financing constraints, the government was not able to provide adequate support to help UEB meet power demand and tap into the hydropower potential" (IMF, 2013). The state of the energy sector has clearly changed since the unbundling. If parliament agrees with the cabinet and decides to implement the rebundling, the sector faces enormous uncertainty and a lot of time and energy will have to be exerted on the transition instead of on improving the performance of the three enterprises.

3.2. Financial performance and debt portfolio of the state-owned energy enterprises

The three state-owned enterprises in the energy sector are wholly owned by the Ugandan government. Therefore, the government of Uganda possesses all equity. Outstanding equity of the three enterprises has increased rapidly over the past years and amounted to more than UGX 1.4 trillion (USD 378 billion) by mid-2018 (see Annex 1 for an overview of outstanding equity and financial performance indicators). UEGCL's equity increased most over financial year 2017/2018, almost doubling to UGX 830 billion (USD 224 million) and accounts for more than half of the total outstanding equity of the three enterprises.

Equity increases are a result of share issuances in return for capital contributions by the state or due to transfers of outstanding obligations into equity. The share issuances do not dilute the ownership of any other shareholder, given that the government is the single shareholder. The capital contributions offer an attractive alternative for debt financing, because they do not create financial obligations (liabilities) on the balance sheets of the enterprises.[13] Normally, enterprises are expected to provide a return on equity by paying dividends to their shareholders. However, the three state-owned enterprises, like all state-owned enterprises in Uganda, do not have a good record of paying out dividends to their (sole) shareholder. Even profitable enterprises do not pay out appropriate dividends.

This comes with a cost for public finances, because the government has to finance the capital contributions and the financing costs are not recovered by dividend payments. A rough estimate for the cost to public finance is the difference between the return on equity (received dividend payments) and the average cost of domestic public borrowing for the outstanding equity amount. With no dividends received, outstanding equity at UGX 1.4 trillion (USD 378 million) and domestic borrowing costs at around 15 percent, the public cost of equity to the three enterprises amounted to roughly UGX 212 billion (USD 57.3 million) in financial year 2017/2018. This is a conservative estimate, because it does not take into account the opportunity costs for government or the higher financing rates between 2015 and 2017, which still apply on the bonds.

Furthermore, the three enterprises made a loss in financial year 2017/18 and UETCL was the worst performing state-owned enterprise in Uganda. Their collective loss amounted to UGX 93 billion (USD 25.1 million) and the loss of UETCL to more than UGX 75 billion (USD 20.3 million).[14] UETCL's performance has been fluctuating a lot over the years, being one of the best performing enterprises in 2017 and one of the worst performing in 2018. The bad performance of the three energy enterprises is also reflected in their negative return-on-assets ratios. While the three companies were able to cover short-term financial obligations

[13] In return for the capital injection, the enterprise issues shares to the government. The enterprise is expected to pay-out dividend on the shares, providing the state with a return on the capital injection.

[14] Of the 29 state-owned enterprises that are considered in the Auditor General's annual report, fourteen were not profitable. The Uganda Railways Corporation was the worst performing state-owned enterprise.

(with current ratios above one)[15], their longer-term financial positions are under stress with debt-to-asset ratios above 80 percent.[16] Furthermore, UETCL was found to be – of the 24 state-owned enterprises – the least able to service its debt in financial year 2017/2018, with a highly negative interest coverage ratio (-181.4).

Their bad financial performance is mainly due to the lack of financial planning, financial "surprises" and legacy issues. Financial surprises take place both on the income and expenditure side due to central government decisions, the inability of state-owned enterprises to pay financial obligations to each other and unforeseen project costs. Legacy issues require the enterprises to write off liabilities inherited from the former Uganda Electricity Board.

An assessment of the creditworthiness of UETCL and UEGCL finds significant expected losses for the central government from these enterprises' liabilities. A scoring methodology of the World Bank and the South African Treasury is used. The assessment estimates the expected loss for the central government at between UGX 136 billion (in 2017, USD 36.8 million) and UGX 412 billion (in 2021, USD 111.4 million) from UEGCL's liabilities and between UGX 918 million (in 2017, USD 248,000) and UGX 10 billion (in 2021, USD 2.7 million) from UETCL's liabilities. The assessment is present in detail in Annex 2.

The financial statements of UEGCL and UETCL show that the government of Uganda has contracted most of the debt on their behalf. The government had contracted USD 1.4 billion worth of loans for generation and transmission projects by mid-2017.[17] Of these USD 1.4 billion worth of loans, USD 925 million was disbursed and outstanding. All debt was on-lent from the central government to UEGCL and UETCL and the enterprises had no direct loans with creditors (Box 2 provides an explanation of these on-lending arrangements). Especially the loans for the construction of the Isimba and Karuma dams and the expansion of the national transmission grid are large liabilities for UEGCL and UETCL (see Annex 3 for an overview of all loans of UEGCL and UETCL). The debt portfolios of UEGCL and UETCL pose the following four challenges to the enterprises and central government.

First, the government has – similar to its other borrowing – relied on a small group of external creditors for the financing of the planned projects of the three enterprises. Most significantly, the government has relied on the Export-Import Bank of China, which agreed to provide 82 percent of the USD 1.4 billion worth of financing. The reliance on external financing and the selected group of creditors has made the government vulnerable to a change in investor sentiment. Financing conditions have been relatively favourable, but the government

[15] However, the liquid reserves of UETCL were less adequate than the reserves of UEGCL and UEDCL. Furthermore, UETCL reported delays in payments to Bujagali Energy Limited in 2018, resulting in a wasteful surcharge obligation of UGX 392 million (USD 106,000).

[16] The Auditor General considers a debt ratio of above 50 percent as undesirable, because assets are likely to be insufficient to carry the future debt obligations. Four of the 24 state-owned enterprise have reported levels above this threshold at the end of financial year 2017/2018, including UEGCL, UETCL and UEDCL and the National Water and Sewerage Corporation.

[17] The latest publically-available financial statements of UEGCL and UETCL are dated the 30th of June 2017. No financial statements of UEDCL are publically available.

could face increased refinancing costs (making the rollover of debt more expensive) if the creditors reprice risks or if their financing costs increase.

Box 2. On-lending arrangements between the government and UEGCL and UETCL.

With an on-lending arrangement, an entity borrows from a creditor and passes on the capital to a beneficiary (in this case the government of Uganda passing capital on to UEGCL and UETCL). The borrowing creates a direct liability on the balance sheet of the government, matched with a contingent asset. The borrowing adds to the public debt position of the central government and the borrowing creates a liability on the balance sheet of the beneficiary entity, because the entity is expected to repay the debt service costs to the government.

On-lent borrowings are sources of fiscal risk for a government. The contingency of the asset stems from the willingness and ability of the beneficiary to repay the debt service costs. The central government will have to make budget available for debt servicing in the event that an entity does not repay the debt service costs.

In Uganda, the Ministry of Finance manages on-lending arrangements on behalf of the government. The Ministry is formally the primary borrower, signs borrowing agreements, and is responsible for the debt servicing to the creditor. One of the benefits of on-lending is that the terms and conditions are negotiated, analysed and approved centrally. The Ministry has a better relationship with creditors, more experience with negotiations, and is better informed about the terms and conditions of other borrowings. Furthermore, the interest rate will reflect the creditworthiness of the sovereign, rather than the beneficiary, and is therefore generally lower.

Next to on-lending, the government has two other financing options which do not involve direct capital contributions, subsidies or grants. These two options also pose fiscal risks and create contingent liabilities.

- **Sovereign loan guarantee**: the government can guarantee to the creditor that all obligations of the beneficiary (the borrower) will be met. Sovereign loan guarantees are explicit contingent liabilities for the government, as the government is legally obliged to cover the obligations of the beneficiary in case it defaults.[18] The size of the underlying loan does not add to the public debt position of the government. However, it is a fiscal risk to the government as it exposes the government to the beneficiary's credit risks (stemming from its ability and willingness to service its debt). According to the Report on Public Debt, Guarantees and Other Financial Liabilities and Grants

[18] The Minister of Finance can provide a sovereign loan guarantee but needs the approval of Parliament. According to Section 39(1) of the Public Finance Management Act 2015 (PFMA), "the Minister [of Finance] may, where he or she is satisfied that it is in the public interest, in the manner and on conditions he or she may think fit, with the approval of Parliament, on behalf of the Government, guarantee the repayment of the principal money and the payment of the interest and the other changes on a loan raised within or outside Uganda by a state enterprise, a local government council, any entity other than a local government council, which is required to be audited by the Auditor General under an Act of Parliament, or a private sector entity. "

for FY2018/2019, the government of Uganda explicitly guaranteed seven loans with a total value of USD 55 million (MoFPED, 2019f). However, none of these loans are used to finance projects in the energy sector.

