

# IMPACT OF PRIVATIZATION IN AFRICA: UGANDA WATER

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These studies focus on identifying and explaining results of various forms of privatization, defined broadly to include any significant transfer of management or ownership from the public to the private sector (that is, management contracts, leases, *affermage* contracts, concessions and full and partial divestiture). The first goal is to measure performance quantitatively to the extent possible with available data. The second goal is to explain that performance in terms of how the privatization was conducted. A key feature of the study is that performance covers equity as well as efficiency. That is, we attempt to measure the impact on various stakeholders: primarily consumers, workers, the government, and the new owner or operator. In sum, a successful privatization is not just one where the deed gets done, but where performance improves substantially and the results of that change are distributed equitably with sizeable public benefits to help build and sustain political support. The cases include failures as well as successes. One can learn at least as much from the former as the latter. The goal is to help replace faith-based policies with ones that are fact-based. The opinions expressed here are the sole responsibility of the authors and do not reflect those of the World Bank.

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## **EXECUTIVE SUMMARY**

Uganda's National Water and Sewerage Corporation (NWSC) emerged from the Idi Amin period in the mid-1980's with devastated infrastructure. Over the next ten years, substantial donor investments dealt with much of the physical side of things, but management was another matter. In 1995 technical efficiency (water billed over water produced or 1 minus Unaccounted-For-Water, UFW) was only about 25%, collection efficiency (water paid-for over water billed) was only 58% and the resulting serious cash-flow problems hindered recovery. In 1995 a new NWSC Act was designed to give the company autonomy in return for accountability. These principles were embodied in a series of management/performance contracts during the well-known reform period beginning in 1998. The two that primarily concern us here were management contracts with two different foreign operators from 1998 to 2001 (KRIP) and from 2002-2004 (OSUL) for distribution and billing (but not production) in Kampala. But there were also performance contracts between NWSC's management and the GOU, contracts with managers in the smaller systems outside Kampala, and contracts with managers in Kampala in the interim between KRIP and OSUL and after OSUL.

Results were impressive. For the country as a whole, from 1998 to 2004: real output increased at a compound annual average rate of 8.7% and real Return to Capital at 24.6%; while technical efficiency increased from 47.7% to 61.8% and collection efficiency rose from 60.0% to essentially 100%. Labor productivity soared as the number of workers was almost halved, but employed workers benefited from substantially higher wages and benefits. Consumer benefits as measured by new connections grew at an average compound rate of 27.2%. This is clearly an impressive performance, which any company, public or private, in a rich or poor country, would be proud of.

But here's the catch: performance was also improving rapidly, in some cases considerably more rapidly, in the three years before reforms began. In our view, one cannot therefore attribute all of the improvements to the reforms. Some must also be attributed to changes following from the new NWSC Law and the general environment of economic rationality resulting from Uganda's economic "success story". NWSC is an important chapter in this story, but should be viewed in the larger context. This is by no means to minimize the impressive achievements under the reforms, but only to suggest that an important causal factor likely predates the reforms.

What about our primary concern, performance under OSUL and KRIP? We have sliced the data every which way and our answer is: not much. Performance was good under OSUL and KRIP, but on balance, not significantly better or worse than performance before, between and after them in Kampala, or outside Kampala. There are two exceptions. One was that collection efficiency leapt from 72% to 100% in the first year of KRIP. The other is the acceleration in new connections. And much of these gains can be attributed to other factors: a new government policy of paying its debts in the case of collections and a drop in connection charges from 400,000 Ushs to 20,000 Ushs for new connections. Neither factor was due to privatization. Nor were increases in output or the changes in employment and labor wages and benefits, all of which remained in the hands

of NWSC. In sum, performance contracting worked for NWSC, but about as well for internal contracts with employees as for external contracts with foreign operators.

Why wasn't performance better under private management? The limited degree of delegation inherent in any management contract, and exacerbated by the exclusion of production, might be thought to have minimized the impact. But our conclusion holds for the variables that were under their control. The short duration of both contracts may have minimized operator incentives to undertake long-term change. For KRIP, part of the problem may be traced to non-competitive selection of a firm with experience in designing and constructing water systems, but with experience running only a single very small system. NWSC learned from this and the OSUL contract was competitively and transparently bid. But incentives went the other way. Under KRIP the operator kept 25% of collections and responded with significant improvement in this area. Under OSUL, this was dropped to 10% and a non-continuous trip-wire incentive was added. But it was small (only 7% of the management fee) and its structure meant that if one is unlikely to make the target (which proved to be the case), one should give up and do nothing because even if 99% is achieved, the bonus will be zero.

We are extremely impressed with NWSC. Public enterprise reform is never easy and when it is accomplished it is all too often unsustainable: the next government, minister, or manager comes in and gains dwindle away. Yet NWSC has been continually and dramatically improving performance for more than 10 years and counting. If someone wants to do a case study of successful and sustained public enterprise reform, NWSC might be a fine candidate. But it is not a success story for private management contracts.

## **1. WHAT WAS DONE?**

### **1.1. BACKGROUND TO PRIVATIZATION**

Following Uganda's tragic events of the 1970s and early 1980s, which devastated the country's infrastructure, substantial amounts of money were poured into rehabilitating and renewing the water network in Kampala with the help of various donors. Many of these investments were allegedly made without regard to economic feasibility, and according to one informed source they were "donor driven, a lot of money had to be spent, so they were spent on anything whether it made sense or not." To quote a World Bank report produced around 1998, which stated things more diplomatically:

“Over the last 10 years, the GOU in partnership with the World Bank and Other Donors have made significant investments (over US \$ 100 million) in the Urban Water and Sewerage sector. These investments have contributed immensely in rehabilitating the existing infrastructure under the NWSC (National Water and Sewerage Corporation) management. Unfortunately, these investments have not been matched with the necessary efficient commercial and financial management capacity that can ensure the delivery of sustainable services in the medium to long-term”.<sup>1</sup>

A key problem during this period was that donors focused on the larger production facilities, leaving smaller-scale rehabilitation of the distribution system to be financed from the cash flow of NWSC. But this was not forthcoming for reasons noted above and the cash flow problems only worsened when it became necessary to begin paying for the debt incurred by the projects. Nonetheless, NWSC entered the reform period with two considerable advantages: first, an abundant raw water supply; and second, thanks to the donors, the infrastructure to extract that water. At the time, the company faced significant obstacles: high unaccounted-for-water, high arrears, excessive labor costs, unsustainable operations in several towns. Its financial situation had deteriorated to a point where it was no longer able to service the excessive debt of the previous decades that began to mature. We heard claims that the company could not even pay its electricity bills.

### **1.2. OVERVIEW OF PRIVATIZATION EFFORTS**

In 1995, NWSC was given substantial operational autonomy, notably including the authority to set tariffs (although these had to be approved by the controlling minister). In return, the 1995 NWSC Act required it to cover all costs, including debt service, depreciation and a return on investment.

The ensuing search for better management was uncommonly wide-reaching, including:

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<sup>1</sup> Quotation from Silver Mugisha, Ato Brown and Sonko Kiwanuka, "Water Reforms in Three East African Capital Cities," Working paper for World Bank Water Week, March, 2005.



- Two different external management/performance contracts<sup>2</sup> between NWSC and foreign firms in Kampala;
- Two sets of multiple internal management/performance contracts between NWSC and its managers outside Kampala (from 2000-2004, Area Performance Contracts {APCs}; and from January 2004, Internally Delegated Area Management Contracts {IDAPCs});
- Two internal management/performance contracts between NWSC and its managers in Kampala; and,
- Two internal management/performance contracts between the government and NWSC.

As if that weren't confusing enough, in 1999, midway through the first management contract, a dynamic new Managing Director took over NWSC and initiated many far-reaching reforms throughout the system. To help keep things straight in the following narrative, we start with a roadmap:

**Table 1: Institutional Arrangements Affecting NWSC Since 1998**

	Jan-Jun 1998	Jul-Dec 1998	1999	Jan-Jun 2000	Jul-Dec 2000	Jan-Jun 2001	Jul-Dec 2001	Jan 2002	Feb-Dec 2002	Jan-Jun 2003	Jul-Dec 2003	Jan-Feb 2004	Mar-Dec 2004
Kampala	KRIP Management Contract					Interim PC		OSUL Management Contract				IDAMC	
Other Cities						Area Performance Contracts						IDAMC	
NWSC						Performance Contract 1					Perf. Contract 2		

Our primary concern is the two external Management Contracts, but it is important to be aware that some other reforms were going on simultaneously and might also have been responsible for any observed change in performance.

### 1.3. FIRST MANAGEMENT CONTRACT: KRIP

#### 1.3.1. Choice of Modality and Operator

NWSC wanted quick action and felt it could not afford the delay necessary if it was to follow World Bank advice at the time and pursue a lease, concession or outright divestiture. For the same reason the company felt it could not afford the time necessary for a competitive tender process. So, in August 1997, the Managing Director of NWSC invited H.P. Gauff Ingenieure of Germany to submit a technical and financial proposal for management of Kampala operations, excluding production and sewage treatment (Kampala accounted for 70% of the water produced by NWSC in FY98). Gauff was a German firm with considerable experience in designing and implementing water projects,

<sup>2</sup> Internationally, it is common to use “performance contracts” when the contracted party is an enterprise employee or employees, and “management contracts” when the contractor is a private party. However, in Uganda, both sorts are called management contracts. We use their terminology but for clarity insert internal or external as the case may be.

and already was familiar to NWSC as it had for two years been operating the Malindi, Kenya town system under a management contract. Negotiations indeed went quickly, and in November, 1997, a three-year management services contract for the Kampala Revenue Improvement Project (KRIP) was signed (July 1, 1998- June 30, 2001), preceded by a transition/start-up period of seven months.

### **1.3.2. Essential features of the Contract**

The stated summary objectives of the contract were to:

- Improve billing for water and sewerage services;
- Improve current revenue collection;
- Reduce arrears and bad debts;
- Improve water distribution operation and maintenance;
- Expand water supply coverage; and
- Establish a management information system (MIS).

In addition, under “separate arrangements outside this Contract” the operator was to oversee installation of water meters and to ensure that by the end of 1997/1998, 90% of all customers had operational water meters.<sup>3</sup> Note that water production and sewerage responsibilities were not included in the contract.

Financial arrangements included the following:

- Gauff was to contribute up to Ushs 1 billion (US\$ 0.8 million) “as a contribution to the interim Budget”<sup>4</sup>;
- Gauff was to be paid Ushs 9,084 million (US\$ 7.3 million) with 2,073 of this for the transition years and 2,531, 2,284 and 2,196 in each succeeding fiscal year.
- Gauff was also to be paid an incentive bonus based on a 25% share in “Surplus Improvement”, a feature which we shall analyze in detail later.

