ELECTRICITY SECTOR
PERFORMANCE REPORT

FIRST HALF OF 2007

ELECTRICITY REGULATORY AUTHORITY
P.o Box 10332
Kampala – Uganda
Website: http://www. era.or.ug

CONTENTS

LIST OF ABBREVIATIONS AND ACRONYMS iv
EXECUTIVE SUMMARY v

1. INTRODUCTION 1

2. OVERVIEW OF MACROECONOMIC DEVELOPMENTS 1
   2.1 Inflation 2
   2.2 Exchange Rate Market Developments 3
   2.3 Interest Rate Developments 3

3. POWER GENERATION 4
   3.1 Generation and Financing Plan 4
   3.2 Generation Capacity 4
   3.3 Status of the New Generation Projects 6
      3.3.1 Thermal Generation Projects 6
      3.3.2 Large Hydro Generation Projects 7
      3.3.3 Renewable Projects 7

4. ENERGY SUPPLY AND DEMAND SITUATION 8
   4.1 Energy Purchases by UETCL 8
   4.2 Energy Sales by UETCL 9
   4.3 Transmission Losses 10
   4.4 Energy Purchases and Sales by Umeme Ltd 11
      4.4.1 Energy Purchases 11
      4.4.2 Energy Sales 11

5. CHALLENGES AND THE WAY FORWARD 14
   5.1 High Oil Prices 14
   5.2 Increasing Generation Costs 15
   5.3 Challenge of Stronger Coordination 15

6. CONCLUDING REMARKS 16

LIST OF ABBREVIATIONS AND ACRONYMS

MW	Megawatt
KW	Kilowatt
KWh	Kilowatt-hours
MWh	Megawatt-hours
OFC	Owen Falls Complex
OFE	Owen Falls Extension
OFPS	Owen Falls Power Station
UEDCL	Uganda Electricity Distribution Company Limited
UETCL	Uganda Electricity Transmission Company Limited
WENRECo	West Nile Rural Electrification Company Limited
TANESCO	Tanzania Electric Supply Company Limited
KPLC	Kenya Power and Lighting Company Limited
KML	Kilembe Mines Limited
KCCL	Kasese Cobalt Company Limited
BST	Bulk Supply Tariff
O&M	Operating and Maintenance Costs
HFO	Heavy Fuel Oil
EAC	East African Community
BEL	Bujagali Energy Limited
GoU	Government of Uganda
EPC	Engineering Procurement and Construction

EXECUTIVE SUMMARY

During the period under review, electricity supply improved slightly following an improvement in hydrology as the country enjoyed favourable rainfall patterns. Lake Victoria regained 25 cm between December 2006 and June 2007. As a result, generation from both Kiira and Nalubaale had stabilized at 120.08 MW by the beginning of the 1st quarter 2007 before increasing to 147MW in the 2nd quarter 2007

On the macroeconomic front, the period under review was characterized by increasing interest rates, particularly the money market rates, and an appreciating domestic currency. Inflation on the other hand, declined during the period from the high levels reached by the close of 2006. Underlying inflation, however, remained above 5 percent but below two digit levels.

The composition of electricity generation has changed significantly since 2005 mainly due to the introduction of thermal generation using diesel. During the period under review, thermal power accounted for 47.5% of total energy supply to the grid. Inspite of the strong government commitment to increase generation, there was notable limited progress with the exception of Bujagali hydro power dam where the EPC contractor started construction in June 2007 under an early start arrangement. Negotiations on Karuma are still in their early stages.

The IDA supported thermal power plant at Mutundwe has been delayed by the negotiations on the power purchase agreement between the UETCL, Aggreko International Projects Limited and World Bank. There are aspects of risk allocation in the PPA that were not yet agreed by all the parties. There are a number of other thermal generators that are negotiating to supply electricity using HFO.

A number of renewable generation projects have been delayed by slow progress towards financial closure. One of them, China Shan Sheng was delayed by some land dispute issues.

There was a notable increase in power supply and a corresponding reduction in transmission losses during the period. However, the distribution losses remained quite high inspite of the stable end-user retail tariffs. Moreover, the actual weighted average tariff of Shs 311.7/kWh was much lower than the approved weighted average tariff of Shs 318.5/kWh which implies that; i) either sales revenue is understated or energy sold is overstated; ii) or the load profile has shifted with more consumption towards the large industrial consumers whose weighted average tariff is lower than the average.

In a bid to sensitise consumers about energy efficiency, Government purchased about 800,000 compact florescent lamps (CFL) of which about 570,000 have already been distributed to consumers at zero cost. Further to this, the Ministry of Energy and Mineral Development was active in conducting public awareness campaigns on efficient energy utilization. Combined with the high tariffs, these measures appear to have had a significant downward impact on demand which is estimated at 25-30 MW.

Oil prices remained quite high during the period under review. This was mainly due to supply constraints, together with geopolitical concerns and refinery glitches. The strong global economic expansion is expected to continue into 2008 at a growth rate of 4.9%, almost at the same pace as the forecasted 5% in 2007. China and India are expected to continue driving demand for oil products in 2007 and 2008.

1. INTRODUCTION

The first half of 2007 was characterized by stability in generation following the drought that affected much of 2005 and 2006. Lake Victoria had regained 25 cm between December 2006 and June 2007. The improvement in the lake level is attributed to a more favorable rainfall pattern during the period.

As a result of the improvement in hydrology, generation from both Kiira and Nalubaale had stabilized at 120.08 MW by the beginning of the 1st quarter 2007 before increasing to 147MW in the 2nd quarter 2007[1]. Inspite of this improvement in hydro-generation, electricity supply remained far below demand thus imposing significant load shedding. The mitigation measures that involved the commissioning of the 50-MW of thermal power in May 2005 and an additional 50 MW in October 2006 were not sufficient to meet the supply shortfall. While peak demand amounted to 380 MW during the period under review, total electricity supply varied between 235-255 MW resulting into a supply shortfall ranging between 145-125 MW.

To address the above shortfall, the regulatory and government policies remained geared towards increasing generation capacity, a stable tariff regime, demand management including reduction in system losses and good quality of supply and service. Government however remains mindful of relatively high world oil prices in combination with concerns about the environmental consequences of greenhouse gas emissions. In response, attention has been directed towards encouraging clean sources of energy particularly renewable energy sources. During the period under review, Government approved the Renewable Energy Policy and a set of Feed-in Tariffs.