- **Non-central borrowing without guarantee**: the government can allow non-central government entities to borrow on their own balance sheet strength without providing a guarantee.[19] In case the entity defaults, the government will not intervene. However, in practice this non-explicitly guaranteed debt, especially of state-owned enterprises, is implicitly guaranteed and therefore a contingent liability. Creditors may expect the government to step in when the enterprise defaults, because the enterprise is under supervision of a minister. Also, the non-guarantee may not hold in court, because the enterprise may be considered part of government. Moreover, given most state-owned enterprises' importance to society, the government will probably intervene before they default to ensure the continuation of service provision.

Second, it is ambiguous whether UEGCL and UETCL have to and intend to recover the debt service costs of the on-lend borrowings to the central government. The financial statements of UETCL state that the "shareholder/lender has no intention to recover both the principal amounts and accrued interest in the foreseeable future as the Government of Uganda sources and repays the scheduled instalments." This is not in line with the borrowings being listed as liabilities, on-lend by the government and not labelled as capital contributions or grants. Unfortunately, no further details about this non-intention are provided. Furthermore, it is unclear whether the government expects to recover the debt service costs from UETCL, whether the budget has been drafted accordingly, or whether UEGCL is planning to recover the debt service costs for the on-lend loans. UEGCL provides no similar information in its financial statements, but given its financial performance and current revenue, the company will not be able to recover all costs.

The financial statements of the enterprises are also ambiguous and contradictory. In its 2017 financial statements, UEGCL states that it has no exposure to interest rate risk "because the company has no interest-bearing borrowings" (UETCL, 2017, page 84). While it may be true that UEGCL is not exposed to interest rate risk, given that all debts have fixed interest rates, it is unclear why the company states that it has no interest-bearing borrowings. Elsewhere in the financial statements, the total outstanding interest-bearing debt of UEGCL equals UGX. 2.8 trillion (USD 756 million - UETCL, 2017, page 16). In case the entities do not intend to repay the debt service costs and the government is still expecting the recovery of costs, the government will have to adjust its budget framework to account for the non-recovery. These adjustments will result in significant fiscal pressure.

[19] However, the non-central government entities can borrow only with the prior approval of the Minister of Finance. According to Section 36 (1) of the PFMA, "the authority to raise money by loan and to issue guarantees for and on behalf of the Government shall vest solely in the Minister [of Finance]..."

Third, a large part of the sizable debt portfolio will mature simultaneously, making refinancing more difficult and expensive. For all on-lend loans to UEGCL and UETCL, interest rate payments and principal repayments are due after a grace period of five to twenty years.[20] The government signed the on-lend loans for the Karuma and Isimba projects – with a value of USD 1.2 billion – between November 2014 and February 2015 and these loans all have a grace period of five years. If the initial grace periods still apply, debt repayments on the outstanding and disbursed debt will commence between November 2019 and February 2020 While the outstanding and disbursed amount of these on-lend loans had a value of USD 755 million mid-2017,[21] the value has increased to more than USD 1.3 billion since due to large disbursements on the Karuma loan.[22]

Fourth, given the project delays and incomplete transmission infrastructure, UEGCL and UETCL will not immediately be able to recover the debt servicing costs. The revenues generated from the newly developed assets and the current revenues of the enterprises are not sufficient to cover the shortfall. [23] UEGCL has reported negative operational results and UETCL seems to have relied heavily on financial contributions of the government (more analysis about their creditworthiness will be presented in the next section). Therefore, the government of Uganda has to make budget resources available to cover the debt repayments, especially for the Karuma and Isimba loans that the Export-Import Bank of China has provided.

[20] A grace period is a delayed payment obligation, for which no penalty or default charges apply. The rationale behind this grace period is that the government completes the construction of the asset first and will be able to generate revenues from the asset, which can be used for the debt service payments. Generally, debt service payments for loans consist out of interest rate payments and principal repayments. The interest rate normally only applies to the disbursed and outstanding loan amount, not to the full loan amount. In addition, the government might need to pay fees to the creditors.

[21] According to the 2017 financial statements of UEGCL and UETCL.

[22] According to the Report on Public Debt, Guarantees, other Financial Liabilities and Grants for Financial Year 2018/2019 (mofped, 2019f).

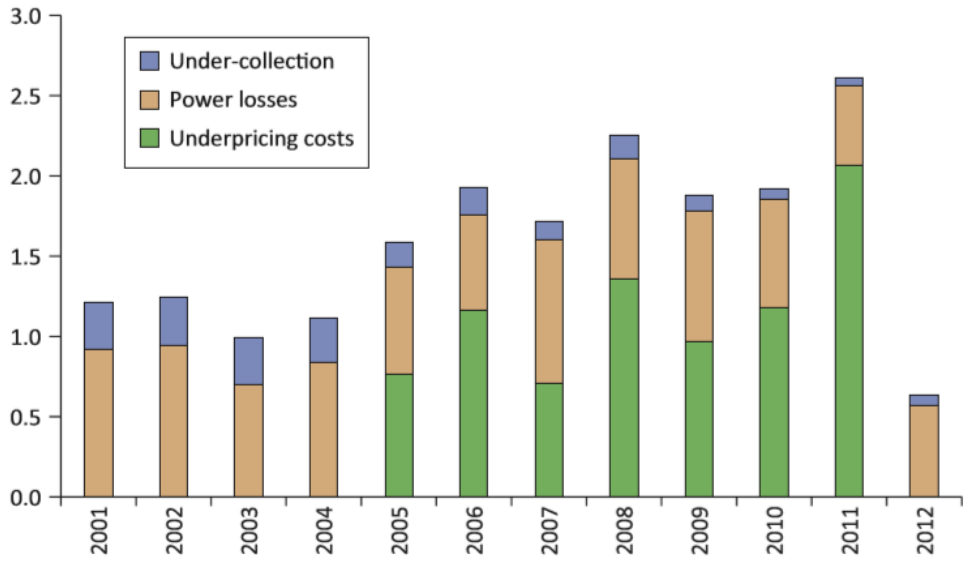
[23] Delays in the construction of new assets also resulted in the accumulation of significant commitment fees, amounting to more than USD 2.1 million according to the Report on Public Debt, Guarantees, other Financial Liabilities and Grants for Financial Year 2018/2019 (mofped, 2019f).

3.3. Tariff structure and the quasi-fiscal deficit of the energy sector

The government abolished most of its direct subsidies to the energy sector in 2012, but it has continued to provide financial support to the state-owned energy enterprises. The annual budgetary support to the energy sector is one measure of the government's support to the sector, although it does not cover all public costs. The state-owned enterprises are not individually included in the general government accounts and the "true cost" of underfinanced enterprises is not fully disclosed to the public. The actual support is also partly implicit, including through under-priced service delivery.

The quasi-fiscal deficit more precisely estimates the total financial support provided by government. The quasi-fiscal deficit is the "difference between the actual revenue charged and collected at regulated prices and the revenue required to fully cover the operating costs of production and capital depreciation" (Saavalainen and ten Berge, 2006). Figure 20 shows the quasi-fiscal costs of the Uganda power sector denoted as a percentage of GDP between 2001 and 2012 (before the subsidies were removed). The IMF estimated that most of this government support was due to under-pricing of costs in the tariff and power losses in transmission and distribution.

20. Quasi-fiscal costs of the power sector in percent of GDP for Uganda.



Source Figure 20: IMF (2013)

The publicly-available information on UETCL's transactions with generation and distribution companies (which the regulator ERA publishes quarterly) allows for an assessment of the quasi-fiscal deficit of the enterprise. The following formulas can be used to estimate the quasi-fiscal deficit of UETCL, which shows that the difference between UETCL's tariff payments to generation companies and UETCL's receivables from distribution companies largely determines UETCL's profits or losses:[24]

[24] See chapter 7 of paper 1 of this project for a full review of the tariff methodology and structure.