Gauff was to provide senior professional staff. All other workers would be seconded from NWSC.

### **1.3.3. New NWSC Management and Contract Revision**

Soon after the contract was signed, a new Managing Director took over NWSC and the contract with Gauff was renegotiated and amended in October 1998. The amendment was prompted by a perception on the part of the new management that the price tag was excessive and that the interests of NWSC had not been adequately considered. Besides making certain provisions explicit, the new version included the following major

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<sup>3</sup> KRIP Management contract, Article 3.4.

<sup>4</sup> KRIP Management Contract, Article 5.2.4.1.

changes:

- Gauff compensation was cut 27%;
- as a partial offset, Gauff would no longer be responsible for making any investment from its own funds;
- NWSC would have the right to reject any GAUFF staff; and,
- the collection account would be operated solely by NWSC, unlike the previous version which gave joint responsibility to NWSC and Gauff. However, this applied only to signatory power: GAUFF retained responsibility for collections.

The above amendments were a reflection of a tense relationship between the two companies. The contract ended with some on the government's side claiming that "it failed miserably" and Gauff claiming significant achievements. Neither party was interested in an extension of the existing arrangement.

#### **1.4. SECOND MANAGEMENT CONTRACT: OSUL**

##### **1.4.1. Negotiations**

Even before the end of the KRIP contract, NWSC planned for a new two-year contract with international competitive bidding and asked for Expressions-of-Interest in October 2000. It planned to have the new contract begin with the termination of KRIP in July 2001. However, given the usual delays, the new contract did not commence until February 2002. The new contract was with the French company OSUL (Ondeo Services Uganda Limited) for Kampala.

In the first year of the contract OSUL asked for a renegotiation of the contract, with a 20% increase in the management fee to compensate for higher-than-anticipated costs of operations, foreign staff expenses, and deterioration in the Euro/Dollar exchange rate. An international accounting firm was engaged to investigate these claims. Though the claims were held to be legally invalid, a small increase in the management fee was granted.

The original contract provided for a one-year negotiated extension. Negotiations on performance targets were agreed to, but broke down on the issue of management fees, and in February 2004, negotiations were halted. Unlike the situation with KRIP, where neither party was interested in an extension, both parties wanted an extension of OSUL but they could not agree to a price for the services. The NWSC's position was influenced by the fact that its experience with IDAMCs had been favorable and it had a viable alternative in simply signing an IDAMC with its Kampala office. That is what it finally did and today NWSC remains publicly owned and operated, albeit under various performance contracts.

### **1.4.2. Essential Features of the Contract**

The stated obligations of the operator were to:

- Enhance efficiency and quality of services provided;
- "guarantee the maximization of revenue to the NWSC from the services";
- Reduce losses and wastage in water distribution;
- Expand customer base and increase supply of water and sewerage services;
- Maximize collections and eliminate arrears and bad debts;
- Establish and maintain a reliable management information system; and
- Operate and maintain water distribution and sewerage collection efficiently.

Services to be provided included:

a. water supply and sewerage systems operation and maintenance:

- Water meter installation, repair, renewal and calibration
- Infrastructure installation and renewal
- Operation and maintenance of water distribution and sewerage networks
- Water supply leakage reduction and control
- Reduction of sewerage system blockages and overflows
- Repair and replacement of water distribution and sewerage networks.

b. water and sewerage services sales:

- Meter reading
- Billing, invoicing and record maintenance
- Revenue collection
- Debt collection
- Arrears collection.

c. Personnel development:

- Develop human resource policies and procedures
- Staff administration
- Provision of protective clothing and safety equipment
- Prepare training plans
- Implement training plans.

## **1.5. INTERNAL PERFORMANCE CONTRACTS**

### **1.5.1. GOU-NWSC Performance Contract**

NWSC signed a three-year performance contract with the government starting in July 2000. This was a detailed contract including:

- Specific targets for improving technical, billing and collection efficiency plus new connections and major financials;

- Qualitative targets for systems improvement in corporate planning, capital budgeting, human resources development, etc;
- Incentive payments of up to 25% of senior managers' salaries; and
- A Performance Contract Review committee (Ministry of Finance, Ministry of Water, Lands and Environment and two external Board Members) to review performance quarterly and recommend bonuses as appropriate.

Upon expiration of that contract, a second three-year performance contract was signed. It was quite similar to the first, except for updated targets.

### **1.5.2. APCs and IDAMCs**

NWSC came into the reform period with considerable experience outsourcing services to local private providers. This took two forms: contracting construction of local turnkey systems and licensing kiosk managers to run standpipes. Not all of this experience was the best<sup>5</sup>, but it built upon this experience and in 2000 began signing APCs for operation of local water services. Considerable learning took place and the APCs evolved into IDAMCs in 2003. Since our focus is on the private/external/management contracts rather than the internal/performance contracts, the details of this diverse experience does not concern us here, but key features of the IDAMCs included:

- A competitive element, as prospective providers always had to present a business plan and often there were multiple applicants (incumbent managers, other managers and private parties);
- Explicit targets and incentives (discussed later); and,
- Comprehensive planning, negotiation and documentation (for example, the Jinja contract runs to 118 pages and provides tables and procedures for just about everything imaginable).

These contracts were believed to be successful enough that it was decided not to bid a new management contract, but rather, to sign a similar IDAMC with its Kampala office.

### **1.5.3. Kampala Performance Contracts**

Upon expiration of the KRIP contract, responsible interim NWSC managers were given a set of performance targets and incentives similar to those for KRIP. Upon termination of OSUL, the successful experience with IDAMCs led to one being signed for Kampala.

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<sup>5</sup> Barungi, Adela, *Contracts and Commerce in Water Services: The Impact of Private Sector Participation on the Rural Poor in Uganda*, Water Aid and Tearfund, 2003.

## **1.6. PUBLIC ENTERPRISE REFORM VERSUS PRIVATIZATION**

Is it possible to reform public enterprises sustainably as an alternative to privatization? This is an old debate, settled in many influential minds a decade ago, but once again opens in at least some minds. For those for whom this remains an open question, this case provides some evidence. We have two external performance contracts in Kampala and internal management contracts with: NWSC, suppliers outside Kampala for most of the period, and in Kampala after 2003. How much of any improvement in Kampala was due to factors controlled by NWSC management and how much to those controlled by the private managers? How did performance under external contracts in Kampala compare with performance under internal contracts outside Kampala and in Kampala after 2003? We think these are interesting questions. Unfortunately, the experiment is highly imperfect. Kampala and non-Kampala comparisons involve very different scales, problems, inheritances and investment levels. Inside Kampala we only have one year of data under the internal contract. So, definitive answers will not be possible. We will nonetheless try to shed some light on these issues.

## **2. WHAT WERE THE RESULTS?**

### **2.1. BASIC QUESTION**

To what extent is there quantitative evidence that the two management contracts improved performance? Needless to say, the plentitude of contractual arrangements complicates our task considerably. To assess the impact of private sector participation, we need to isolate the factors (both positive and negative) attributable to KRIP and OSUL from all other factors which may have played a role (new management, performance contracts, IDAPCs etc). To do that, among other things, we need to separate performance in the Kampala area from that in other cities. As Table 2 shows, Kampala operations are responsible for 69% of the value of NWSC's output, 82% of its value added, 24% of its labor cost, but almost twice its return to capital. Comparing trends in Kampala with those elsewhere may be a useful comparator for some variables, as we will show below. However, a complicating factor is that comprehensive audited financial data are only available for NWSC's nationwide operations. Data on the Kampala operations, while available, are fragmentary, incomplete, not audited and use different classifications for different years, making consistent historical series difficult to produce. We have nonetheless produced such a series by starting with the consistent national series and decomposing into Kampala and Non-Kampala operations by using a mixture of partial data from various sources and cross-checking plausibility with other national and local data. Needless to say, results are imperfect and we will not attempt to use these series to explain fine points, but only broad trends which seem to be robust with respect to the data.

**Table 2: Ratio of Kampala to National Operation (%)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Average
Output	66.6	69.2	72.6	71.8	69.6	68.4	71.1	69.1	67.3	65.8	69.2
Value added	73.8	80.5	81.9	83.6	68.1	85.9	85.3	74.4	99.2	86.1	81.9
Labor cost	29.7	28.3	20.1	21.9	26.2	22.4	16.4	19.8	27.3	29.9	24.2
Return to capital	140.3	160.3	213.0	295.6	-702.3	494.7	509.3	290.6	238.3	150.5	179.0
Number of employees	30.7	30.7	29.3	28.4	30.5	29.3	34.3	38.6	34.1	35.3	32.1

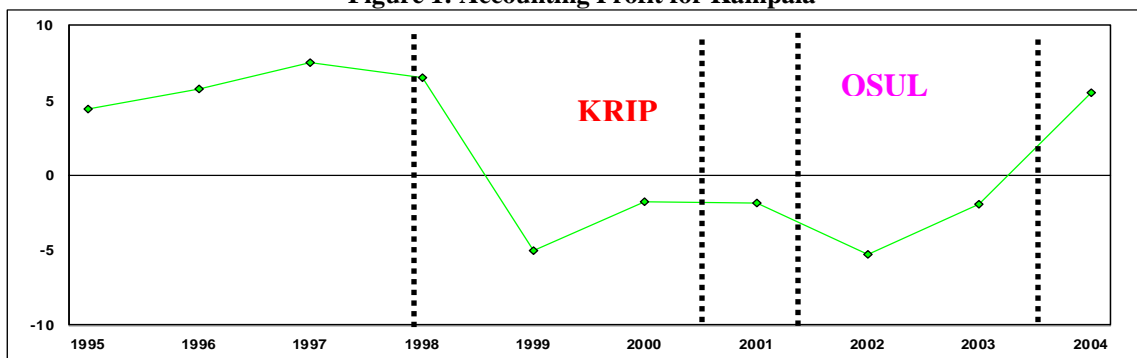
Source: NWSC and authors' calculations.

We proceed to examine the results by stakeholder. Initially, in recognition of our data limitations, we will only try to compare trends before and after the beginning of the reforms in mid-1998. Later, we will see if we can add anything on the KRIP, Interim, OSUL, and post OSUL sub-periods.