The developments in the electricity sector occurred against a background of relatively stable macroeconomic setting that was characterized by upward movements in interest rates, increased foreign exchange inflows and an appreciating domestic currency. The appreciation of the Shillings helped to mitigate the impact of the high fuel prices on end-user retail tariffs.

2. OVERVIEW OF MACROECONOMIC DEVELOPMENTS

The developments in the macro economy have several linkages with the electricity sector and vice versa. A depreciating currency always puts upward pressures on the electricity tariffs since most electricity contracts are hedged against exchange rate risk. Similarly, increasing tariffs affect the consumer price index also pushing up the cost of doing business in Uganda.

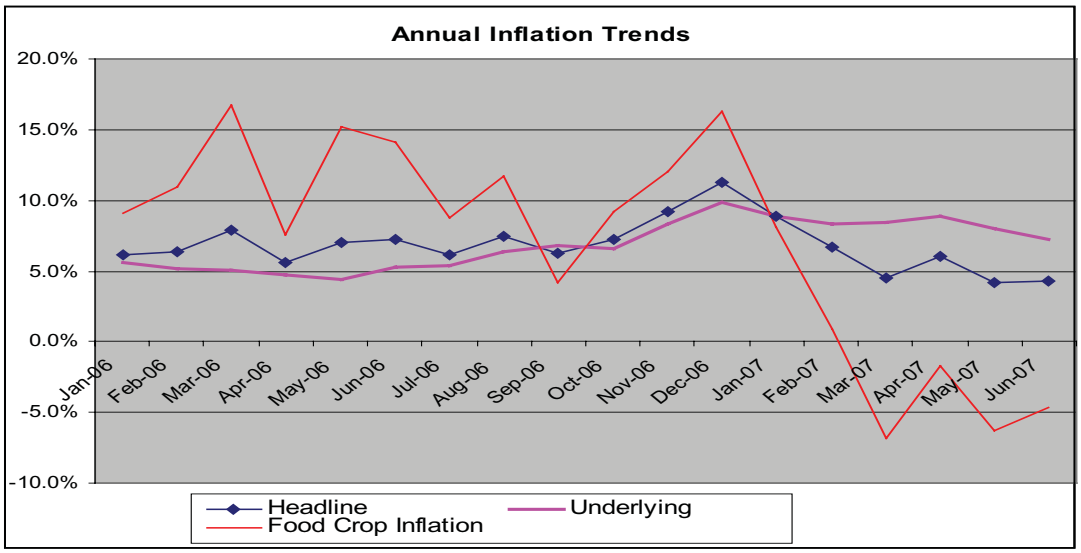
[1] There was a fear by mid-2006 that effective generation at Kiira and Nalubaale was going to reduce to 90 MW.

The period under review was characterized by increasing interest rates, particularly the money market rates, and an appreciating domestic currency. This section provides a brief overview of the macroeconomic developments during the 1st two quarters of 2007.

2.1 Inflation

Annual headline inflation declined persistently during the 1st two quarters of 2007 from a high of 11.3 percent recorded in the year ended December 2006 to 4.3 percent in the year ended June 2007 (Chart 1). The decline was largely driven by falling food prices. Annual food crop inflation declined from 16.3 percent to -4.6 percent over the same period respectively. The annual food crop inflation has been negative since March 2007. The decline in food crop prices was attributed to falling prices of most food items such as matooke, passion fruits, onions, maize flour, fresh cassava e.t.c. This was due to increased supply of food items as a result of favorable weather conditions.

Chart 1: Annual Inflation Trends



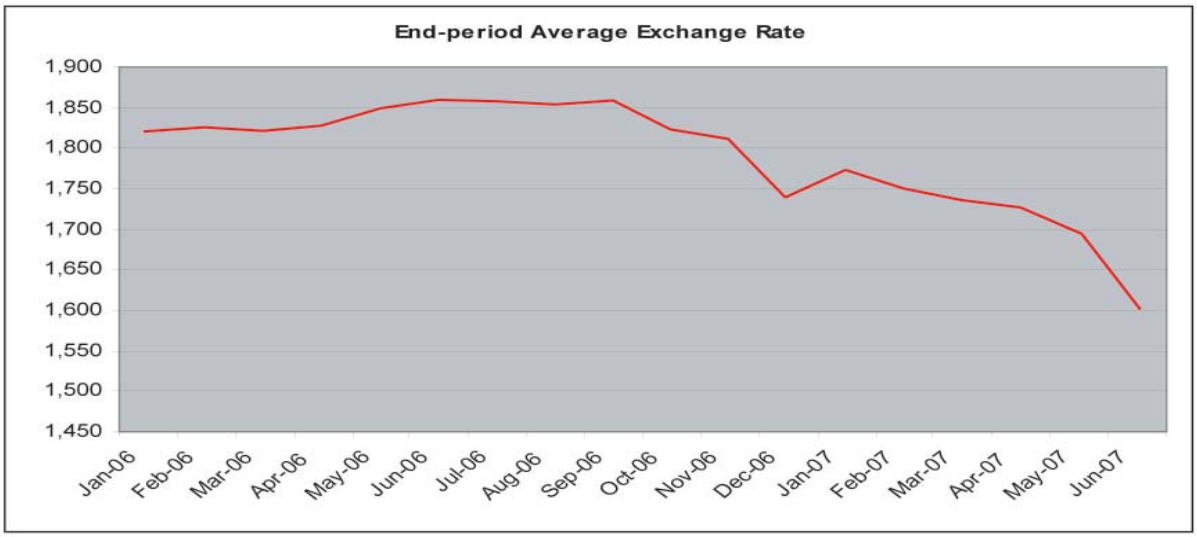
Underlying inflation also registered a declining trend over the period under review. After hitting the high of 9.8 percent in December 2006, underlying inflation fell persistently to reach 7.2 percent in June 2007. Inspite of the decline in underlying inflation, it is still higher than the government target of 5 percent which is seen as the desired level of inflation in Uganda that is consistent with stable macroeconomic policy. The high level of underlying inflation is mainly attributed to the upward adjustments in the utility tariffs at the end of 2006 and the persistently high prices of petroleum products. The prices of petroleum products have stayed at stubbornly high levels inspite of the downward trend recorded in the fourth quarter of 2006.