(1) QFD = CRRR – ACR

- QFD: quasi-fiscal deficit
- CRRR: cost recovering required revenue
- ACR: actual cash revenues

(2) $CRRR = 1/(1 - ELRT) * \sum(EPGC_1 * TGC_1 + EPGC_2 * TGC_2 + \ldots + EPGC_n * TGC_n) + OOC$

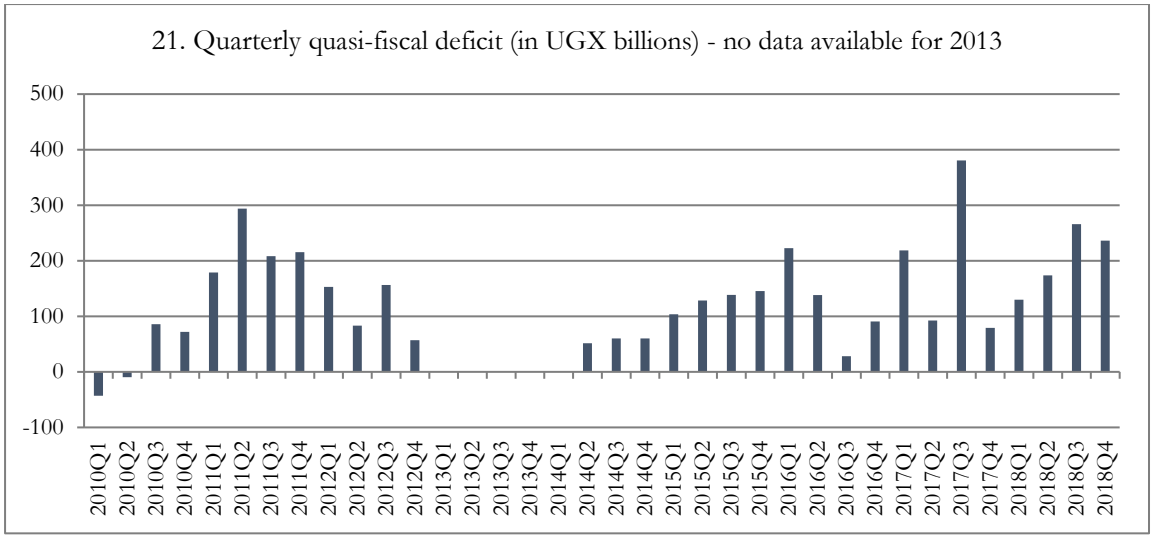
- ELRT: energy loss rate during transmission
- $EPGC_n$: electricity purchased from generation company *n*
- TGC_n: tariff of generation company *n*
- OOC: other operating costs (including grid maintenance costs, administrative expenses and other costs)

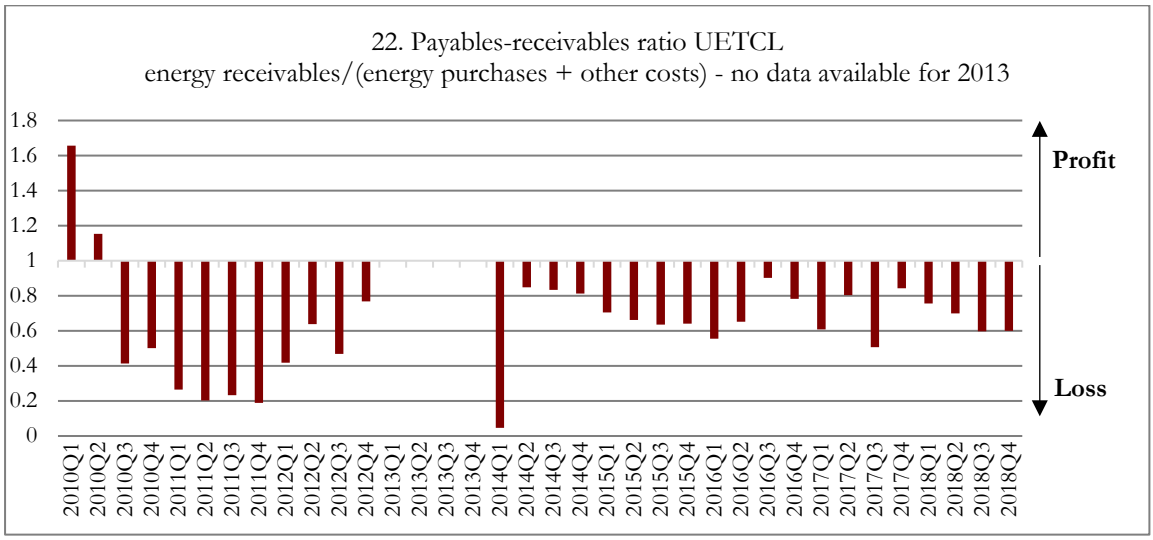
(3) $ACR = \sum (ESDC_1 * TDC_1 + ESDC_2 * TDC_1 + \ldots + ESDC_m * TDC_m)$

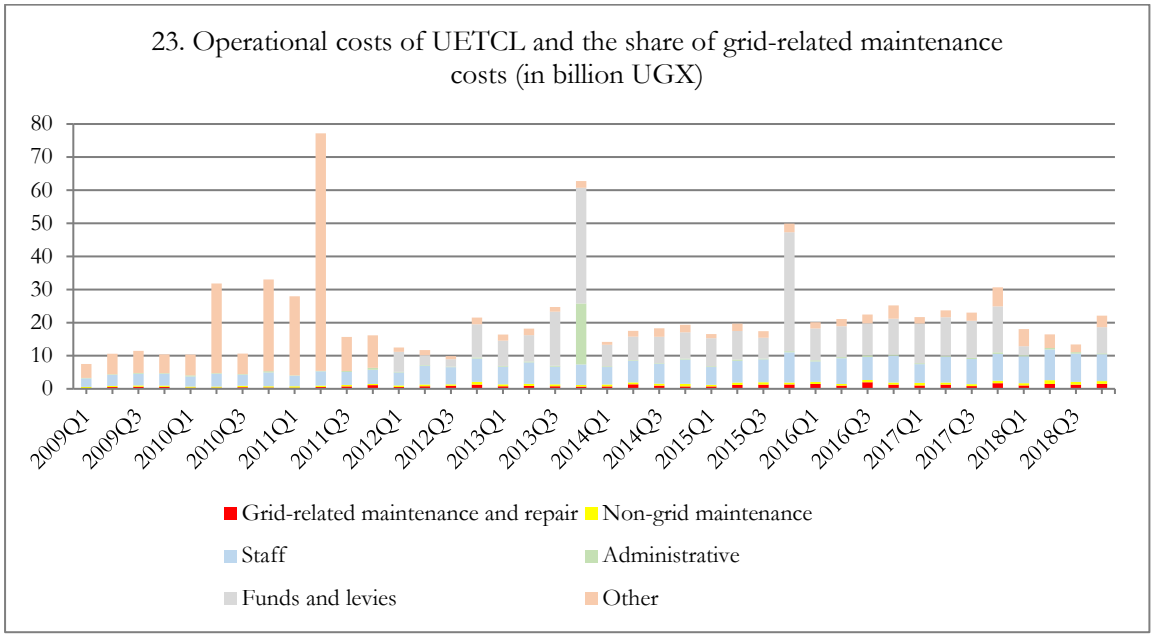
- $ESDC_n$: electricity sold to distribution company *m*
- TDC_n: bulk supply tariff of distribution company *m*

UETCL has been structurally unable to recover its costs through tariff collections from distribution companies.[25] Figure 21 shows the quarterly quasi-fiscal deficit of UETCL between the beginning of 2010 and the end of 2018 and the figure indicates that since mid-2010 UETCL has been structurally unable to recover its costs through tariff collections. At the end of 2018, tariff revenues covered only 60 percent of the company's costs (see Figure 22 for the payables-receivables ratio) and the quasi-fiscal support amounted to more than UGX 800 billion (USD 216 million) over the year 2018. Figure 23 shows the trend of quarterly operational costs of UETCL and reveals that the total costs have been increasing over the decade. More employees have been hired and levies and funding costs have peaked in some quarters (mostly in the final quarter of the year). One of these levies is imposed by the ERA and flows into the rural electrification fund, which promotes and enables off-grid rural electrification. Worryingly, grid-related maintenance costs account for on average only five percent of total costs over the past two decades, which raises questions about the importance that is attached to maintenance and, consequently, about the state of the existing transmission infrastructure.