## 2.2. ENTERPRISE PERFORMANCE

### 2.2.1. Profit

We start by examining enterprise performance because stakeholder impact flows from this. We first look at profit, not because it is the most important, but because it is a common beginning. Figure 1 shows the trend in accounting profit. As can be seen, there is a distinct kink, with profit plunging after reforms began. However, this is in no way attributable to the reforms. Rather, as can be seen from Table 3 and Table 4, it is due primarily to a jump in interest payments as the grace period on earlier loans ended and debt service commenced. It is secondarily due to rising depreciation charges as those investments came on line.

**Figure 1: Accounting Profit for Kampala**

Source: NWSC

**Table 3: Reconciliation of Total Return to Capital and Accounting Profit for Kampala (billion shs)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total Return to Capital	5.8	7.2	8.8	7.9	4.7	7.7	8.7	7.7	12.2	15.2
- Depreciation	1.3	1.3	1.4	1.5	3.8	3.5	3.9	3.9	3.9	3.8
- Interest payments	0.0	0.0	0.0	0.0	5.9	5.9	7.0	9.6	11.1	7.7
+ Miscellaneous income	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.7	1.9
= Accounting Profit After tax	4.5	5.8	7.5	6.5	-5.0	-1.8	-1.8	-5.3	-2.0	5.5

Source: NWSC and authors' calculations

**Table 4: Total Return to Capital vs Accounting Profit, Simplified Version (billion shillings)**

Variable	Average		
	1995-1998	1999-2001	2002-2004
Total Return to Capital	7.4	7.0	11.7
- Depreciation	1.4	3.7	3.9
- Interest payments	0.0	6.3	9.4
+ Miscellaneous income	0.0	0.1	1.0
= Accounting Profit after Tax	6.1	-2.9	-0.6

Source: Table 3.

### 2.2.2. Total Return to Capital

A more relevant measure of how enterprise financial performance is impacted by privatization is the enterprise's surplus generated after payment of various factors of production. This is calculated after converting the business Profit and Loss Statement to economically relevant categories in the following form:

$$\begin{aligned}
 & \text{Output (=Sales + Output Inventory Change)} \\
 & - \text{Intermediate Inputs} \\
 & = \text{Value Added} \\
 & - \text{Return to Labor} \\
 & = \text{Total Return to Capital (TRC), or Quasi-rents or operational EBDIT}^6
 \end{aligned}$$

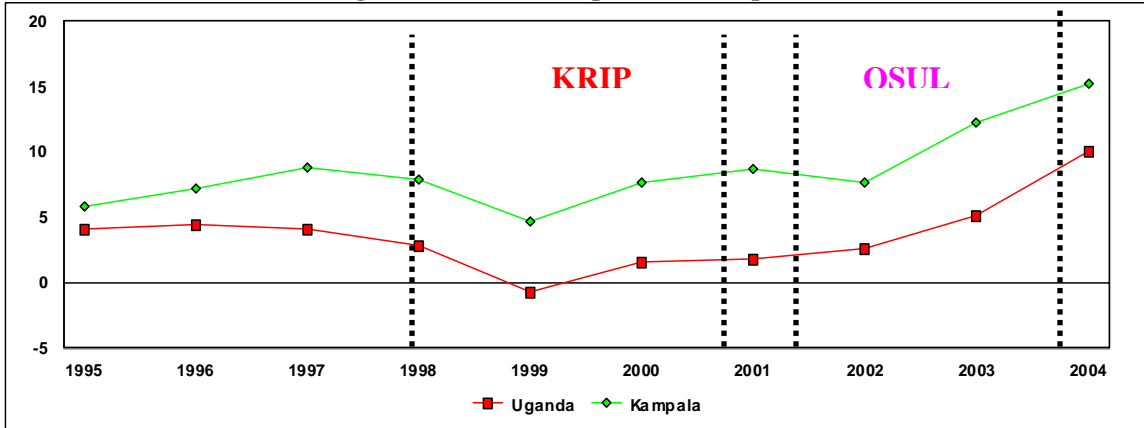
Figure 2 shows the trends in TRC for Kampala and the whole country. The first thing to note is that contrary to many privatization cases, Kampala had a positive TRC before privatization. Second, that surplus was increasing before privatization (95-98) at essentially the same compound annual rate of 11.0% compared with a rate of 11.5% after (1998-2004). Third, the fall in the first year after privatization is due to increased maintenance expenditures, which is by no means a bad thing. Fourth, the post-reform period combines a zero growth period (-.07% from 1998 to 2002) and a high growth period (40.4% from 2002 to 2004). Fifth, surplus outside Kampala is, with one minor exception, also positive and follows a very similar trend to Kampala. Before making a

<sup>6</sup> Earnings before depreciation, interest and taxes.



great deal out of these numbers, we need to adjust for prices.

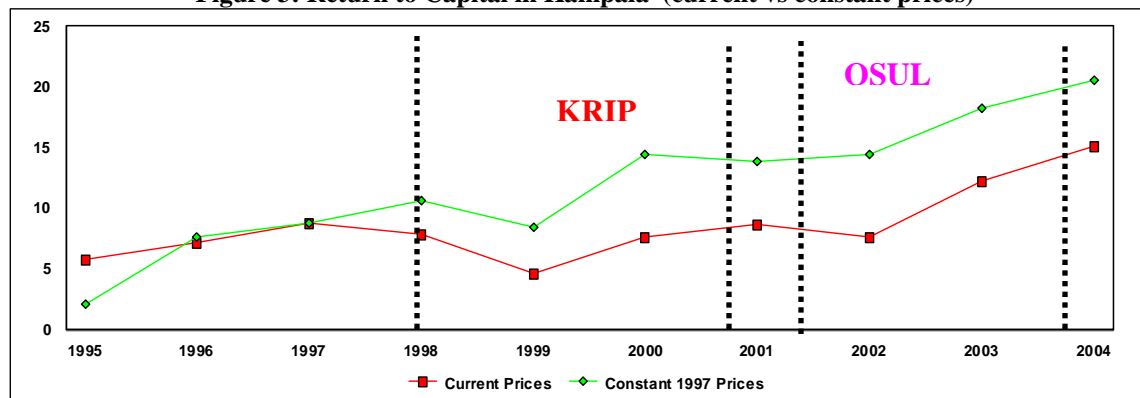
**Figure 2: Return to Capital (current prices)**



Source: Table 16

### 2.2.3. Price/Quantity Breakdown

Were the changes just noted due to altered efficiency (quantity effects) or to price effects? This is an important question because input prices are regulated and, in this case we can find no reason to believe that they would have been any different with and without privatization. Similarly, most intermediate inputs (especially fuel) are internationally traded or purchased in competitive domestic markets and so are unlikely to be affected by privatization. To ascertain the impact of privatization, we must therefore take away the impact of price changes and focus on quantities. The first step in evaluating how performance is impacted by privatization is, therefore, to ascertain how much of the change in any value (for example, revenue) is due to a change in prices (dictated by the regulatory authority) and how much to changes in quantities (for example, m<sup>3</sup> sold). In essence, we are doing at the enterprise level what is done at the national level when converting from a nominal to a real GDP series. The reasons for the conversion are also the same. Figure 3 compares NWSC's Kampala operation TRC in current and constant prices. The curve is roughly linear, meaning comparable annual increments to surplus (1.8 billion shillings before privatization and 1.7 billion after). However, because of the changing base, there is a marked deceleration in growth (from an annual average compound rate of 35.2% before reforms started to 11.6% after).

**Figure 3: Return to Capital in Kampala (current vs constant prices)**

Source: Table 16 and Table 17.

Table 5 sheds further light on this issue by decomposing annual changes in profit for the Kampala operation into price and quantity effects for its main components and averaging them for the pre- and post-privatization periods. This table is one of our favorite ways of comparing enterprise performance in different periods. To interpret it, look at output in the pre- period: the table says that while sales went up an average of 0.91 billion per year, the quantity of output was up three times as much (2.64 billion) but the declining prices depressed that effect. The same applies to the bottom line. The story post- privatization is somewhat different: while output prices were favorable to the firm, they were negated by increases in labor and intermediate input prices, but efficiency gains dominated the price effects to produce higher average annual gains. So both the pre- and post- periods showed solid efficiency and bottom line gains. This is an unexpected result: in a typical privatization, the pre- period often shows overwhelming positive price effects as output prices are boosted to compensate for inefficiency. Not here: the firm was steadily improving efficiency even before the reforms. Now let us look at more common measures of efficiency to see what was behind these gains.

**Table 5: Price and Quantity Effects Kampala Operation: Pre vs Post Privatization (annual average in billion shillings)**

	Pre (1995-98)	Post (1999-2004)
<b>Output</b>		
Price Effect	-1.73	0.39
Quantity Effect	2.64	1.30
Total (Value) Change	0.91	1.69
<b>Intermediate Inputs</b>		
Price Effect	0.34	0.38
Quantity Effect	-0.20	-0.15
Total (Value) Change	0.15	0.23
<b>Employee benefits</b>		
Price Effect	0.07	0.38
Quantity Effect	-0.02	-0.13
Total (Value) Change	0.05	0.24
<b>Return to Capital</b>		
Price Effect	-2.14	-0.37
Quantity Effect	2.85	1.58
Total (Value) Change	0.71	1.21

Source: Table 18.