2.2 Exchange Rate Market Developments

The Shilling came under intense appreciation pressures during the period under review. On an end period basis, the Shilling appreciated by 7.8 percent between December 2006 and June 2006 from Shs 1739.60/US$ to Shs 1603.35/US$ (Chart 2). On a year to year basis, the Shilling appreciated by 13.8 percent on the backdrop of increased inflows from NGO's, exports and portfolio flows particularly into the securities market.

The intervention by Bank of Uganda on the buy side increased the shilling liquidity in the market calling for more sales of domestic securities. Given the large interest rate differentials, a number of offshore investors were attracted into the securities market causing some upward pressures on interest rates.

Chart 2: Exchange Rate Developments

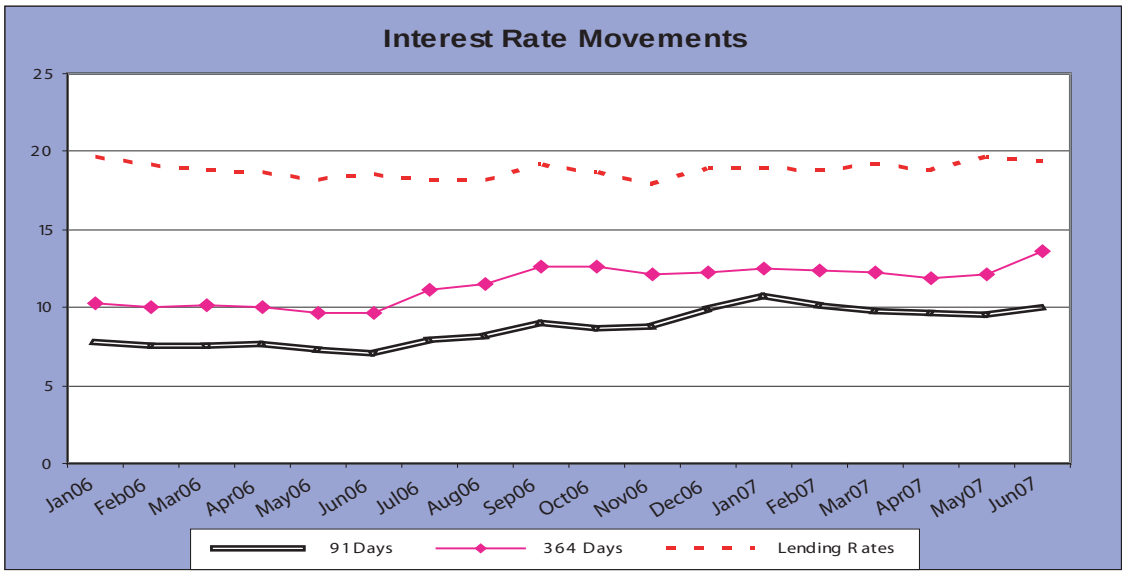


2.3 Interest Rate Developments

There was a general upward movement in the major interest rates. The rate on the 91-day Treasury bills increased from 9.91 percent in December 2006 to 10.01 percent in June 2007 while the interest rate on the 364-day Treasury bill rates increased from 12.26 percent to 13.62 percent over the same period respectively. The lending rates also followed a similar trend.

The increase in interest rates was largely driven by increased demand for domestic securities arising partly from the demand by offshore investors. Against the appreciating currency, foreign investors were attracted into the securities market because of the widening interest rate differentials. The increased intervention by the central bank in the foreign exchange market to stabilize the exchange rate and restore orderliness in the market helped to fuel speculation in the securities market putting further pressures on the central bank to intervene in the securities market. The developments in interest rates during the period under review are shown in chart 3.

Chart 3: Interest Rate Developments



3. POWER GENERATION

3.1 Generation and Financing Plan

The period under review was characterized by increasing costs of power supply as a result of the short-term measures to address the supply constraints. The increased share of diesel based thermal generation in the mix coupled with the high international oil prices necessitated the continued subsidization of the electricity tariffs by government. During the first half 2007, the total government subsidies to the sector towards capacity payments for the thermal plants and direct energy subsidies amounted to Shs 58,197 million.

In a bid to ensure that licensing as well as dispatch of the generators of electricity was kept in line with the budgeted government financing for the sector, Government worked out an Electricity Generation and Financing Plan at the beginning of 2007/08. The communicated scenario considered 150 MW as the optimal diesel-based thermal generation in the energy mix. The plan provided for Shs 92 billion in FY 07/08 from the domestic budget and US$ 206.05 million to be secured from IDA as a loan towards subsidization of electricity from the 50 MW thermal plant at Mutundwe.

3.2 Generation Capacity

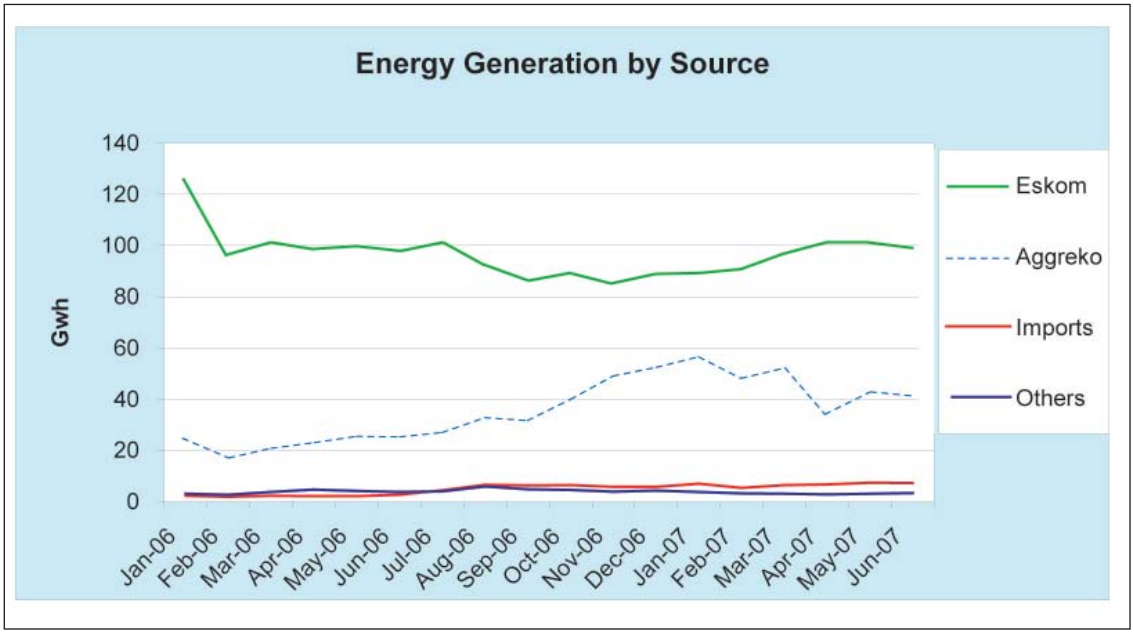
The composition of electricity generation has changed significantly since 2005 mainly due to the introduction of thermal generation using diesel. During the period under review, thermal power accounted for 47.5% of total energy supply to the grid. The installed capacity of hydro generation has remained unchanged at 314 MW of which