[25] The Electricity Regulatory Authority (ERA) is responsible for the tariff setting and regular revision of the electricity tariff structure. Tariffs are set through a methodology as outlined in the 2003 Electricity Tariff Code Regulations. The tariff structure includes prices for the three main transactions in the electricity supply: from transmission companies to the generators, from the distributors to the transmission companies, and from the end consumers to the distributors. The ERA developed a formula which takes into account revenue and profit requirements from the energy companies. The tariff is adjusted quarterly through an automated adjustment mechanism and price revisions are capped at ten percent per quarter. The tariff structure for the transactions between end consumers and distributors takes the type of consumer, demanded voltage and time of demand into account. A lifeline tariff has been put in place for the first fifteen kWh of electricity per household per month to increase the affordability of electricity for low-income households. See chapter 7 of the first paper of this project for more information on the electricity tariff structure: 'Fiscal risks from the Ugandan energy sector' (van der Ven, 2020).







Source Figure 21, 22 and 23: Electricity Regulatory Authority (2018).

4. Main fiscal risks arising from the energy sector and proposed actions

The key sources of fiscal risk from the energy sector are:

1. Ever-increasing budget spending and a continued political push for (large-scale) projects.
2. Dependency on external financing and the stringent conditions of borrowing.
3. Financial performance and debt portfolio of the state-owned enterprises.
4. Non-cost recovering tariffs.

1. Ever-increasing budget spending and a political push for (large-scale) projects.

The energy sector's inability to limit public expenditure and generate additional revenue amounts to a significant fiscal risk to the government. The allocated budget for the energy and mineral development sectors has increased over the past years and reached 10.4 percent of the total budget in fiscal year 2019/2020. The government aims to decrease the budget for the sector from next fiscal year onwards. In fiscal year 2023/2024, the government expects the sector's budget to be less than one-third of the 2019/2020 budget. However, this target requires several conditions to be met, including the realization of projected returns on investment, no further delays in project completion or incidences of unforeseen costs, revenue collections from the extraction of oil, and no new demands of parliament for projects that the government has not yet planned and budgeted for.

These conditions might prove challenging, and can make future budget targets for the energy sector unrealistic. Uganda has a track record of delayed project implementation, has made limited progress on the implementation of oil projects, and faces limited growth in the demand for electricity and an already existing oversupply. In addition, Uganda's politicians regularly announce new energy projects (the Minister of Finance recently announced the government's plan for the construction of four additional hydropower dams). In addition, delays in project implementation have resulted in delayed loan disbursements and the accumulation of commitment fees. These challenges will make it difficult to achieve the planned budget decreases for the energy sector. Furthermore, many expenditures have been frontloaded by the sector based on future (oil) revenue forecasts, resulting in additional stress on the budget in the event that projected revenue does not materialise.

Recommendations

1. **The government's targets for installed energy generation capacity should be revised in line with energy demand forecasts**. The Vision 2040 and NDP III energy generation targets - 3,500MW by 2025 and 41,738 MW by 2040 respectively - are unrealistic given the current level of generation, the capacity of ongoing projects and the achieved growth over the past decade. Massive investments would have to be made in additional electricity generation plants and transmission infrastructure to reach these targets. Furthermore, the targets are inappropriate given the existing oversupply and lacking demand developments.
2. **The Ministry of Energy should enhance its project selection process and optimize its project portfolios**. Before considering specific projects, the Ministry should define the needs and gaps of the energy sector. It should not only invest in new assets or additional

capacity (whether in generation, transmission or distribution) but should start to consider alternatives to resolve bottlenecks in the already existing infrastructure. The Ministry should establish selection criteria for projects in order to ensure that projects meet predefined objectives. The right projects should be combined, to ensure optimal service delivery. Given the increasing gap between the demand and supply for electricity as well as the gaps in transmission and distribution infrastructure, the government should focus on investments in electricity transmission and distribution instead of spending more on new generation plants. The energy mix of neighbouring countries, and import and export possibilities, should be more closely considered when matching demand and supply.

3. **The government should optimize its use of existing infrastructure.** Instead of investing in new projects, the government should aim to get the most out of its existing assets and improve efficiency. The state-owned enterprises should focus more on increased asset utilization and enhanced maintenance planning. More attention should be given to maintenance (including of the assets operated by concessionaires) to extend the assets' lifetime, maintain output levels, avoid early or unnecessary construction of new assets, as well as to increase the returns on investment. Furthermore, a study of causes and possible solutions for energy losses might result in the identification of quick wins.
4. **Actors in the energy sector should consider off-grid solutions more seriously**. Instead of aiming to connect 80 percent of households to the grid (from 22 percent in 2016), the government should focus on increasing electricity accessibility in general. With most Ugandans living in scarcely-populated rural areas, grid extensions might not provide the most efficient solution to increase accessibility. For example, solar power installations can provide a more attractive off-grid alternative, offering a solution for the most rural (and dry) areas. The government of Uganda should work with experts and assess how to target increased electricity accessibility in rural areas more efficiently. The Rural Electrification Strategy and Plan of the Rural Electrification Agency should be updated accordingly and accounted for in the Grid Extension Plan of UETCL.
5. **The government should review and analyse what causes the delays in project implementation in the sector**. Furthermore, an assessment should be done on why absorption of credit facilities is often delayed and how the government can plan its financing better to limit the accumulation of commitment fees. The Ministry of Lands, Housing and Urban Development should review the land laws to address the current issues with lengthy land acquisition processes for government projects. Lastly, the Ministry of Energy and the three state-owned energy enterprises should improve and streamline their project delivery and invest in project planning and design. The government should plan and coordinate generation, transmission and distribution projects holistically and establish cross-functional teams. Close coordination between the three service fields will prevent delays in the actual electricity supply and will allow for quick adaptation between projects.

2. Dependency on external financing and the stringent conditions of borrowing.

The energy sector is currently dependent on funding provided by (a small group of) external creditors. The energy sector is insufficiently able to generate its own resources and needs government support for the implementation of the country's development aspirations.

The energy sector's budget is funded for more than 80 percent through external financing (including loans and grants, both on concessional and non-concessional terms). The government plans to completely remove external financing to the sector by financial year 2023/2024. This seems unrealistic given the sector's current dependency on external financing. In addition, fiscal pressures might arise from the combination of relatively high financing costs and a record of delayed project implementation. Decreasing external financing might prove to be especially challenging if the completed projects do not deliver their projected (high) returns in time. Furthermore, the financing needs of the energy sector substantially add to the total public debt position. Easy financing conditions over the past decade have encouraged the build-up of debt and have increased rollover and debt sustainability risks.

By all means, Uganda should avoid a perception grows that its government is driven by moral hazard incentives and that it expects to be forgiven for its debt again. In 1998, Uganda received USD 2 billion debt relief under the HIPC initiative. The debt-to-GDP position decreased from above 70 percent in 2003 to below 20 percent in 2009. Since that time, the debt position has once again increased rapidly and is approaching the recognised 50 percent threshold for debt sustainability. Short-term borrowing is almost unconstrained, while the government continues to project that its financing needs in the medium and long term will decrease. Furthermore, the composition of the public debt portfolio has changed substantially: the government of Uganda borrows increasingly from (a selected group of) non-traditional official and private creditors, whose credit is provided on less concessional terms and with stringent conditions, which may put the government's sovereignty and credibility at risk.

Recommendations

1. **To ensure debt sustainability in the medium to long term, the government should step up its efforts to address the debt appetite of politicians and government officials**. The Ministry of Finance should increase its efforts to create awareness of the risks and costs of debt, while continuing to build capacity in effective debt management. The Ministry of Finance should ensure and insist that the consideration, negotiation, approval, reporting and monitoring of all public borrowing follow the legal and policy frameworks that are in place. The government should plan its financing needs well in advance - for which early coordination of any public entity with the Ministry of Finance is required – and to allow for a timely coordination with the Minister of Finance, Cabinet and Parliament where necessary.
2. **The (external financing) needs of the energy sector should be specifically considered in the financing strategy and medium-term debt strategy of the Ministry of Finance**. The government should desist from frontloading expenditure in expectation of revenues from the oil sector, because this frontloading may backfire in case of delayed oil production or in case of future fluctuations in oil prices. Furthermore, the government should ensure that it does not become dependent on a limited number of creditors, establishing a maximum exposure limit for each creditor. The government should continue its efforts to develop the domestic capital market, including the secondary market for government securities, to decrease domestic borrowing costs in the medium to long run. This will reduce dependency on external creditors and address refinancing risks. Both local currency borrow-

ing and fixed rate financing will contribute to accurate debt management and budget planning. The Debt Directorate of the Ministry of Finance should enhance its capacity and efforts to hedge currency and interest rate risks.