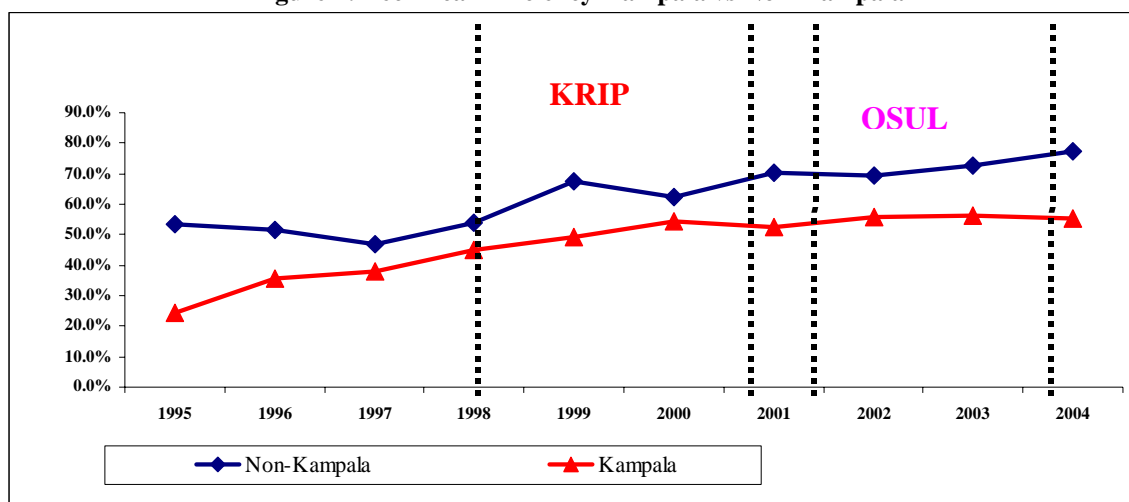
### 2.2.4. Technical and Collection Efficiency

The most common indicators for efficiency in the water sector are two: technical efficiency (the ratio of the volume of water billed to water produced; or, one minus unaccounted-for water) and collection efficiency (the ratio of the volume of paid-for water to water billed). Table 6 provides a time series for technical efficiency for NWSC since 1995 and compares it with levels achieved in other countries of sub-Saharan Africa and the average of 50 Asian cities. With an average pre-privatization level of 36% (40% for all of Uganda), a significant improvement has been achieved post-privatization in Kampala with the steady rise to the 55% level in 2004 (62% for all of Uganda), a post-privatization average of 54%, which remains short of what other African countries have achieved. However, these averages mask the important fact that the improvement had started before privatization: the trend had clearly been upward, peaked in 2000 and then flattened for the remaining years (see Figure 4): technical efficiency in Kampala improved at an average annual compound rate of 23.0% from 1995 to 1998 but only 3.7% from 1998 to 2004. Does this mean privatization made things worse? Two factors make this conclusion unwarranted. First, the very low starting figure of 24.3% is suspect. Second, improving technical efficiency gets harder and harder as you dispense with the easy, cheap and obvious fixes. On the other hand, it would clearly be unwarranted to conclude that the reforms improved matters.

**Table 6: Technical Efficiency Uganda vs Other Countries (%)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>Uganda (Kampala)</b>	24.3	35.4	38.0	45.2	49.4	54.3	52.5	55.9	56.1	55.3
<b>Uganda (non-Kampala)</b>	53.2	51.5	47.1	53.8	67.5	62.1	70.2	69.2	72.7	77.1
<b>Uganda (all)</b>	32.7	39.6	40.4	47.7	54.5	56.5	57.4	59.6	60.8	61.8
<b>Senegal</b>	70.8	69.5	72.1	74.4	73.9	73.9	78.1	78.5	79.9	79.9
<b>Mozambique</b>				46.3		43.1	46.8	46.7	42.9	44.2
<b>Asia</b>	65.0									

Sources: for Uganda, NWSC. For Senegal, Jammal/Jones *Uganda Water*. For Mozambique, Gokgur/Jones *Mozambique Water*. For West Africa, World Bank *Water Benchmark Indicators: West Africa*. For Asia, ADB *Water in Asian Cities Utilities' Performance and Civil Society View*.

**Figure 4: Technical Efficiency Kampala vs Non-Kampala**

Source: Table 6

Table 7 provides a similar time series for collection efficiency. Like technical efficiency, it shows improvements in both periods. Unlike technical efficiency, collection efficiency in Kampala (see Figure 5) accelerates markedly after the reforms (from an annual average pre-reform of 65% to one exceeding 100% post-). Further, the turnaround was immediate, with efficiency leaping from 71.7% in 1998 to over 100%<sup>7</sup> in 1999 and remaining at the maximum thereafter. In one year, Uganda jumped from mediocre to world-class performance. This is a change that is clearly associated with privatization, but is the relationship causal?

A very detailed study by the Utility Regulatory Authority asks this question using a detailed comparison of before and after monthly collections by type. The study concludes that “KRIP has had minimal effect on the collections (net of GOU collections) of NWSC”.<sup>8</sup> Further, it notes that about half of the arrears at the onset of the contract were GOU obligations and that “at the time, government increased emphasis on the settlement of domestic debt. That meant that a substantial portion of the arrears were now easily collectible (with minimal effort from KRIP).”<sup>9</sup> Further, much of the reduction in arrears came in the first seven-month transition period while GAUFF was not primarily responsible for performance. While we find the evidence in that study largely persuasive, it only includes data through June 1999, that is, the transition period plus the first six months of operation. And the rest of the period saw continued improvement which we believe can be attributed to KRIP. But a substantial part has to be attributed to the new government policy of settling its debts. We do not attribute this to privatization. Rather, both privatization and debt-settlement were due to the GOU’s larger focus on economic rationality.

<sup>7</sup> The figures can exceed 100% because collection of arrears is included.

<sup>8</sup> Utility Regulatory Authority “National Water and Sewerage Corporation (NWSC) Risk Allocation in the KRIP Management Contract”, page 11.

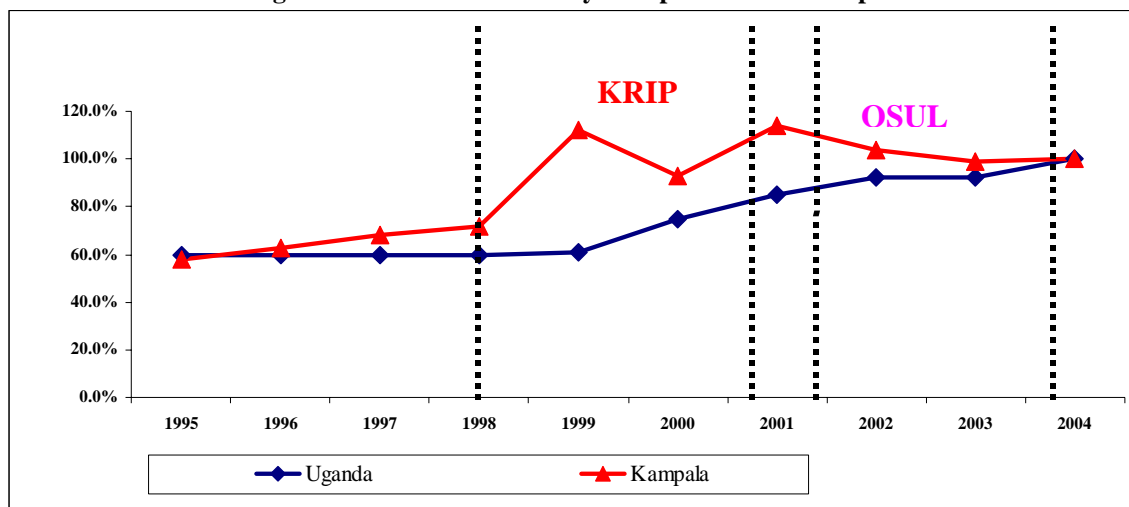
<sup>9</sup> Same source, page 3.

**Table 7: Collection Efficiency Uganda vs Other Countries (%)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Uganda (Kampala) <sup>1)</sup>	58.1	63.0	67.9	71.7	112.1	92.7	114.0	104.0	99.0	100.0
Uganda (all)	60.0	60.0	60.0	60.0	61.0	75.0	85.0	92.0	92.0	100.1
Senegal	90.1	96.0	98.0	98.0	97.0	97.0	97.2	97.7	98.2	98.3
Mozambique		64.1		70.1		58.3	58.1	.681	64.9	71.7
Asia	87.7									

1) Since 1999, collection efficiency includes arrears in both numerator and denominator.  
 Sources: for Uganda, NWSC. For Senegal, Jammal/Jones *Uganda Water*. For Mozambique, Gokgur/Jones *Mozambique Water*. For West Africa, World Bank *Water Benchmark Indicators: West Africa*. For Asia, ADB *Water in Asian Cities Utilities' Performance and Civil Society View*.

**Figure 5: Collection Efficiency Kampala vs Non-Kampala**



Source: Table 7

Note that the gains persisted after KRIP, so there is evidence of technical transfer in Kampala. Further, non-Kampala performance caught up from 1999 to 2004 and this may be due to the same phenomenon.

### 2.2.5. Kampala versus Non-Kampala

How has performance in Kampla compared with that outside of Kampala? The bottom panel of Table 8 tells us that in constant prices, non-Kampala surplus generated was negative pre-reform, but improved substantially in 1999 and turned positive in 2001 and continued to increase thereafter. And, unlike Kampala, in nominal terms it had been basically flat pre-reform. Collection efficiency data outside Kampala are suspect in the early years, but by the end of the period, they were also essentially at the 100% level. Given differences in scale, age of assets, and changing composition, we don't believe it is meaningful to compare growth rates inside and outside of Kampala. But the data are at least consistent with the hypothesis that reforms outside Kampala produced a clearer performance kink than in Kampala (where the only apparent kink was in collection

efficiency).

**Table 8: Kampala vs. Non-Kampala Operational Indicators**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>Kampala (nominal bn shilling)</b>										
Output	12.9	14.6	15.6	15.6	17.0	16.2	18.5	19.7	22.6	25.7
Value added	7.7	9.1	10.6	9.9	7.9	9.9	10.4	9.8	15.0	18.7
Labor cost	1.9	1.9	1.8	2.0	3.2	2.2	1.7	2.1	2.7	3.5
Return to capital	5.8	7.2	8.8	7.9	4.7	7.7	8.7	7.7	12.2	15.2
Number of employees	524	539	512	507	443	356	375	343	324	349
<b>Non-Kampala (nominal bn shilling)</b>										
Output	6.5	6.5	5.9	6.1	7.4	7.5	7.5	8.8	11.0	13.4
Value added	2.7	2.2	2.3	2.1	3.6	1.7	1.9	3.4	0.1	3.0
Labor cost	4.4	4.9	7.0	7.2	9.1	7.7	8.7	8.4	7.2	8.1
Return to capital	-1.7	-2.7	-4.7	-5.1	-5.4	-6.1	-6.9	-5.1	-7.1	-5.1
Number of employees	1181	1216	1235	1277	1011	857	717	546	625	641
<b>Kampala (constant 97 prices)</b>										
Output	10.1	15.1	15.6	17.8	18.5	21.2	21.9	23.6	25.2	26.9
Value added	4.0	9.5	10.6	12.4	10.0	15.7	15.2	15.7	19.4	21.7
Labor cost	1.8	1.9	1.8	1.7	1.5	1.2	1.3	1.2	1.1	1.2
Return to capital	2.2	7.7	8.8	10.6	8.5	14.4	13.9	14.5	18.3	20.5
<b>Non-Kampala (constant 97 prices)</b>										
Output	7.7	6.1	5.9	7.3	8.1	8.4	8.3	9.8	12.2	14.5
Value added	3.3	1.1	2.3	3.4	5.0	3.7	4.4	7.0	5.8	8.7
Labor cost	6.8	7.0	7.0	7.2	5.8	4.9	4.2	3.3	3.7	3.8
Return to capital	-3.4	-5.9	-4.7	-3.8	-0.8	-1.2	0.2	3.7	2.2	4.9

### 2.2.6. Post-Performance by Sub-Period

There is one clear sub-period effect. The dramatic increase in collection efficiency occurred in the first year of KRIP. This is dramatic enough in its own right, but it was also done in such a way that technology, systems and skills were transferred and subsequent management regimes, whether public or private, maintained the stellar performance. Aside from that, we can find no performance changes sufficiently distinctive about the sub-periods to warrant say that one was more successful than the other. Performance improved under all four management regimes.