180 MW relate to the Nulubaale plant and 120 MW relate to the Kiira plant while 14 MW is the combined installed capacity of both Kilembe Mines Ltd and Kasese Cobalt Ltd. The remaining two units at Kiira are still undergoing the testing phase.

Due to the poor hydrology, the effective generation capacity of the combined Kiira and Nalubaale plants was reduced to 120.08 MW effective July 2006 equivalent to a water release of 64.8 million cubic metres per day. The operating regime of Kiira/Nalubaale was also changed from that of a constant power output to a three-block generation regime in order to optimize power generation. Generation at off-peak (00:00-08:00) was adjusted to 79 MW while generation at shoulder (08:00-17:00) and peak (17:00-24:00) was adjusted to 145 MW and 135 MW respectively. However, water release was increase at the beginning of February 2007 to allow for the testing of unit 15. Following a steady rise in the lake level, the water release was further increased from 750 cubic metres/second to 908.6 cubic metres/second in mid March 2007. Chart 4 shows the share of energy sold to the grid by source.

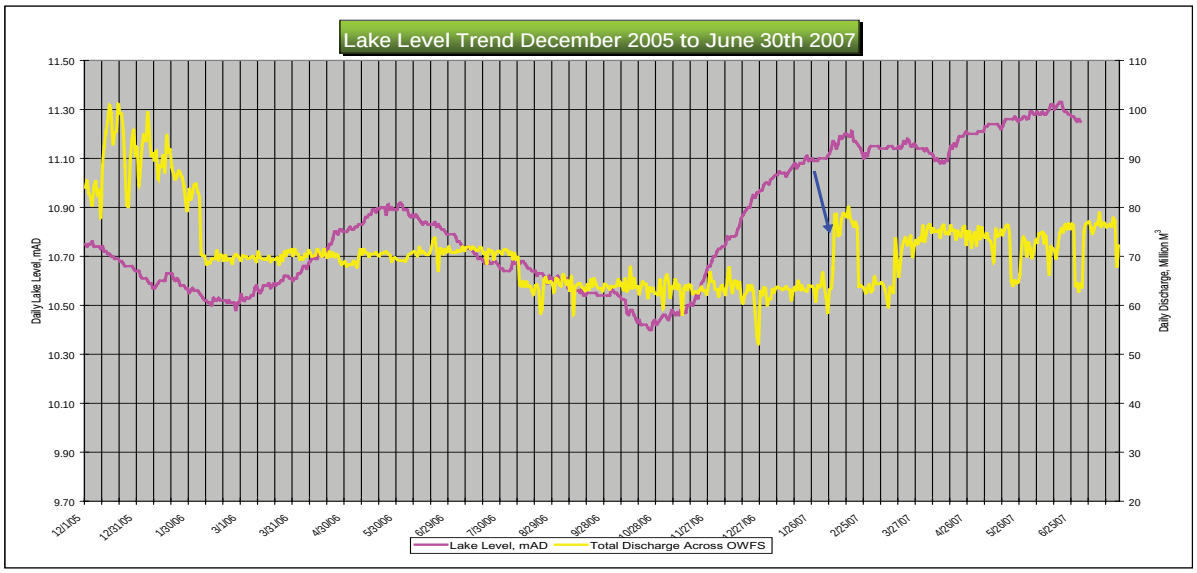
The generation optimization regime adopted in July 2006 was continued into the first half of 2007 where water is conserved for more generation at shoulder and peak periods.

Chart 4: Energy Sold to UETCL by Source



Lake Victoria continued a recovery trend reaching 11.25 metres as at end June 2007 compared to the low of 10.42 metres reached in October 2006. The lake level reached in June 2007 is comparable to the levels reached in August 2004. The improvement in the lake level was against the background of improved rainfall and highly regulated water discharge by the Directorate of Water Department (Chart 5).

Chart 5: Lake Victoria Levels



The other hydro generation comprises of small grid connected generators with total installed capacity of less than 15 MW. Kilembe Mines Limited has an installed capacity of 5 MW though much of the power produced is not sold to the grid; Kasese Cobalt Company Limited has an installed capacity of 9.9 MW and Kisizi Hospital has an installed capacity of 6 KW (Chart 1).

As a result of the contraction in hydro generation and increased shortfall in electricity supply that has resulted into serious load shedding, government has consistently increased thermal generation. In early 2005, government entered into a three year leasing agreement with Aggreko International projects to supply 50 MW of emergency short-term thermal plant comprising packaged high-speed diesel units burning distillate fuel. These units entered into service in May 2005. In October 2006, an additional 50 MW of thermal generation was commissioned bringing the total installed thermal generation capacity connected to the grid to

3.3 Status of the New Generation Projects

3.3.1 Thermal Generation Projects

In a bid to meet the excess demand, efforts were continued to promote new generation projects. In particular, the evaluation of the bidder to provide 50 MW of diesel based thermal power at Mutundwe was finalized and negotiations between GoU and the best evaluated bidder were initiated. The plant will be leased by GoU for a three-year period. This plant is expected to be financed by an IDA loan of US$206.5 million. In

addition, three companies namely Invespro Uganda Ltd, Empower Ltd and Eletro-Maxx expressed interest to generate 50 MW, 50 MW and 10 MW respectively using HFO and were awarded a permit to enable them carry out the studies. Furthermore, the licensing of Jacobsen Eletro to supply 50 MW of HFO was affected by the court case. This however was resolved following the ruling of the High Court and the company was awarded a generation license in July 2007.