3. **The cost and conditions of borrowing should be considered next to the return on investment and the value of the asset that is created**. When credit is requested for the construction of a revenue-generating asset, the debt service costs should be considered alongside forecasts of future revenue. Independent feasibility studies should be conducted to get an estimate of the return on investment. Any collateral should be assessed alongside the value of the borrowing and mismatches in the values should be limited. Moreover, the government should find a balance between agreeing on stringent financing conditions and being able to negotiate the most favourable financing terms.
4. **All government entities, including state-owned enterprises should be more transparent about their debt portfolio**. They should regularly disclose information about their financial performance and debt portfolio. The audited financial statement of government entities should be published in a timely manner. UEDCL especially should begin to publish its financial statements.

3. Financial performance and debt portfolio of the state-owned enterprises.

The financial non-performance of the state-owned enterprises in the energy sector are a fiscal risk to the government. As the state-owned enterprises are considered "too-important-to-fail", the government of Uganda is expected to rescue the enterprises in case they run into financial difficulties. The following five developments are worrisome from a fiscal risk perspective.

Firstly, because the government is expected to prevent state-owned enterprises from defaulting, the government implicitly guarantees all liabilities of the enterprises. As implicitly-guaranteed contingent liabilities, all obligations of state-owned (utility) enterprises present a fiscal risk to the central government. The most pressing liabilities are debt obligations, because these accumulate interest (and potentially default interest). At the moment, the state-owned enterprises do not have any direct loans with creditors. However their total liabilities have increased significantly, especially UEGCL's liabilities from ongoing projects which have more than quadrupled over an 18-month period.

Secondly, the government is exposed to explicit guarantee arrangements. UETCL's demand guarantees to independent power producers is a particularly notable guarantee: if UETCL is not able to cover costs, the government may be expected to step in. Furthermore, various power purchase agreements include an explicit government guarantee, legally requiring the government to step in when UETCL fails to fulfil all obligations. The opposing clauses in the agreements for the Karuma and Isimba dams between UEGCL and UETCL, and between UEGCL and ERA, can result in the materialization of the government's explicit guarantee.

Thirdly, the Ministry of Finance has on-lent borrowings to state-owned enterprises in the energy sector, but the enterprises do not repay all debt service costs to the central government. These on-lent borrowings are contingent assets for the central government. The

enterprises are expected to debt service these borrowings to the central government and the government will then use these proceeds to debt service the creditors. The performance of state-owned enterprises on debt servicing to the central government is not encouraging. The statement of UETCL that the lender (the government) does not expect to recover the debt service costs is particularly worrying. Furthermore, UEGCL has not been able to compensate the government for the on-lend loans for the development of Karuma and Isimba dams and the future ability of UEGCL to do so is highly dependent on these dams generating revenue. These two contingent assets are especially worth monitoring because the exposure increased quickly over the past decade and because a large part of the on-lent borrowings is still to be disbursed by the creditor.

Fourthly, the assets of the state-owned enterprises do not generate enough revenue. The ability of the state-owned enterprises to improve their financial performance – and debt servicing performance in particular – depends on their ability to increase revenue collections from the assets that are under their management or that are being developed with the on-lend resources. The income from the concession arrangement with Eskom is the main source of income for UEGCL until the hydropower dams become fully operational. As long as the Electricity Regulatory Authority does not change its tariff structure methodology, UEGCL will not be able to bill Eskom for all costs under the concession arrangement. The inability of UEGCL to bill for the depreciation of the two dams has potentially large financial consequences when the company has to fund refurbishments costs.

Fifthly, the government has agreed to contribute capital to the state-owned energy enterprises in return for additional equity, but has not received any dividend on its contributions. The lack of profits made by most state-owned enterprises may in part explain the lack of dividend payments, but the government has also not received dividend payments from profitable public enterprises. The capital contributions put pressure on Uganda's fiscal sustainability, because the government has to source the contributions – given the fiscal deficit – through debt financing. The financing costs in turn are not recovered by dividend payments. In short, the government of Uganda does not seem to benefit from its public enterprises.

Recommendations

1. **The government should assign clear responsibilities for different government units (also within ministries) for the monitoring of the energy sector's financial performance.** The government should consider additional capital contributions to state-owned enterprises more cautiously and insist that the enterprises provide a return on investment through dividend payments. The various government units involved in the monitoring of the enterprises should agree on guidelines for their actions, which have to be discussed and approved by Cabinet.
2. **The Ministry of Finance should assess fiscal risks from contingent liabilities and contingent assets in a more structured manner and ensure that budget is allocated to cover expected losses**. In line with the Public Finance Management Act 2015, all borrowings of public entities need to be assessed by the Ministry of Finance. A specialized team of the Debt and Cash Directorate of the Ministry of Finance should be responsible

for all assessments to allow for continuity and consistency. The assessment should be similar to the process for central government borrowings. The team should be trained in areas where expertise falls short. Furthermore, the Directorate of Debt and Cash of the Ministry of Finance should develop guidelines for the monitoring, management and approval processes of these borrowings. All relevant public entities should be sensitized about the appropriate processes. The Ministry of Finance should only consider borrowing requests when all the required and relevant documentation has been received and when the risks and costs to government have been properly quantified. An overview of the results of the monitoring, management and approval activities should be disclosed in the annual public debt report of the Ministry of Finance. The government's contingency fund should become fully operational and the government should allocate sufficient funding to the fund to cover contingency shocks.

3. **The on-lending policy of the Ministry of Finance needs to reviewed and strengthened and the Ministry has to ensure that debt service payments are recovered by the beneficiaries.** The Ministry of Finance should spell out the objectives and conditions for the different financial instruments in a financing strategy and ensure that the terminology for the different instruments is understood by all stakeholders. UETCL has to explain and verify its statement that the lender does not intend to recover the debt service costs for the on-lent capital. The Ministry of Finance can provide grants, subsidies or other capital contributions to the state-owned enterprises, but the Ministry and enterprises should only refer to on-lending arrangements when enterprises truly intend to recover the debt service costs.
4. **The secondary legislation for the approval, monitoring and management of borrowing by state-owned enterprises needs to be strengthened**. The primary legislation (including the Constitution and the Public Finance Management Act) for off-balance sheet borrowing is well developed, but guidance for various government units on how to manage contingent liabilities (including in case any would materialize) needs to be strengthened by the Ministry of Finance in consultation with stakeholders. The PFMA's section 36 should be enhanced and define that authorizations-to-borrow from the Ministry of Finance to public or publically-aided entities do not constitute a government guarantee.[26] At the moment, the non-guarantees of public and publically-aided entities may not hold in court, because the entities may be considered part of the government. Moreover, given most state-owned enterprises' importance to society, the government will probably intervene and bail-out non-guaranteed borrowings before the public entity defaults to ensure the continuation of service provision.
5. **The Ministry of Finance should discourage public and publicly-aided entities from obtaining debt liabilities on their own balance sheet strength without obtaining a government guarantee**. By ensuring that the Ugandan parliament explicitly approves all

[26] According to Section 36, "the authority to raise money by loan and to issue guarantees for and on behalf of the Government shall vest solely in the Minister [of Finance]..." According to Section 39 of the Public Finance Management Act 2015 (PFMA), "the Minister [of Finance] may, where he or she is satisfied that it is in the public interest, in the manner and on conditions he or she may think fit, with the approval of Parliament, on behalf of the Government, guarantee the repayment of the principal money and the payment of the interest and the other changes on a loan raised within or outside Uganda by a state enterprise, a local government council, any entity other than a local government council, which is required to be audited by the Auditor General under an Act of Parliament, or a private sector entity."

debt liabilities which increases the government's liability, fiscal risks from implicitly guaranteed liabilities will be eliminated. The government should stop referring to the authorizations as "letters of support", because no government support is provided through these letters.