## 2.3. CONSUMERS

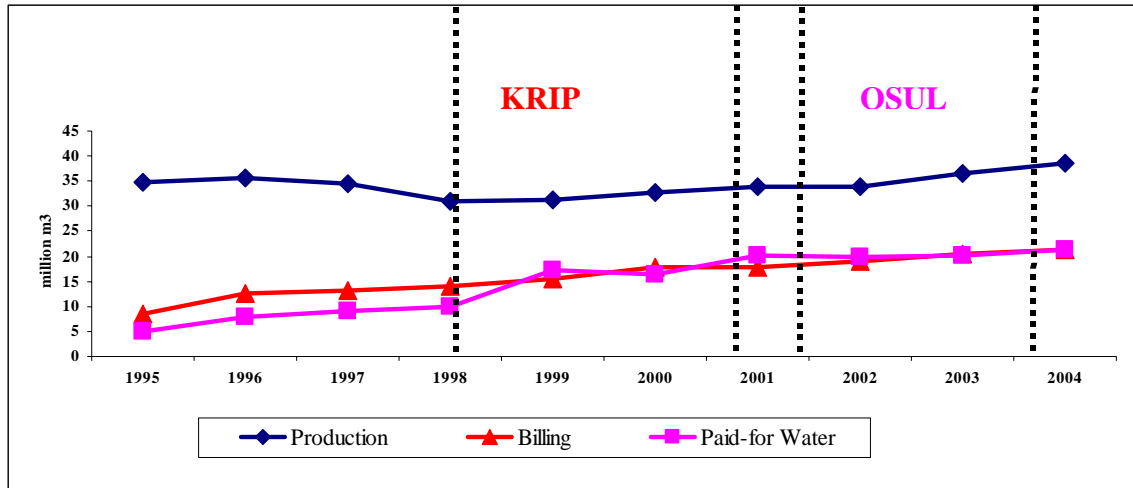
### 2.3.1. Quantity

A primary goal of any water sector reform is to increase the quantity of water to consumers. Was that achieved in Kampala? Figure 6 provides a historical series of the

volume of water produced, sold/billed and paid-for. Production shows a clear performance kink (indeed, a reversal of trend) with negative growth in the pre- period of -3.8% turning to positive growth of 3.7% thereafter. But since production was not delegated to GAUFF, but remained the responsibility of NWSC, this cannot be attributed to privatization. Sold/billed water, on the other hand, grew steadily in both periods, though with considerable deceleration (18.4% vs 7.3%). The difference between the two series is explained by lost water, or equivalently, by technical efficiency (the ratio of billed to produced water). We will look at this in more detail later.

For the present, what matters for consumers is the bottom line of water consumed. This is equal to water sold/billed plus water stolen. We have no data on stolen water and instead proxy consumption by water sold/billed as the variable in Figure 6 of most relevance to consumers. In the first period gains were due primarily to dramatically improving technical efficiency, which more than offset declining production. On the other hand, in the second period, smaller improvements in technical efficiency were combined with increased production to also produce net annual gains but at less than half the rate of the pre-reform period.

**Figure 6: Water Production, Sales and Paid-for in Kampala**

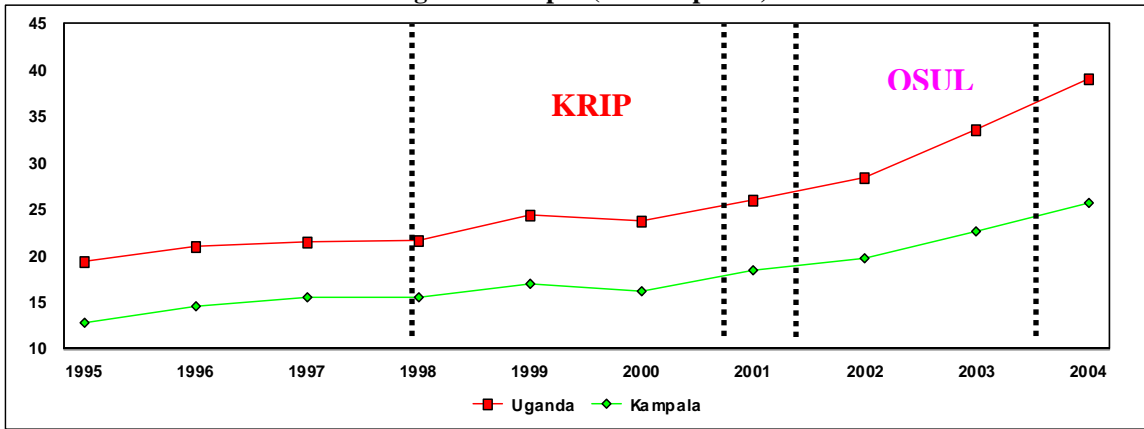


Source: NWSC

The one series in Figure 6 that does show improvement is paid-for-water (average annual compound growth rate of 27.0% before versus 13.4% after). What this means is that collection efficiency improved. We have already looked at collection efficiency in some detail above, what is germane here is that this helped government and the contractors, but actually made some consumers worse off.

To assure ourselves that this was not the odd result of multiple subtractions of numbers we looked at what should be the most important determinant, output. As Figure 7 shows, this variable has been increasing steadily both before and after privatization.

**Figure 7: Output (current prices)**

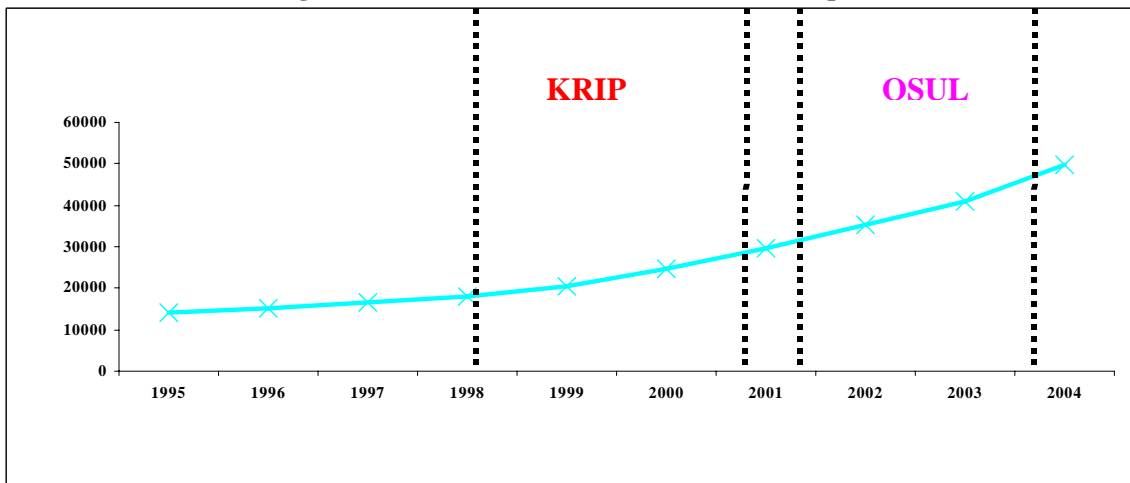


Source: Table 16

**2.3.2. Access**

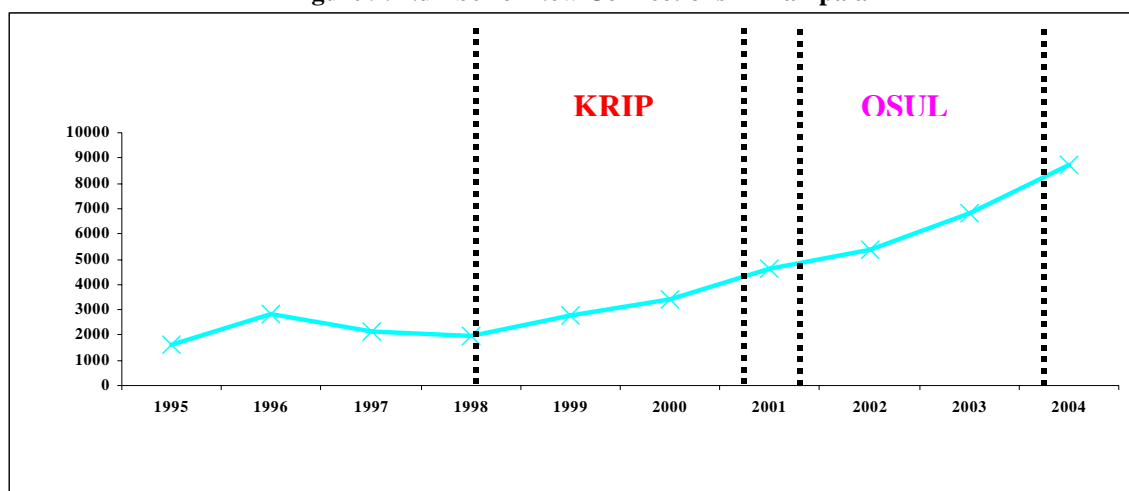
How did this improvement translate into increased access by consumers? As Figure 8 shows, the number of connections in Kampala has accelerated with privatization. Looking at new connections only (Figure 9) makes this even clearer: the average annual compound rate was 7.1% before privatization and 28.2% after.

**Figure 8: Number of Active Connections in Kampala**



Source: NWSC



**Figure 9: Number of New Connections in Kampala**

Source: NWSC

The connection spurt cannot be attributed solely to management reforms. Beginning in 1999 there was also a change in connection charges from full cost (about US\$ 400,000 plus materials) to a subsidized rate (US\$ 25,000 plus materials). With any sort of reasonable price elasticity of demand, this could explain a substantial jump in demand. However, this would not explain the continued increase in subsequent years. That, however, may be due to income elasticities. But real GDP growth was fairly stable at around 6% during the reform period and was actually somewhat higher in the pre-reform period. So income elasticity cannot explain it either. So management reforms would seem to be at least partially responsible.