3.3.2 Large Hydro Generation Projects

GoU was also engaged in negotiations with the developers of Bujagali hydro power dam to ensure an early start. Due to the unanticipated delays in reaching financial closure and given the increasing excess demand for electricity, GoU agreed on an early start arrangement with BEL. In this regard, GoU advanced a loan to BEL which is recoverable once financial closure has been attained. ERA issued a license to BEL on 1st June 2007 after the company had fulfilled the requirement for the license as spelt out in the Act. The EPC contractor, Salini Construttori S.P.A commenced construction works in late June 2007.

Government has also engaged in negotiations with the possible sponsors of Karuma hydropower project. The sponsors are restructuring ownership to include SN Power Invest and GoU. A draft memorandum of understanding (MoU) and a Due Diligence Agreement has been produced and this was submitted to ERA for comments in March 2007.

3.3.3 Renewable Projects

In addition to the thermal plants and the large hydro plants, a lot of progress has been made with respect to small hydro plants (<20 MW). Kissizi Hospital Power Ltd with a planned capacity of 290 KW was granted a license exemption by the Authority. Construction works has already commenced. The headrace construction is completed and the excavation of the deep trench for penstock is nearing completion. The turbine is expected to be delivered by January 2008.

China Shan Shen Industry International Ltd was awarded a 30-year license to generate 10 MW at Kikagati in South Western Uganda. Construction works have been delayed by the land issues. The land where the construction is supposed to take place belongs to UEDCL. There were delays in negotiating the land lease agreement. Furthermore, there are cross-border issues involving the Republic of Tanzania. These are being handled through established protocol channels involving the Ministries of Foreign Affairs.

Eco Power (U) Ltd has been awarded a license by the Authority in April 2007 to generate 6.6 MW at Ishasha in western Uganda. Construction works have been delayed by financial closure issues. Hydromax Ltd submitted a license application to the ERA in May 2007. The company intends to generate 9 MW and sell 99 percent to the UETCL and distribute 1 percent.

The West Nile Rural Electrification Company Ltd also commenced the construction on a 3.4 MW hydro power plant at Nyagak in Northern Uganda. The power generated will be distributed to the surrounding districts of Arua, Pakwach and Nebbi by the company under their license of 2003.

4. ENERGY SUPPLY AND DEMAND SITUATION

4.1 Energy Purchases by UETCL

The current structure of the electric power sector in Uganda is a "single buyer model" with the UETCL being the sole bulk buyer and seller of all the power generated in Uganda save for the off grid systems such as the one in West Nile. The main sources of power supply to UETCL during the period under review included purchases from Eskom (U) limited, Aggreko International Projects Ltd, Kasese Cobalt Company Limited, Kilembe Mines limited, and imports from Tanzania and Rwanda.

During the first half of 2007, UETCL purchased 578,888 MWh from Eskom (U) Ltd at a cost of Shs 17,408 million resulting into an average effective price of Shs 30.07 per kWh. This represents an increase of 36,242 MWh or 6.3 percent compared to 542,646 MWh purchased from Eskom in the preceding period. This trend is explained by the increased hydro generation following the improvement in hydrology during the period. As a result of improved hydrology, Eskom was permitted by Directorate of Water Department (DWD) to release more water than in the previous period (Table 1).

In July 2006, UETCL entered into a memorandum of understanding to import power from KPLC of Kenya. KPLC agreed to export to UETCL up to a maximum of 15 MW on a non-firm basis. In view of the fact that KPLC was going to dispatch thermal plants, the pricing was revised to reflect the actual costs of thermal power production. The pricing therefore fully captures the cost of fuel prices. Imports from KPLC of Kenya increased to 39,233 MWh in the first half of 2007, an increase of 14.5% compared to the previous period. On the other hand, the price per kWh moderated to Shs 419.0 in the period under review compared to Shs 452.5 in the previous period[2]. Imports from Electrogaz of Rwanda declined marginally from 1,044 MWh during the 2nd half

[2] It is important to note that the price of energy imports from KPLC stood at Shs 279.9/kWh in the 2nd quarter 2006 just before the memorandum of understanding became effective.

2006 to 1,032 MWh in the 1st half 2007. The price of energy imports from Electrogaz was unchanged at US cents 8.25/kWh (Table 1).

The importance of thermal power in the energy mix increased during the period under review. This was mainly due to the commissioning of 50 MW diesel fired thermal plant in October 2006. The plant is on a lease basis from Aggreko International Projects which already had another 50 MW in operation. Aggreko supplied 275,215 MWh to UETCL at a cost of Shs 108,313 million in the 1st half of 2007 compared to 233,286 MWh at a cost of Shs 97,510 million in the preceding period. Consequently, the share of thermal power in the energy supply increased from 28.2% in the previous period to 30.3% in the period under review. Inspite of the relatively low share in energy supply, thermal power accounted for 75.6% of the total costs of power acquisition by UETCL. This phenomenon is consistent with the stress that thermal power has continued to impose on the tariff and government budgetary resources as well. The average price at which Aggreko sold energy to UETCL decreased to Shs 393.6/kWh from Shs 418.0/kWh in the previous period consistent with the movements in the international prices of diesel.

The other sources of energy supply included KCCL and KML. The combined energy purchases both KCCL and KML amounted to 15,500 MWh during the period under review of which only 219 MWh was from KCCL. With the resumption of cobalt mining, energy supply to the grid by KCCL has declined significantly.

Table 1: Energy Purchases by UETCL

Year	KCCL	KML	AGGREKO	KENYA (KPLC)	RWANDA (Electrogaz)	ESKOM	Total
	Energy Purchases (Shs Million)						
1st Half 2006	29	544	62,258	3,483	148	15,473	81,935
2nd Half 2006	31	937	97,510	15,496	160	16,842	130,976
2006	**89**	**2,025**	**222,026**	**22,462**	**456**	**47,788**	294,846
1st Half 2007	9	999	108,313	16,438	148	17,408	143,315
	Energy Purchases (MWh)						
1st Half 2006	829	13,725	136,212	12,483	986	617,810	782,045
2nd Half 2006	793	14,674	233,286	34,245	1,044	542,646	
2006	**2,451**	**42,124**	**505,710**	**59,211**	**3,016**	**1,778,266**	2,390,778
1st Half 2007	219	15,282	275,215	39,233	1,032	578,888	909,868

4.2 Energy Sales by UETCL

The major markets of UETCL are Umeme Ltd (domestic demand) and export markets including Kenya, Rwanda and Tanzania.