6. **The non-billing of costs under concession arrangements has to be addressed, especially regarding the arrangement between UEGCL and Eskom.** UEGCL should be able to fully recover the costs under the concession arrangements for the Nalubaale and Kiira dams. Alternatively, the government has to recover UEGCL for these costs and should budget for the resources explicitly.

4. Non-cost recovering tariffs.

A quick study of the quasi-fiscal deficit of UETCL shows that the three tariff types in the energy sector do not recover operational costs. Keeping the electricity tariff low through interventions in the tariff setting procedure and methodology has resulted in the financial non-performance of UETCL. UEGCL and UEDCL are also known for making losses. Furthermore, according to various players in the field, and the state-owned enterprises themselves, the ERA methodology prevents UIEGCL and UEDCL from fully charging for costs under active concession agreements.

Recommendations

1. **The Ministry of Energy should study the true cost of supplied electricity and take transactions along the entire supply chain into account.** The government should aim to maintain financial viability for all companies active in the sector, because this is a prerequisite to attract investment in the sector. The government should communicate its intention to maintain viability properly, because power producers will be likely to agree to a lower price for their electricity if they know the government will ensure that their company remains financially viable over the term of the contract. The quasi-fiscal deficits of all public entities in the energy sector should be estimated (as has been done for UETCL in section 4.3.4. of this paper). Furthermore, the Ministry of Energy has to assess whether and how the ERA methodology causes under-billing of UEGCL and UEDCL to Eskom and Umeme respectively.
2. **The Ministry of Finance should study – with stakeholders – all financial transactions of the government with any entity in the energy sector.** This study will allow for a mapping of the government's total support to the sector. All public entities that have provided support to the energy sector, including the Ministries of Finance and Energy, should review whether they have used the right financing instruments (in line with the financing strategy) for each transaction. A clear breakdown of all subsidies, grants, capital contributions, write-offs, etc. should be drawn up. Any subsidization of the electricity tariff should be made explicit. Furthermore, the government should continue to engage with private sector investors for the further development of the energy sector. The procurement of projects should be done by means of a transparent and competitive process and the contract should be awarded in an open, fair and competitive manner.

3. **The government should ensure that its energy supply comes from a diverse set of generation sources and that it does not become overly dependent on one source**. Dependency on a single source such as the river Nile in Uganda makes the country vulnerable to droughts and other weather events, and therefore dependent on emergency power (which can quickly drive up the tariff).
4. **The government should develop a strategy on how to address the high tariffs paid by UETCL to some (thermal) power producers and should aim to renegotiate the terms of agreements**. UETCL pays very different tariffs to the various generation companies in Uganda. The tariff paid to one of the thermal power producers is more than 13 times as high as what is paid to a producer of hydropower. The government should assess what incentives it can provide to the power producers to lower their very high tariffs (for example a longer contract term, which allows the producer to recover initial investment over a longer term).

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Annex 1. Financial performance indicators for UEGCL, UETCL and UEDCL.

	UEGCL		UETCL		UEDCL	
	AG	**FS**	**AG**	**FS**	**AG**	**FS**
Total outstanding equity (in UGX billions)						
June 2018	830		379		206	
June 2017		452		455		
December 2016				392		
December 2015		466		374		
December 2014		467				
Profitability (in UGX millions)						
June 2018	(10,856)		(75,526)		(6,683)	
June 2017	(13,483)	(13,908)	62,254	62,256	(6,731)	
December 2016				18,592		
June 2016	13,508		(20,760)		(-9,284)	
December 2015		5,402				
December 2014		(9,098)				
Return on assets (in percentages)						
June 2018	-0.2		-2.9		0.4	
June 2017	0	-0.4	1	2.9	-1	
December 2016				0.09		
June 2016	1.34		-6.01		-0.77	
December 2015		0.5				
December 2014		-1.7				
Liquidity (current ratio)						
June 2018	7.6		1.5		4.5	
June 2017	7.2	7.09	1.4	1.43	3.7	
December 2016				1.36		
June 2016	1.8		1.3		6.3	
December 2015		3.80				
December 2014		4.95		1.34		
Debt to assets (in percentages)						
June 2018	85		84		87	
June 2017	86	85	74	38	86	
December 2016				39		
June 2016	53		77		85	
December 2015		52		35		
December 2014		0				

Source: 2016, 2017 and 2018 annual reports of the Auditor General to Parliament and the financial statements of UEGCL (2017 and 2015) and UETCL (2017).

Annex 2. Credit risk assessment of UEGCL and UETCL.

An appraisal of financial statements of state-owned enterprises allows for an assessment of their creditworthiness and, therefore, provides insights into the government's fiscal risk exposure to the enterprises. Unfortunately, the financial statements and annual reports of UEGCL, UETCL, and UEDCL are not publically disclosed every year, which limits the assessment possibilities. However, UEGCL and UETCL have published financial statements for fiscal year 2017 as part of their annual reports. UEGCL also published a 2015 annual report with financial statements on its website. These reports have been audited by the Auditor General's Office. No financial statements or annual reports of UEDCL are publically available. Therefore, the creditworthiness of only UEGCL and UETCL are assessed.

The credit risk assessment of UEGCL and UETCL is largely conducted in line with a methodology developed by the World Bank and the South African National Treasury.[27] While the World Bank focused on an assessment of fiscal risks from explicit loan guarantees, the authors acknowledge that their methodology can also be applied to other liabilities of state-owned enterprises as the fiscal risks are driven by the same factors. For UEGCL and UETCL, fiscal risks stemming from all their liabilities are considered.

The World Bank and South African Treasury quantify fiscal risks from liabilities of a state-owned enterprise by making use of a credit rating approach. The credit risk rating is conducted by scoring an enterprise on various indicators on a scale of one to nine.[28] These indicators are listed on industry-specific scorecards. While the scorecard for the energy sector of the South African Treasury includes both business and financial risk indicators, only financial risk indicators are considered for the scoring of UEGCL and UETCL. Not enough information is available to score the business indicators, whereas the financial indicators can straightforwardly be scored with the information from the financial statements.

The scorecard includes eleven financial risk indicators, covering indicators for profitability, debt capacity, efficiency and liquidity. The South African Treasury has published a guidance document which provides ranges for the scoring of each indicator. On the scorecard, every indicator has a weight allocated, which allows for the calculation of an overall weighted risk rating. See Table 2 for the scorecard that is used to assess the creditworthiness of UEGCL and UETCL. Table 3 and 4 present the credit rating scale and scoring ranges for each indicator as guided by the South African Treasury respectively.

Table 2. Scorecard with eleven financial risk indicators.

Risk indicators		**Formula of indicator**	**Weight**	**Rating**	**Rating x weight**
1.	Operating profit margin	Operating earnings {before taxes}/revenue	7.5%		

[27] As described by Bachmair, et al. In a World Bank Policy Research Paper (2019).

[28] Next to credit ratings, various other methodologies are available to assess credit risks. These include statistical and structural models. However, these methodologies require more data to be available.

2.	Net profit margin	Net profit/revenue	10%		
3.	Revenue growth	(Revenue at t/revenue at t-1) – 1	5%		
4.	Debt to assets ratio	Total debt/total assets	15%		
5.	Debt to equity ratio	Total liabilities/shareholders' equity	5%		
6.	Interest cover ratio	Operating earnings {before interest and taxes}/interest expenses	15%		
7.	Cost to income ratio	Operating expenses /operating earnings {after interest, before tax}	15%		
8.	Cash flow adequacy	Cash flows from operations/cash flow used in investing activities	7.5%		
9.	Cash ratio	(Cash + cash equivalents + bank account balances)/ current liabilities	10%		
10.	Quick ratio	(Cash and equivalents + marketable securities + accounts receivable)/ current liabilities	5%		
11.	Current ratio	Current assets/current liabilities	5%		
Weighted risk rating:					

Table 3. Credit rating scale used by the South African National Treasury.