If total connections have been on the rise, have the poor benefited? The main vehicle for providing water service to the poor in Uganda has been through the installation of public standpipes (or kiosks). Table 9 provides a snapshot of water sources by quintile for urban areas. Unfortunately, no time series is available so we cannot assess trends. And, the sample size is too small to meaningfully separate out Kampala. So the data do not allow any conclusion on the impact on the poor.

**Table 9: Urban Household Sources of Water by Income Quintile, 1999/2000 (%)**

Water Source	5 (poorest)	2	3	4	1 (richest)	Average
Piped in Dwelling	1.2	2.9	5.6	9.3	22.2	6.8
Public Tap	21.7	29.6	30.5	34.3	28.4	28.0
Piped outside Dwelling	3.0	8.2	12.3	15.1	13.9	9.4
Bore-hole	33.2	22.1	18.1	14.0	11.9	21.8
Protected Well/ Spring	23.5	20.6	18.1	12.6	8.5	17.9
Vendor/ Tanker Truck	2.0	5.0	8.0	9.3	10.8	6.3
Other sources	15.3	11.6	7.5	5.2	4.7	9.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Maxwell Stamp PLC, Poverty Impact Assessment of Privatisation of the Urban Water Sector in Uganda, 19 August, 2003, page 29. Citing Uganda National Household Survey, 1999/2000.

### 2.3.3. Hours of Service

We were unable to obtain a consistent time-series on hours of service for Kampala. The question is whether or not this omission materially affects our conclusion. Hours-of-service are an important engineering decision involving trade-offs between hours and volume. But how important is the difference from the standpoint of economic welfare? The volume of water matters, as discussed above. But, does it matter whether the extra water is disturbed via more hours or more volume during old hours? Water is storable, so the two possibilities are partial substitutes. In our experience living in places with interrupted water service, the better off respond with roof-top tanks and the poor with multiple small containers filled during service hours and drawn down during off-hours. So for a given volume of water, the benefit of extended hours is a reduction in the costs (including inconvenience) of storage. This is not to be sneezed at, but is a second-order effect compared to the total volume of water supplied. So if the data were available and showed that the new water delivered had been more from extra hours than previously, this would be a relatively minor contribution. Further, we are skeptical that the data would show such a thing. There is no evidence of positive changes in anything in the water supply chain, and given that collections were the sole basis of incentive payments (see below), this is not surprising.

### 2.3.4. Quality

Data on water quality and service quality could not be obtained separately for Kampala. However, Table 10 gives national data. As can be seen, quality did improve significantly after reforms, but it had been rising even more rapidly before the privatization reforms began. For example, Bacteriological Conformity increased at an annual average compound rate of 10.8% from 1995 to 1998 and at 0.5% from 98 to 2004. This, of course, does not imply that privatization slowed things down since improvements become ever more difficult as the limit of 100% is approached. But it does repeat the message that things were improving rapidly even before the privatization reforms were instituted.

**Table 10: Compliance with National Drinking Water Standards (%)**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Bacteriological conformity <sup>1)</sup>	70.0	90.2	93.5	95.1	96.1	97.0	98.2	98.3	99.1	98.5
Color	89.5	90.1	90.4	92.0	92.1	92.1	92.6	91.5	93.2	93.6
Turbidity	90.0	91.2	91.3	92.1	92.2	92.2	92.3	93.1	92.7	94.7

1) Note that the WHO international guideline level is 95%.

Source: NWSC.

Despite these improvements, consumer focus groups revealed significant dissatisfaction:

- “Those customers with piped water connections in Kampala usually enjoy 24-hour water supply and there is generally a good level of satisfaction amongst those customers. In other towns the service levels are not quite so

high, but most customers receive water on more than 5 days per week.”<sup>10</sup>

- “Installation process taken very long up to more than 6 months. The officials are not straight forward.”
- “High connection costs. One pays 58,500/= to water office, official needs 20,000/= to recommend one, the official needs another 20,000/=. Then one buys materials which include pipes at 1000/= per metre. The inspector of the materials wants 5000/=. If the connection is across a road, one has to pay 250,000/= to K.C.C. Lastly one pays 20,000/= for a water metre and to install the metre the official needs 30,000/= as labour. These charges are very prohibitive.”<sup>11</sup>

This says that, although things have been improving, much remains to be done.

### **2.3.5. Price**

A third way in which privatization impacts consumers is through prices. Figure 10 compares tariff levels for four main classes of users while Figure 11 gives average real tariffs. Note the following:

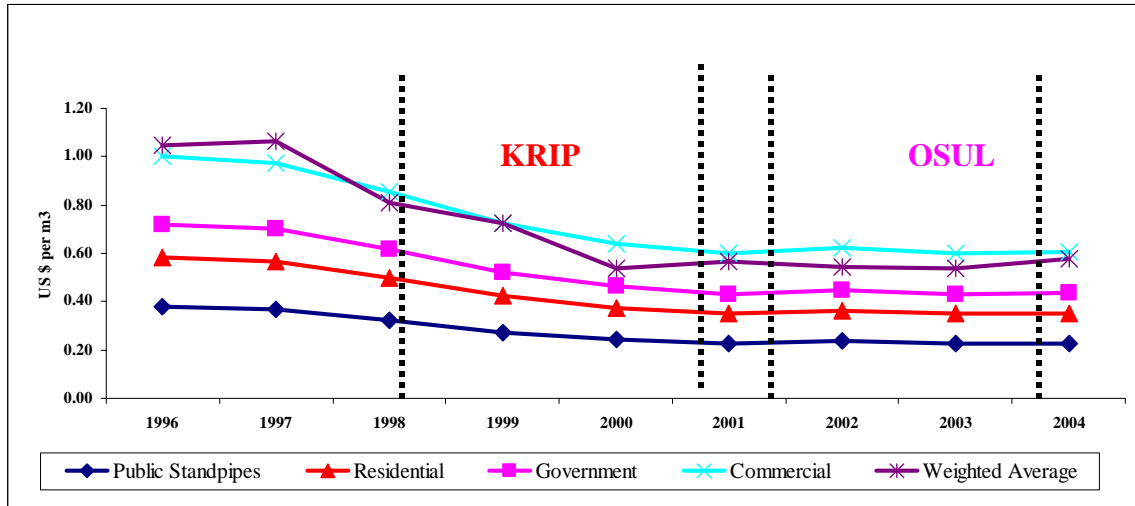
- nominal individual tariffs have been largely flat with a change in composition causing some trends in the average tariff;
- real tariffs fell until 2000, then were flat; and
- the 2000 turning point doesn't correspond directly to any of the changes in management regime.
- Relative prices to different consumer categories were largely unchanged over the period.

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<sup>10</sup> Maxwell Stamp PLC, Poverty Impact Assessment of Privatisation of the Urban Water Sector in Uganda, 19 August, 2003, page 15.

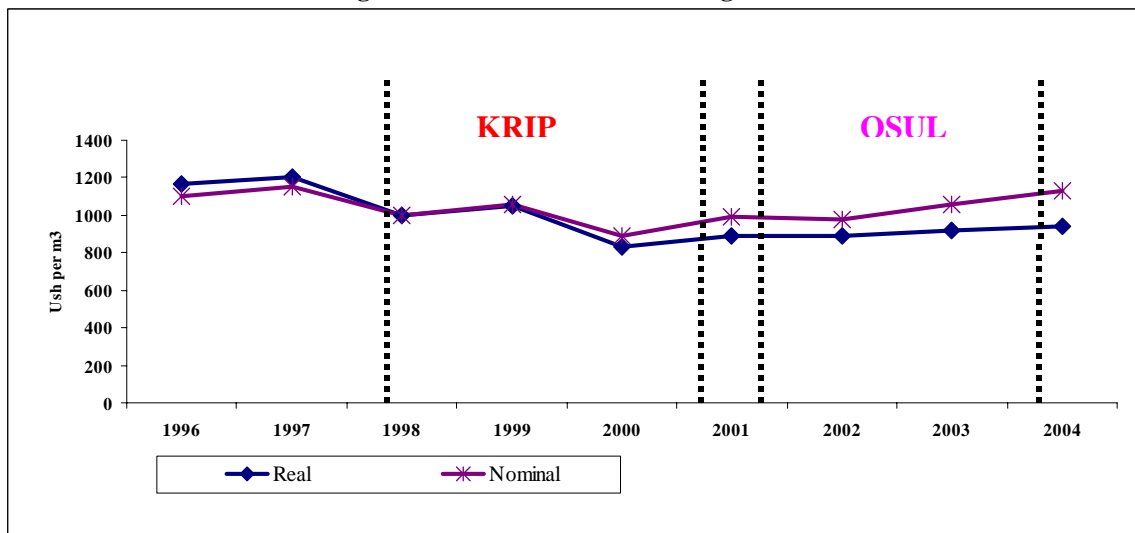
<sup>11</sup> Same source, page 66.

**Figure 10: Nominal Tariffs by Consumer Group**



Source: NWSC

**Figure 11: Nominal vs Real Average Tariff**



Sources: NWSC and UBOS for data on inflation

**How do these tariffs compare with other countries?**

Table 11 provides some comparative indicators. Trends here of course tell us more about Foreign Exchange rates than tariffs. But comparing countries in any given year is interesting. Uganda started with relatively high prices but has since declined to an average level. That is, in making the choice between subsidizing a social good and fiscal sustainability, Uganda has moved more in the direction of the former (or less in the direction of the latter) than the comparator countries.

**Table 11: Average Prices (\$/m<sup>3</sup>) Paid by Consumers in Uganda vs Other Countries**

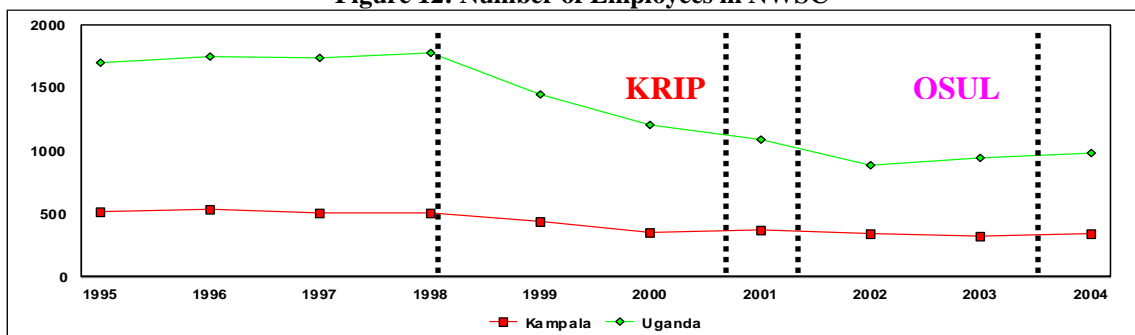
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Uganda		1.05	1.06	0.81	0.73	0.54	0.56	0.54	0.54	0.58
Senegal	0.72	0.74	0.68	0.70	0.70	0.63	0.62	0.67	0.84	
Mozambique		0.20	0.29	0.28	0.40	0.32	0.31	0.36	0.41	
West Africa	0.67	0.73	0.68							
Asia	0.36						0.24			

Sources: for Uganda, NWSC. For Senegal, Jammal/Jones *Senegal Water*. For Mozambique, Gokgur/Jones *Mozambique Water*. For West Africa, World Bank *Water Benchmark Indicators: West Africa*. For Asia, ADB *Water in Asian Cities Utilities' Performance and Civil Society View*.