Energy sales to Umeme Ltd increased by 9.8 percent to 849,014 MWh in the 1st half 2007 compared to 773,117 MWh in the previous period. In shilling terms, energy sales to Umeme increased from Shs 111,020 million to Shs 165,547 million over the

same period respectively. Consequently, the weighted average selling price (Average BST) was Shs 195/kWh during the period under review. At the same time, however, UETCL paid to Umeme a rebate amounting to Shs 59,745 million during the period under review. All the subsidy amounts were obtained from Government. This implies that the weighted average effective BST was Shs 125/kWh[3]. Therefore the subsidy from Government was equivalent to Shs 70/kWh.

Energy exports increased by 3.3 percent from 27,833 MWh in the 2nd half of 2006 to 28,763 MWh in the 1st half 2007 largely on account of increase in energy exports to Kenya and Tanzania. Exports to Kenya increased by 63.2 percent from 4,656 MWh to 7,601 MWh over the same period respectively[4]. Energy exports to TANESCO of Tanzania declined by 6 percent from 21,915 MWh to 20,607 MWh over the same period respectively (Table 2).

Table 2: Energy Sales by UETCL

Electricity Sales by the Transmission Company (MWh)					
Year	Quarter	Sales to Umeme	KPLC	TANESCO	Rwanda-Electrogaz
2006	1	370,600	3,105	8,666	833
2006	2	359,294	2,680	9,167	740
1st Half 2006		729,894	5,785	17,833	1,573
2006	3	369,679	1,647	12,041	561
2006	4	403,438	3,009	9,874	701
2nd Half 2006		773,117	4,656	21,915	1,262
TOTALS		**1,503,011**	**10,441**	**39,748**	**2,835**
2007	1	429,207	3,009	10,154	341
2007	2	419,807	4,592	10,453	214
1st Half 2007		849,014	7,601	20,607	555

4.3 Transmission Losses

Transmission losses can be derived by subtracting the energy sold by UETCL (inclusive of exports) from energy purchased. UETCL purchased 909,868 MWh during the 1st half of 2007 and sold 877,777 MWh during the same period giving losses amounting to 32,092 MWh or a transmission loss factor of 3.5%. See table 3.

The apparently low loss factor is partly due to thermal plants which interconnect directly to the distribution network.

[3] Weighted average BST refers to the actual price paid by Umeme for each kWh purchased from UETCL after adjustments for per kWh subsidies.

[4] Increased energy exports to Kenya were mainly on account of tie line flows.

Table 3: Transmission Losses

	Units	Q1 2006	Q2 2006	Q3 2006	Q4 2006	Q1 2007	Q2 2007
Energy purchased	MWh	397,893	384,152	396,320	430,368	459,969	449,899
Energy sold	MWh	383,204	371,881	383,928	417,022	442,711	435,066
Transmission Losses	MWh	14,689	12,271	12,392	13,346	17,258	14,833
Transmission Loss Factor	%	3.7%	3.2%	3.1%	3.1%	3.8%	3.3%

4.4 Energy Purchases and Sales by Umeme Ltd

4.4.1 Energy Purchases

Umeme Ltd purchased 849,014 MWh from UETCL in the first half of 2007 compared to 773,117 MWh in the preceding period representing an increase of 9.8 percent. As a result, the energy purchase costs increased from Shs 111,020 million to Shs 165,547 million representing an increase of 49 percent over the same period respectively. The much larger increase in energy acquisition costs is a reflection of the increase in tariffs in the fourth quarter of 2006 as well as increased volume of energy purchases.

4.4.2 Energy Sales

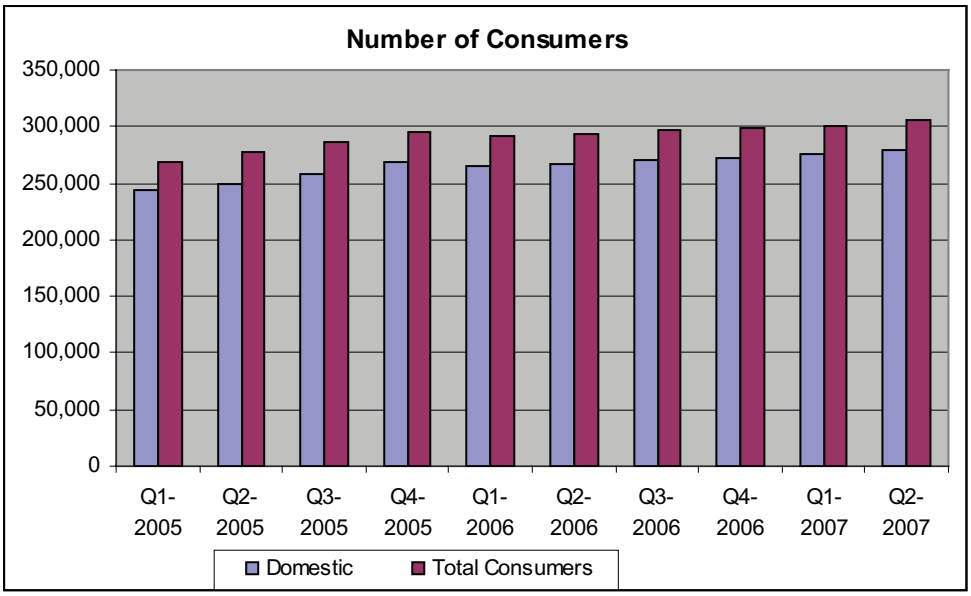
Energy sales increased by 37 percent from 128,816 MWh in the 2nd half of 2006 to 176,683 MWh in the 1st half of 2007. Average quarterly consumption per customer recorded mixed trends. While the consumption of large industrial consumers has recorded a fairly consistent increasing trend, the average consumption of the other customer categories registered a decrease in the 2nd quarter 2007 compared to the 1st quarter as shown in table 4.