Risk rating	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Indicator	**Remote**				**Possible**		**Probable**		
Profitability									
1. Operating profit margin	>42%			26%	25%	12%	11%		<=5%
2. Net profit margin	>40%			11%	10%	5%	4%		<=1%
3. Revenue growth	>40%			11%	10%	5%	4%		<=1%
Debt capacity									
4. Debt to assets ratio	<=15%			28%	29%	58%	59%		>=80%
5. Debt to equity ratio	<=0.4x			1x	1.1x	2x	3.0x		>=4.0x
6. Interest cover ratio	>=20x			16x	15x	3x	2x		<1x
Efficiency									
7. Cost to income ratio	<=16%			49%	50%	80%	81%		>=100%
8. Cash flow adequacy	>=40%			20%	19%	12%	11%		<1%
Liquidity									
9. Cash ratio	>=1.0x			0.8x	0.7x	0.4x	0.3x		<=0.1x
10. Quick ratio	>=5.0x			2.0x	1.0x	0.5x	0.4x		<=0.1x
11. Current ratio	>=5.0x			3.0x	2.0x	1.0x	0.9x		<=0.1x

Table 4. Credit rating scale used by the South African National Treasury.

Risk ratings	Extent of risk exposure	Probability of financial distress
1	Extremely low risk	Remote
2	Low risk	
3	Moderate risk	
4	Marginal risk	
5	Special attention	Possible
6	Substandard	
7	High risk	Probably
8	Very high risk	
9	Imminent default/default	

In line with the methodology, the weighted rating is translated into probabilities of default by converting the rating to a rating scale of an external credit rating agency.[29] The South African Treasury converts their allocated credit rating to Moody's rating. Moody regularly publishes a table with default frequencies by rating and time horizon, which is used as an estimation for the probability of financial distress.[30] See Table 5 for the conversion between the weighted rating and the Moody's rating, as well as the related probabilities of default. The appropriateness of this conversion is questionable, especially given the fact that external credit rating agencies apply expert judgement on the final risk rating allocation and do not solely rely on the set of indicators on the scorecard. Furthermore, not all indicators of Moody's scorecard have been scored for UEGCL and UETCL as only financial indicators have been considered.

Table 5. Rating alignment with Moody's rating and associated probabilities of financial distress.

Internal rating	Moody's rating	Probability of default (in %)									
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
1	Aaa	0.00	0.01	0.02	0.05	0.08	0.14	0.22	0.31	0.41	0.52
2	Aa2	0.02	0.07	0.14	0.25	0.39	0.54	0.69	0.83	0.96	1.08
3	A2	0.06	0.21	0.40	0.65	0.97	1.32	1.68	2.04	2.39	2.72
4	Baa2	0.17	0.53	0.88	1.32	1.83	2.38	2.94	3.51	4.07	4.64
5	Ba2	1.11	3.22	5.17	7.47	9.89	12.23	14.37	16.25	17.93	19.47
6	B2	3.90	9.63	14.10	18.99	23.86	28.37	32.30	35.59	38.29	40.55
7	Caa2	15.89	27.65	34.99	42.01	48.31	53.66	58.00	61.41	64.06	66.13
8	Ca	54.15	65.12	70.44	74.86	78.43	81.23	83.36	84.96	86.16	87.08
9	C	100	100	100	100	100	100	100	100	100	100

Now that an estimate for the probability of financial distress of the state-owned enterprise has been derived, the expected loss can be calculated. Expected losses (EL) are measured by multiplying the probability of default (PD) with exposure at default (EAD) and loss given default (LGD). However, given the "too-important-to-fail" status of state-owned utility enterprises

[29] As explained by Bachmair, et al., not many treasuries have a database of historic credit events for state-owned enterprises it has been exposed to. Therefore, treasuries have to rely on third-party information.

[30] As governments will try to save the state-owned utility enterprises from defaulting, given their importance for the economy but also due to public expectations, the probability of financial distress should be considered instead of the probability of default. This will allow for a calculation of the expected financial interventions by government.

and government's willingness to provide financial support before a default, the definition of probability of default has to be extended. It is assumed that the probability of default equals the probability of financial distress of a state-owned enterprise, which also captures events more broadly defined as "any type of unplanned government support aimed at avoiding default".[31]

Table 6. Review of UEGCL financing risks alongside 11 risk indicators.

Financial risk indicator		**31 December 2014**	**31 December 2015**	**30 June 2017**
Profitability				
1.	Operating earnings margin	-1.28	0.09	-0.86
2.	Net profit margin	-1.21	0.10	-0.82
1.	Revenue growth	- [32]	6.11	-0.79 [33]
Debt capacity				
4.	Debt to assets ratio	0	0.52	0.85
5.	Debt to equity ratio	0.09	1.16	6.29
6.	Interest cover ratio	-1.61	NA [34]	-0.21 [35]
Efficiency				
7.	Cost to income ratio	-0.95	9.02	-2.26
8.	Cash flow adequacy	0.098	0.018	0.0006
Liquidity				
9.	Cash ratio	1.23	1.74	5.80
10.	Quick ratio	4.55	2.38	7.09
11.	Current ratio	4.95	3.80	7.09

Table 7. Calculating the weighted risk rating for UEGCL.

Risk indicators		**Weight**	**2014**		**2015**		**2017**	
			Rating	**Rating x Weight**	**Rating**	**Rating x Weight**	**Rating**	**Rating x Weight**
1.	Operating profit margin	.075	9	0.675	8	0.6	9	0.675
2.	Net profit margin	.10	9	0.9	5	0.5	9	0.9
3.	Revenue growth	.05	-	0.05	1	0.05	9	0.45
4.	Debt to assets ratio	.15	1	0.15	6	0.9	9	1.35
5.	Debt to equity ratio	.05	1	0.05	5	0.25	9	0.45

[31] Similar to the assumptions made by the South African Treasury as described by Bachmair, et al. Unplanned government interventions may include additional financial support (e.g., subsidies and capital injections), the write-off of outstanding (debt) obligations to other government entities, as well as central government taking over debt service obligations from the entity.

[32] No information is available about the 2013 revenue of UEGCL.

[33] As the 2017 position for revenue is an 18 months position, revenue has been divided by 18 and multiplied by 12.

[34] On page 58 of the 2015 annual report of UEGCL, the company notes that the government of Uganda loan was converted to equity in financial year 2013 and that therefore no interest is payable anymore.

[35] On page 64 of the 2017 annual report of UEGCL, the interest payable for the Karuma and Isimba on-lend borrowings are stated (around UGX 46 billion for Karuma and UGX 24 billion for Isimba). On page 66 in the cash flow statement, these interest payables are listed as income. On page 88 and 89, UEGCL states that the interest amounts are outstanding under the on-lend arrangements with the government of Uganda. However, on page 84 UEGCL states that it has no interest-bearing borrowings. This interest cover ratio assumes that the company has interest payables for both the Karuma and Isimba on-lend borrowings.

6.	Interest cover ratio	.15	9	1.35	1	0.15	9	1.35
7.	Cost to income ratio	.15	9	1.35	9	1.35	9	1.35
8.	Cash flow adequacy	.075	7	0.525	8	0.6	9	0.675
9.	Cash ratio	.10	1	0.1	1	0.1	1	0.1
10.	Quick ratio	.05	2	0.1	4	0.2	1	0.05
11.	Current ratio	.05	2	0.1	3	0.15	1	0.05
Weighted risk rating:					4.85		7.4	

Table 8. Calculating the expected loss of UEGCL.

	Exposure at default (total liabilities, in millions UGX)	**Loss given default (%)** [36]	**Probability of default (%)**	**Expected loss (in millions UGX)**
2017	2,843,217	30%	15.89	135,537
2018	2,843,217	30%	27.65	235,845
2019	2,843,217	30%	34.99	298,452
2020	2,843,217	30%	42.01	358,331
2021	2,843,217	30%	48.31	412,067

Table 9. Review of UETCL financing risks alongside 11 risk indicators.

Financial risk indicator		**31 December 2015**	**31 December 2016**	**30 June 2017**
Profitability				
1.	Operating earnings margin		0.14	0.59
2.	Net profit margin		0.10	0.42
2.	Revenue growth			-0.21 [37]
Debt capacity				
4.	Debt to assets ratio	0.35	0.39	0.38
5.	Debt to equity ratio	1.53	2.08	1.87
6.	Interest cover ratio		7.13	39.3
Efficiency				
7.	Cost to income ratio		5.99	0.69
8.	Cash flow adequacy		0.47	0.15
Liquidity				
9.	Cash ratio	0.43	0.59	0.47
10.	Quick ratio	1.28	1.30	1.38
11.	Current ratio	1.34	1.36	1.43

Table 10. Calculating the weighted risk rating for UETCL.