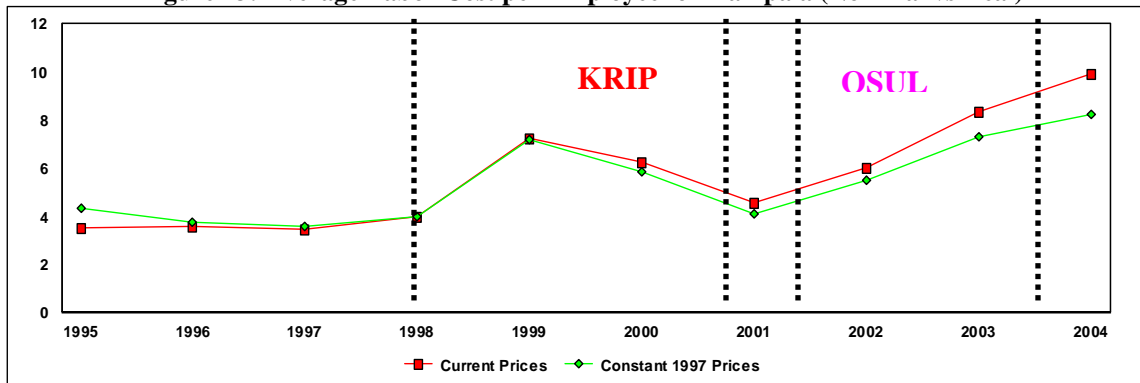
In sum, the only major impact on consumers which coincided with changing management regimes appears to be increased access. However, we believe that this increase was probably more influenced by the change in connection charges rather than the change in management contracts. Given the level of water produced, you might think this is a wash, because more water for new consumers meant less water for old consumers. However, we would argue that this is nonetheless a significant welfare gain. This is because the value of the first 5 m<sup>3</sup> consumed per family (for drinking and cooking) is much higher than that of the third 5 m<sup>3</sup> (for, say, washing the floor).

## 2.4. EMPLOYEES

How did employees fare with privatization? Typically labor unions complain of layoffs and of substantial benefit cuts. As Figure 12 shows, employment has indeed been on a declining trend since 1998 in the Kampala operation, but not nearly as much as in other cities. However, lower employment was offset by higher compensation for remaining employees, resulting in increasing average labor payments, both in nominal and real terms, particularly after 2000 (Figure 13). Given the generally favorable conditions for remaining employees in NWSC, one can understand the lack of complaint on the part of its labor union.

**Figure 12: Number of Employees in NWSC**

Source: NWSC

**Figure 13: Average Labor Cost per Employee for Kampala (Nominal vs Real)**

Sources: NWSC and UBOS for data on inflation.

In sum, during the reform period, some workers have lost through job losses, but retained workers gained through higher wages. Which of the two effects was larger; that is, were workers as a group net winners or losers? That is largely answered by Figure 13; since the average wage bill increased, the value of the wages shed was less than that of wages added. Was privatization responsible for the change? What the evidence suggests is that the company was successful in convincing employees that the pre-1998 conditions were unsustainable and that retrenchment was inevitable. Employees went along, and those retained indeed benefited from higher wages. Can this development be attributed to privatization? Not directly, since NWSC set terms and conditions. However, the stick of privatization may have had a positive effect in convincing labor unions to accept some job losses.

## 2.5. GOVERNMENT

How did the government fare? Table 12 gives our estimate of the flows to the government. The large negative Total after 1998 is due to the onset of loan repayment described earlier and impacting both retained earnings and direct taxes. But most of this would have happened even without privatization. The major exception is collection efficiency under KRIP. What was this worth? Given that collections were increasing to the 100% level outside Kampala, it seems reasonable to assume that collections would also have reached the asymptote even without privatization, but with a lag. How much of a lag? Since they reached 100% outside Kampala in 2004, a reasonable counterfactual would posit the same happening in Kampala, with a linear trend. More importantly, since we also believe it reasonable to assume the foregoing applies to arrears as well as current collections, the amount of money accruing to the government would have been about the same. It would have come in a few years later, so the net gain would have been only a few years interest on the arrears. This is not to be sneezed at, but is not the sort of substantial gains from privatization seen elsewhere.

**Table 12: Government Revenues from NWSC (million Ush.)**

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Direct taxes/credits	0	0	383	96	-263	-3,401	-2,648	923	-3,015	-6,035	0
VAT (on water sold)				3,563	3,590	4,037	3,919	4,294	4,532	5,343	6,190
Retained earnings	1,591	19	172	-2,512	-1,820	-11,418	-7,303	-37,200	-6,444	-4,987	-5,709
Total revenues	1,591	19	555	1,147	1,507	-10,781	-6,032	-31,982	-4,927	-5,679	481

Sources: NWSC and authors' calculations.

For the OSUL contract, PriceWaterhouseCoopers did a financial Benefit-Cost analysis which measures costs as the payments to OSUL and the benefits as reduction in UFW and arrears.<sup>12</sup> They conclude that the government actually lost an annual average of Ushs 1,631 million. However, they credit the reduction in arrears shilling for shilling. If you accept our argument in the previous paragraph that these would eventually have been collected anyway and only credit the interest payment over the lag, then the loss would have been more on the order of Ushs 2,500 million. Of course, there were other possible benefits, but their work reinforces the notion that privatization was hardly a resounding success.

## 2.6. RESULTS SUMMARY

One way of looking at the results is to confine one's perspective to the reform period itself. For the country as a whole, from 1998 to 2004: real output increased at a compound annual average rate of 8.7% and real Return to Capital at 24.6%; while technical efficiency increased from 47.7% to 61.8% and collection efficiency rose from 60.0% to essentially 100%. Labor productivity soared as the number of workers was almost halved, but employed workers benefited from substantially higher wages and benefits. Consumer benefits as measured by new connections grew at an average compound rate of 27.2%. This is clearly an impressive performance, which any company, public or private, in a rich or poor country, would be proud of.

One could stop there, as some writers on NWSC have, and pronounce the reforms a resounding success. But here's the catch: performance was also improving rapidly, in some cases considerably more rapidly, in the three years before reforms began. In our view, one cannot therefore attribute all of the improvements to the reforms. This is by no means to minimize the impressive achievements under the reforms, but only to suggest that the primary causal factor likely predates the reforms.

There are two minor exceptions to the foregoing conclusion. One was that collection efficiency leapt from 72% to 100% in the first year of KRIP. The other is the acceleration in new connections. These are not minor in that the consequences are immaterial—far from it—but in the causal sense that much of the gains can be attributed to other factors: a new government policy of paying its debts in the case of collections and a drop in connection charges from 400,000 Ushs to 20,000 Ushs for new

<sup>12</sup> PriceWaterhouseCoopers, Kampala Water Supply and Sewerage Area: Final Contract Advice, Financial Analysis Report, May 2004.

connections. Neither factor was due to privatization. Nor were the increases in output or the changes in employment and labor wages and benefits, all of which remained in the hands of NWSC. Further, performance improved by similar magnitudes under private management contracts and public performance contracts in Kampala and also under performance contracts outside Kampala. This is not to say that privatization failed: only that there was similar success without it. In the next section, we therefore have to try to explain not only why the privatized management episodes worked, but why everything else did as well, before and after the reform period.

Our original objective was to provide an answer to the following question: what was the welfare impact of private sector participation in NWSC's Kampala operation? We have sliced the data every which way and our answer is: not much. And one of the changes partially attributable to privatization, collection efficiency, has a wash effect on welfare: the firm is better off and consumers are worse off. Given this conclusion, unlike our companion studies of Senegal water and Cote d'Ivoire electricity, we have not bored the reader with the construction of a detailed counterfactual and the quantification of the small effects that did occur.

### **3. WHAT EXPLAINS THESE RESULTS?**

#### **3.1. KRIP**

##### **3.1.1. Was it a Success?**

Depending on how you define success, the answer can be “no”, “yes”, or “probably not”. The first answer comes from revealed preferences: at the end of the contract, neither side wanted to renew it despite the fact that the government wanted continued assistance and GAUFF presumably wanted revenue. If both parties to an agreement decide to end it despite continued need, it is hard to judge it a success.

A considerably more positive evaluation comes from looking at actual accomplishments. In its final report, GAUFF provides the following as some of its major quantifiable achievements:

- Increased billing efficiency (defined as the ratio of water billed to water produced) from 78% to 91%
- Improvement in collections by a Ush 21.5 billion annual average, for a cumulative amount of Ush 64 billion.
- Reduction of arrears from Ush 23.3 billion to 17.6 billion
- Adding 11,000 new connections (an increase of 37%)
- Reduction of the ratio of Unaccounted-For-Water to production from 60% to 48%



- Installation of 43.3 km extensions in piped water mains

This could indeed be legitimately called successful.

However, we have emphasized that similar gains in most areas appeared in the three years prior to KRIP and the four years after, as well as in systems outside Kampala. In addition to the data already presented, one can see this by looking at the performance relative to targets, which were based on previous trends. As can be seen from Table 13, for all years, only 69% of the sales target was reached, 97% of collections from billings, and 90% of total collections.

**Table 13: Actual vs Target in KRIP Contract**

Performance Indicators	1998/99			1999/2000			2000/01			All Years		
	Target	Actual	Actual/ Target	Target	Actual	Actual/ Target	Target	Actual	Actual/ Target	Target	Actual	Actual/ Target
Sales	22372	19937	0.89	25016	16237	0.65	32410	18957	0.58	79798	55131	0.69
Collections from billings	17898	21136	1.18	20763	18919	0.91	27548	24306	0.88	66209	64361	0.97
Total collections (in 98 amend.	21398	21136	0.99	21763	18919	0.87	28548	24306	0.85	71709	64361	0.90

Source: GAUFF

Since we believe that success requires a break in trend not explained by external factors, our answer therefore has to be “probably not”. Only billings and new connections showed a distinct kink, and both were in substantial part attributable to external factors. We would expect rather more from a foreign management contract.