Table 4: Average Quarterly Consumption per Customer (kWh/Customer)

Year	Quarter	Domestic	Commercial	Medium Industries	Large Industries	Street Lights
2006	1	292	1,291	50,932	699,024	951
2006	2	279	1,251	51,661	736,678	407
2006	3	252	1,579	47,562	759,652	1,018
2006	4	256	1,468	55,067	743,314	331
2007	1	281	1,608	61,023	787,368	287
2007	2	251	1,548	55,612	827,412	427

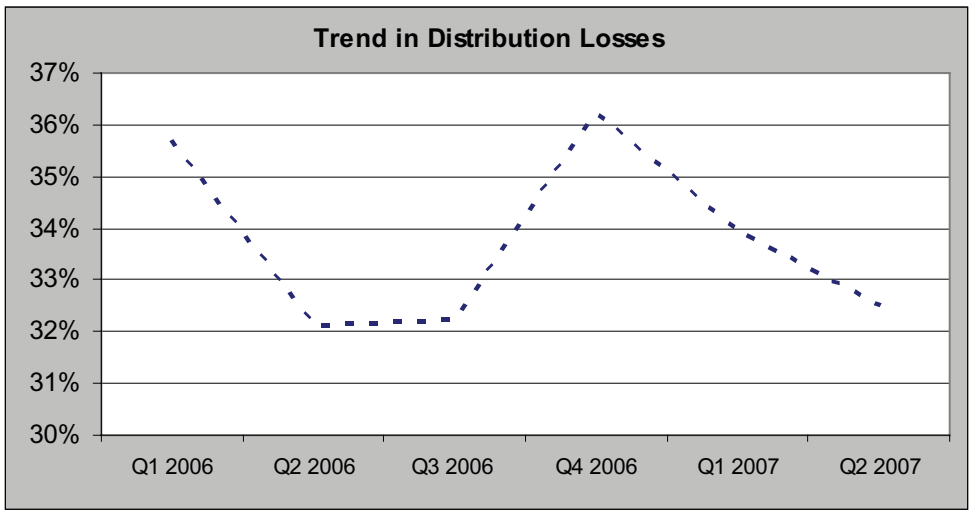
The total number of consumers increased from 298,030 as at end 2006 to 305,758 as at end June 2007. The increase was notable across all customer categories with the exception of street lighting category. In particular, domestic consumers increased from 271,976 to 279,439 while the medium and large industrial consumers increased from 870 and 139 to 933 and 148 respectively.

Chart 6: Customer Numbers



The distribution losses, inclusive of both commercial and technical losses, declined from 34.2 percent in the second quarter of 2006 to 33.2 percent in the period under review as per chart 7 below.

Chart 7: Distribution Losses



Revenue from energy sales also increased from Shs 128,816 million to Shs 176,683 million over the same period respectively. Consequently, the average effective end user tariff increased from Shs 253.7/kWh to Shs 311.7/kWh. The actual weighted average tariff of Shs 311.7/kWh is much lower than the approved weighted average tariff of Shs 318.5/kWh in the tariff model. There two possible explanations for this development: i) it implies that either sales revenue is understated or energy sold is

overstated; ii) it could also imply that the load profile has shifted with more consumption towards the large industrial consumers whose weighted average tariff is lower than the average.

Electricity consumption by end-user consumers remained concentrated among the industrial consumers. The medium industrial consumers accounted for 18.8 percent of total final demand during the period under review compared to 17.5 percent in the previous period while the large industries accounted for 41.5 percent compared to 40.4 percent over the same period respectively. Overall, the share in demand by the industrial consumers increased from 57.9 percent in the 2nd half of 2006 to 60.3 percent in the 1st half of 2007. The share in final demand by the domestic and commercial consumers declined during the period under review as shown in table 5.

Table 5: Electricity Demand by Customer Category

Year	Quarter	Domestic		Commercial		Medium Industries		Large Industries		Street Lights		Total
		MWh	%share	MWh	%share	MWh	%share	MWh	%share	MWh	%share	
2005	1	32,132	24.4%	11,791	9.0%	30,752	23.4%	56,780	43.2%	80	0.1%	131,536
2005	2	101,268	34.7%	39,538	13.5%	57,135	19.6%	93,831	32.1%	179	0.1%	291,953
2005	3	95,150	33.7%	37,305	13.2%	51,731	18.3%	98,050	34.7%	300	0.1%	282,539
2005	4	112,059	30.3%	44,379	12.0%	71,117	19.3%	141,327	38.3%	403	0.1%	369,290
TOTALS		340,610	31.7%	133,014	12.4%	210,735	19.6%	389,988	36.3%	962	0.1%	1,075,309
2006	1	77,525	32.5%	31,131	13.1%	41,357	17.3%	88,077	36.9%	312	0.1%	238,402
2006	2	74,732	30.6%	30,083	12.3%	43,189	17.7%	95,768	39.3%	128	0.1%	243,902
2006	3	68,294	27.3%	39,262	15.7%	40,856	16.3%	101,793	40.6%	320	0.1%	250,527
2006	4	69,635	27.1%	36,301	14.1%	47,908	18.6%	103,321	40.2%	104	0.0%	257,273
2nd Half 2006		137,929	27.2%	75,563	14.9%	88,764	17.5%	205,114	40.4%	424	0.1%	507,801
TOTALS		290,186	29.3%	136,777	13.8%	173,309	17.5%	388,959	39.3%	864	0.1%	990,095
2007	1	77,421	27.3%	38,552	13.6%	54,860	19.4%	112,594	39.7%	86	0.0%	283,513
2007	2	70,204	24.8%	38,581	13.6%	51,886	18.3%	122,457	43.2%	134	0.0%	283,263
1st Half 2007		147,624	26.0%	77,132	13.6%	106,746	18.8%	235,051	41.5%	220	0.0%	566,776

The falling share in demand of the domestic and commercial consumers during this period could be explained by the large increase in tariffs during 2006 and the demand management measures undertaken by government through the Ministry of Energy and Mineral Development to address the crisis caused by the declining supply. Most particularly, the end-user retail tariffs were increased by 37 percent on average in June 2006 followed by an increase of 42 percent in November 2007. These consecutive increases in retail tariffs were in response to increased bulk supply costs as more thermal generation was licensed and the share of thermal power in the energy mix increased.