Risk indicators		**Weight**	**2014**		**2015**		**2017**	
			Rating	**Rating x Weight**	**Rating**	**Rating x Weight**	**Rating**	**Rating x Weight**
1.	Operating profit margin	.075	-	-	6	0.45	1	0.075

[36] Based on the assumption that 70 percent of the liabilities are recovered with the entity's assets (especially because a large part of the liabilities cover the financing of the work-in-progress assets).

[37] As the 2017 position for revenue is a 6 months position, revenue has been divided by 6 and multiplied by 12.

2.	Net profit margin	.10	-	-	5	0.5	1	0.1
3.	Revenue growth	.05	-	-	-	-	9	0.45
4.	Debt to assets ratio	.15	5	0.75	5	0.75	5	0.75
5.	Debt to equity ratio	.05	5	0.25	6	0.3	6	0.3
6.	Interest cover ratio	.15	-	-	6	0.9	1	0.15
7.	Cost to income ratio	.15	-	-	9	1.35	6	0.9
8.	Cash flow adequacy	.075	-	-	1	0.075	6	0.45
9.	Cash ratio	.10	6	0.6	5	0.5	6	0.6
10.	Quick ratio	.05	5	0.25	5	0.25	5	0.25
11.	Current ratio	.05	5	0.25	5	0.25	5	0.25
Weighted risk rating:							4.275	

Table 11. Calculating the expected loss of UETCL.

	Exposure at default (total liabilities, in millions UGX)	**Loss given default (%)** [38]	**Probability of default (%)**	**Expected loss (in millions UGX)**
2017	1,799,901	30%	0.17	918
2018	1,799,901	30%	0.53	2,862
2019	1,799,901	30%	0.88	4,752
2020	1,799,901	30%	1.32	7,128
2021	1,799,901	30%	1.83	9,881

[38] Based on the assumption that 70 percent of the liabilities are recovered with the entity's assets.

Annex 3. Loans on the balance sheets of UEGCL and UETCL.

	Project and loan	Creditor	Date agreement	Total loan amount	Disbursed	Interest rate	Tenor	Comment
UEGCL	Karuma hydropower dam & interconnection	Export-Import Bank of China	24-11-2014	USD 653.8 million	USD 488.8 million	2% per annum on disbursed and outstanding	20 years (including 5 years grace period)	The government of Uganda borrowed USD 789.3 million and USD 645.8 million from EXIM Bank of China and on-lend parts of the loans to UEGCL and UETCL; UEGCL for the construction of the dam and UETCL for the construction of the transmission works and sub-stations. The June 2017 financial statements of UETCL do not specify the on-lend borrowings.
			20-02-2015	USD 534.9 million				
	Isimba hydropower dam & interconnection		24-11-2014	USD 452.1 million	USD 266.9 million			The government of Uganda borrowed 482.6 million from EXIM Bank of China and on-lend USD 452.1 million to UEGCL.
			Total	**USD 1,188.7 million**	**USD 755.7 million**			
UETCL	Kawanda-Masaka transmission line & related substations	International Development Association	23-10-2012	SDR 74.1 million	UGX 146.6 billion	Information not in financial statements	All loans have a grace period of 20 years from the first draw down date, which was	According to World Bank documentation, the tenor is 40 years (with a grace period of 10 years) and IDA charges 0.75%.
	Bujagali – Kawanda, Mutundwe- Kawanda line	African Development Bank	1-10-2017	UGX 44 ,000 million	UGX 274.3 billion	0.75%		

	Mbarara – Mirama & Bujagali – Tororo - Lessos lines		13-05-2009	XUA 7.59 million			in 2012. No info about the tenor is available.	The African Development Bank uses Units of Account (XUA) as currency
	Mbarara – Nkenda & Tororo – Lira lines		13-05-2009	XUA 52.51 million				
	Mbarara – Mirama & Bujagali – Tororo - Lessos lines	Japanese Bank of International Co-operation	26-03-2010	JPY 5.406 million	UGX 169.3 billion	Information not in financial statements		
	Bujagali – Kawanda, Mutundwe- Kawanda line		1-10-2017	JPY 3,484 million		0.01%		
	Mputa interconnection	French Development Agency	13-10-2013	USD 23 million	UGX 34.5 billion	7.13% per annum		
			Total	Equivalent to **USD 252.4 million**	UGX 624.7 billion (equivalent to **USD 169.3 million**)			Exchange rates of the 19 November 2019 have been used for the conversion into USD.
			Grand Total - Debt UEGCL and UETCL	**USD 1,441.1 million**	**USD 925 million**			

Source: UEGCL and UETCL financial statements dated the 30th of June 2017.

Annex 4. Key elements of the income statement and balance sheet of UEGCL.

In UGX millions	**18 months to 30 June 2017[39]**	**12 months to 31 December 2015**	**12 months to 31 December 2014**
Total operating income (revenue)	16,912	53,365	7,502
Concession fee	14,760	10,934	5,971
Total operating expenses	(31,457)	(48,722)	(17,112)
Depreciation of Kiira and Nalubaale	(19,266)	(12,541)	Not specified
Operating earnings (loss)	(14,545)	4,643	(9,610)
Total comprehensive income for the period	**(13,908)**	**5,402**	**(9,098)**
Total assets	**3,295,249**	**1,004,604**	**510,330**
Non-current	3,269,860	979,963	460,999
Property, plant and equipment	436,714	451,698	456,634
Work-in-progress projects	2,830,081	525,067	2,330
Current	25,388	24,641	49,330
Total liabilities	**2,843,217**	**538,664**	**43,801**
Non-current	2,839,635	532,181	33,828
Karuma on-lent loan	1,757,723	214,158	-
Isimba on-lent loan	959,822	298,319	-
Interest payable Karuma	45,708	-	-
Interest payable Isimba	23,951	-	-
Due to government of Uganda	-	-	33,828
Current	3,582	6,483	9,973
Total equity	**452,031**	**465,940**	**466,529**
Capital contributions by government of Uganda	554,862	554,862	554,862
Accumulated losses	(208,038)	(194,130)	(199,532)

[39] After the introduction of the PFMA, public enterprises were required to publish financial statements in line with government's financial year which is from July 1st until June 30th. Therefore, UEGCL published 18 months positions for 2017, covering developments between 31 December 2015 and 30 June 2017.

Annex 5. Key elements of the income statement and balance sheet of UETCL.

In UGX millions	**6 months to 30 June 2017[40]**	**12 months to 31 December 2016**	**12 months to 31 December 2015**
Total operating income (revenue)	149,064[41]	187,883	Not available
Income from energy sales	599,037	940,151	
Income from local energy sales	481,370	867,262	
Income from exports energy sales	117,667	72,889	
Total operating expenses	(506,366)	(975,577)	
Total cost of sales[42]	(445,367)	(814,569)	
Eskom	(30,466)	(49,342)	
Jacobsen	(37,779)	(31,315)	
ElectroMax	(77,762)	(82,790)	
Bujagali Energy	(277,202)	(570,552)	
Cost of sales: government of Uganda subsidies	31,971	(81,152)	
Other operating expenses	(60,999)	(161,008)	
Grid maintenance expenses	(2,788)	(7,729)	
Operating earnings (loss)	88,065	26,875	
Total comprehensive income for the period	**62,256**	**18,592**	
Total assets	**2,254,644**	**2,089,344**	**1,626,110**
Non-current	1,560,417	1,460,068	1,076,923
Current	694,227	629,276	549,187
Total liabilities			
Non-current	1,315,735	1,234,461	842,189
government of Uganda contributions	418,514	398,084	257,299
Capital grants	225,090	220,381	117,038
Borrowings	624,711	594,163	453,703
Current	484,166	462,396	410,026
Total equity	**454,743**	**392,487**	**373,895**
Capital pending allotment	331,059	331,059	331,059

[40] After the introduction of the PFMA, public enterprises were required to publish financial statements in line with government's financial year which is from July 1st until June 30th. Therefore, UETCL published 6 months positions for 2017, covering developments between 31 December 2016 and 30 June 2017.

[41] The cost of the purchase of electricity has been deducted from the revenue of the sale of electricity, and the other operational income has been added.

[42] Costs of sales are negatively listed under operating income, not under operating expenses.

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