In response to the electricity supply crisis that hit the country since the beginning of 2006, Government initiated a number of demand management measures. One of the measures involved the distribution of free energy savers in order to popularize the usage of energy savers particularly among the domestic consumers. It is estimated that about 800,000 energy saver bulbs were distributed to all consumers. Further to

this, the Ministry of Energy and Mineral Development has been active in conducting public awareness campaigns on efficient energy utilization. Combined with the high tariffs, these measures appear to have had a significant impact on demand. According to the statistics availed by the system operator, UETCL, demand growth has moderated due to the increase in tariffs and the impact of energy saving measures (see table 6). For example, while average shoulder demand increased by 14.59% in 2006 compared to 2005, it has only decreased by 0.31% in 2007 compared to 2006. It is important to note that average shoulder demand decreased by 25 MW within one month between November to December 2006 and off-peak demand decreased by 5 MW while peak demand stayed unchanged during the same period. This confirms that price elasticity of demand for electricity is relatively high in Uganda.

Table 6: Electricity Demand Statistics

Time Block Tyipical Maximum System Loads (MW) for 2005 - 2007

	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Maximum	Average
2005														
Off Peak	190	185	180	185	190	185	190	185	195	185	190	200	200	188
Shoulder	230	210	235	245	250	230	230	235	235	230	230	250	250	234
Peak	330	335	330	335	335	335	320	330	330	330	335	365	365	334
2006														
Off Peak	200	205	210	220	220	220	215	215	205	210	200	195	220	210
Shoulder	250	270	265	265	265	250	270	265	285	270	295	270	295	268
Peak	350	355	390	390	390	355	380	360	380	360	365	365	390	370
2007- so far														
Off Peak	200	195	210	215	210	210							215	207
Shoulder	280	270	265	270	260	260							280	268
Peak	365	365	355	345	360	370							370	360
	Growth Rates (annualised)													
	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Maximum	Average
2006														
Off Peak	5.26%	10.81%	16.67%	18.92%	15.79%	18.92%	13.16%	16.22%	5.13%	13.51%	5.26%	-2.50%	10.00%	11.28%
Shoulder	8.70%	28.57%	12.77%	8.16%	6.00%	8.70%	17.39%	12.77%	21.28%	17.39%	28.26%	8.00%	18.00%	14.59%
Peak	6.06%	5.97%	18.18%	16.42%	16.42%	5.97%	18.75%	9.09%	15.15%	9.09%	8.96%	0.00%	6.85%	10.72%
2007- so far														
Off Peak	0.00%	-4.88%	0.00%	-2.27%	-4.55%	-4.55%							-2.27%	-1.39%
Shoulder	12.00%	0.00%	0.00%	1.89%	-1.89%	4.00%							-5.08%	-0.31%
Peak	4.29%	2.82%	-8.97%	-11.54%	-7.69%	4.23%							-5.13%	-2.70%

Source: UETCL

5. CHALLENGES AND THE WAY FORWARD

5.1 High Oil Prices

The world oil market was characterized by rising consumption, moderate non-OPEC supply growth, falling inventories, and rising demand for OPEC oil. These factors have been responsible for the high prices during the period under review. The price of oil has continued to defy projections. The OPEC Reference Basket in June rose $2.41 or almost 4% to close at $66.77/b. Concerns over gasoline supply dominated market bullishness, with geopolitical concerns and refinery glitches.

The strong global economic expansion is expected to continue into 2008 at a growth rate of 4.9%, almost at the same pace as the forecasted 5% in 2007. According to the IMF forecast, the US growth is to improve to 2.8% in 2008 from 2.0% in 2007. However, there is a risk that the housing market woes and ensuing financial markets turmoil could herald a slowdown of consumer spending.

In the Euro-zone and Japan, growth is expected to remain relatively strong at 2.4% and 2.2%, respectively, slightly lower than in 2007. Total oil product demand in Europe grew by 3.7 percent in June compared to the same month of the previous year, and demand for the OECD Europe is foreseen to rise by 2 percent to 15.7 mb/d in 2008.

For Developing countries, and in particular India and China, another year of robust growth can be expected in 2008, albeit at a moderately lower rate. Growth in China is seen at 9.6% and in India at 7.8% in 2008. The risks to this benign forecast may come from higher than necessary interest rates as central banks respond to perceived inflationary pressures which may dampen the rate of growth.

World oil product demand is forecast to grow by 1.8 percent in 2007 to 86.0 mb/d relative to 2006 and grow by a further 2.5 percent to 88.2 mb/d in 2008. Non-OECD — especially China, the Middle East, and India — will account for the largest share, while OECD is expected to see only moderate growth, mostly from North America. The outage of Japan's largest nuclear plant[5] after a major earthquake is likely to result in Japanese utilities burning additional fuel oil and crude to meet power demand at least until Q3 2008.

5.2 Increasing Generation Costs

The total costs of generation continue to increase as a result of increasing composition of thermal power in the energy mix at a time of increasing oil prices. The high costs call for an upward adjustment in the retail tariffs. This is however not feasible at the moment because the electricity tariffs in Uganda are currently one of the highest in the region. Given the rigidity of the prices in the upward direction, it implies that government subsidies will continue to absorb the financing shortfall and this raises concerns regarding financial sustainability of the electricity sector.

5.3 Challenge of Stronger Coordination

The need to address the supply constraints and overall management of the supply crisis calls for stronger institutional coordination. The Ministry of Energy and Mineral

[5] The Kashiwazaki-Kariwa nuclear plant was shutdown in mid-July after a major earthquake that hit northwest Japan.

Development has formed an Energy Sector Working Group which regularly shares information on the sector. It is important that this coordination is maintained and strengthened across all institutions that have a bearing on the electricity sector.

6. CONCLUDING REMARKS

There were mixed developments in the electricity industry during the period under review. On a positive note, there were notable improvements in hydrology as the country enjoyed favourable rainfall patterns. This allowed for increased hydro generation. On the other, the demand management measures implemented by government coupled with the increase in tariffs at the end of 2006 had a significant desirable impact on demand.

The end-user retail tariffs remained stable in nominal terms though actually declined in real terms during the period with government subsidies absorbing the shortfall in financing. This was desirable given that the electricity tariffs had become comparatively higher than those in neighboring and competing countries in the East African Community (EAC). The stability in tariffs however has not yet transcended into lower distribution losses which remain a major point of concern.

Private investment in generation has remained quite slow with a number of projects at the licensing stage. There appears to be a problem of reaching financial closure by most private investors. ERA is in the process of carrying out a study to establish the investment constraints into the electricity sector.