### 3.1.2. External Explanatory Factors

Why was KRIP no more successful than it was? We start with "external factors" outside the control of the players in the reform process.

- **Lack of Continuity:** The private operator negotiated a deal with one manager but less than a year later, was confronted with a new manager who clearly did not display the same confidence in the operator as the first one. A revised contract was accordingly negotiated, but relationships were never good.
- **Inheritance:** GAUFF came into a company that had been rapidly improving on its own and doing better than continuing the trend may have been difficult.

### 3.1.3. Internal Explanatory Factors

Explanatory factors over which reformers did have control include:

- **Selection Process:** Needless to say, sole-sourcing in a non-transparent fashion is a practice to be avoided. NWSC learned this lesson itself and applied it admirably in the second management contract.
- **Operator Experience:** We were told in Kampala that GAUFF had no previous experience in operating water systems, and that this helped explain the subsequent performance. GAUFF, however, pointed out to us

that it: "had been involved for sixteen years, in design and rehabilitation of the water distribution network [in Kampala] prior to this assignment and therefore had a thorough knowledge of the network. In addition, H.P Gauff Ingenieure was successfully carrying out a similar assignment for Malindi Water Supply in Kenya. Gauff's sub-contractor, Seba Messtechnik of Austria had been involved in rehabilitating, surveying and digitising the [Kampala] distribution network and consumer connections including water meter installation projects for eight years prior to 1997." This mitigates the explanation, but does not eliminate it. Design and construction is not the same as operating a system and Malindi is miniscule compared to Kampala.

- **Modality:** A management contract is the lowest form of privatization, not in any judgmental sense, but in the sense that the least risk and responsibility is transferred to the private sector. Elsewhere, some of the greatest gains from privatization came from relaxing the investment constraint, but this cannot happen here. However, given that major donor-financed investments had already been made, this was relatively unimportant in Uganda. NWSC argues that they wanted to do something quickly and management contracts are far easier to negotiate.
- **Duration:** is 3.6 years long enough to see substantial change? After all, it takes time to change corporate culture and introduce new systems. Other privatizations have seen turnarounds in a year or two, but the task was harder in Uganda because of the rapid improvements in previous years. NWSC argues that the option of re-contracting was always open and that they had good talent in place and only needed familiarization with more modern systems before they could operate them themselves. Even so, the short term means a progressive diminution of operator incentives as termination nears.
- **Limited Delegation:** Production was not delegated because NWSC felt it could handle this itself. Events justified this somewhat, as there was a performance kink (compound annual growth rates went from -4% before reforms to +4% after). However, the post- growth rate was much smaller than in other variables and well below the targets set by NWSC.
- **Incentives** are a key issue in any contractual arrangement. The contract contains 29 pages of details on objectives and targets.<sup>13</sup> While impressively thought out, these are only indicative, because: "Since all targets aim at improving revenue, the revenue collection shall remain the only overall target against which the Firm's performance shall be appraised."<sup>14</sup> The incentive to GAUFF was simply 25% of collections (including arrears) above a target. This would seem to us to explain two

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<sup>13</sup> 14 pages on Water Sales Activities (MIS, Billing System, "reduction in in-house misappropriation of funds", Analysis and Improvement of Water Meter Readings, Checking Analysis & collection of Arrears and Customer Care) and 15 pages on Operation & Maintenance Activities (Monitoring/Instrumentation, Mainlines and Appurtenances, High and Low Level and Zonal Interconnections, Communications Pipes, Quality and Efficiency Control, Waste Control, Standpipes & Kiosks, Water Tanker Standpipes, Records and Map Updating, and Maintenance).

<sup>14</sup> Clause 3.6 under "Targets and Milestones".

things. First, it explains in part why collections jumped. Second, it explains why other things didn't show a break in trend. There are two obvious sets of problems with this target. First, it ignores costs. Second, it gives equal weight to a Shilling of water distributed and a Shilling collected. While these are of equal value to a private firm, we wonder if it should be so for a public enterprise. Yes, financial viability is important, but a Shilling of water distributed adds value to the economy, a Shilling collected merely is a transfer from one stakeholder to another. This is not to say that collections should be ignored, only that from a benefit-cost point of view it might be better to weight it less than water newly distributed. Further, it is much more expensive to produce new water or eliminate leaks than it is to collect bad debts, so it is natural that a profit oriented firm will concentrate effort on collections over maintenance and leak reduction. Another factor was that it credited GAUFF with something that was heavily influenced by factors outside their control, namely government's willingness to pay. This ended up favoring GAUFF, but it could have as easily gone the other way.

### 3.2. OSUL

#### 3.2.1. Was it a Success?

We evaluate OSUL on the same three criteria as KRIP. On the first, revealed preference, there is a reversal. Both partners wanted to continue the relationship, but could not agree on a price, so it is a self-evaluated success. On the second criterion, absolute performance was similarly successful, as we believe we demonstrated in Section 2. On the third criterion, relative performance was a little worse. Not only were there no positive breaks in trend (versus two for KRIP), but technical efficiency actually decelerated. So, on what we view as the most important criterion, OSUL cannot be deemed a success.

Further perspective on the degree of success can be gained by comparing actual and targeted performance. Table 14 says that while OSUL did continue the trend of improving performance, they did so by less than their contractual target.<sup>15</sup>

**Table 14: Actual vs Target in OSUL Contract**

Indicator	2-year average before OSUL	Baseline	OSUL Year 1		OSUL Year 2	
			Target	Actual	Target	Actual
Unaccounted for water	46%	44%	40%	44%	36%	45%
Connection efficiency	76%	75%	80%	78%	84%	80%

Note: Given a lack of data on "actual" vs "target" for the OSUL contract, we have used data obtained from NWSC covering fiscal years ending in June. Although they do not strictly correspond to the OSUL performance period (February 2002-February 2004), they are indicative of performance in that period.

<sup>15</sup> Mugisha et. al. perform a similar exercise and reach similar conclusions.

### 3.2.2. External Explanatory Factors

- **Continuity:** Unlike KRIP, the contractors worked for the same CEO that hired them. This led to a much better working relationship and thus to success on the revealed preference criterion.
- **Inheritance:** As with KRIP, OSUL came into a company that had been rapidly improving on its own and doing better than continuing the trend may have been difficult.

### 3.2.3. Internal Explanatory Factors

- **Selection Process and Operator Experience:** Unlike KRIP, which was sole-sourced, OSUL was the result of a transparent and competitive international tender. And as a result, they ended up with a more experienced operator. Sadly for those of us who believe in such things, the improved process did not result in this case in better results.
- **Modality, Duration and Degree of Delegation:** The same comments made about KRIP apply here as well.
- **Targets:** Although there were 20 quantitative performance targets in the contract, most were irrelevant because they were not tied to incentives. As shown in Table 15, three criteria were so tied. Collections were still the most important, but were more reasonably confined to non-governmental collections. But the other relevant comments on this in KRIP still applied. In addition, UFW and connection efficiency targets were added. The UFW indicator is in principle undesirable because its results are also measured by collections and it is therefore duplicative. The danger here is that it says a shilling of extra water delivered by reducing lost or stolen water is better than a shilling from producing more water. However, in this case, the incentive is not perverse because OSUL did not have responsibility for production so while it is double-counting, it is not asymmetric counting of different benefits. The connection efficiency is a good addition to the extent it measures an element of customer service and therefore is not duplicative. So, targets were somewhat improved over KRIP.
- **Incentives:** Incentives were changed significantly compared to KRIP. First, the operator share of collections was reduced from 25% to 10%. But, as also shown in Table 15, had the operator met all targets, it could have received an additional maximum of US \$250,000. This is by no means a high-powered incentive, as it only amounted to about 7% of the fixed management fee. Further, it is a trip-wire incentive in which you get paid the full applicable amount if you go a smidgen over target and nothing otherwise. On the one hand, this means there is zero incentive to maximize and go beyond the target. On the other hand, and the relevant hand in this case, it means that if one is not likely to make the target, one should give up and do nothing because even if 99% is achieved, the performance bonus will be zero. We suggest that performance might well

have been better if incentives were larger and continuous (as in KRIP where they got 25% of collections).

**Table 15: OSUL Performance Bonus Computation by Year (US dollars)**

Indicator	Year 1	Year 2	Maximum Payable
Unaccounted-for Water (%)	\$50,000 if <= target for Year 1	\$100,000 – payment in Year 1 if <= target for Year 2	\$100,000
Non-government collections (Ush)	\$62,500 if <= target for Year 1	\$125,000 – payment in Year 1 if <= target for Year 2	\$125,000
Connection Efficiency (%)	\$12,500 if <= target for Year 1	\$25,000 – payment in Year 1 if <= target for Year 2	\$25,000
<b>Total</b>			\$250,000

Source: NWSC-OSUL contract. NOTE: the signs for the last 2 performance indicators seem to be wrong: the bonus should be triggered when the actuals are higher than the targets.

#### **4. CONCLUSIONS**

We are extremely impressed with NWSC. Public enterprise reform is never easy and when it is accomplished it is all too often unsustainable: the next government, minister, or manager comes in and gains dwindle away. Yet NWSC has been continually and dramatically improving performance for more than 10 years and counting. Much of this has been attributed—legitimately in our view—to a dynamic and innovative CEO and to the system of incentives embodied in its various performance contracts.<sup>16</sup> But this cannot be the whole explanation because improvements predated these factors by three years. Some must also be attributed to changes following from the new NWSC Law and the general environment of economic rationality resulting from Uganda’s economic “success story”.

How much of this was due to the two private management contracts? We have sliced the data every which way and the answer is: “not much”. NWSC did just as well with public management contracts. Performance was good under OSUL and KRIP, but on balance, not significantly better or worse than performance before, between and after them in Kampala, or outside Kampala. There are two exceptions. One was that collection efficiency leapt from 72% to 100% in the first year of KRIP. The other is the acceleration in new connections. And much of these gains can be attributed to other factors: a new government policy of paying its debts in the case of collections and a drop in connection charges from 400,000 Ushs to 20,000 Ushs for new connections. Neither factor was due to privatization. Nor were increases in output or the changes in employment and labor wages and benefits, all of which remained in the hands of NWSC. In sum, performance contracting worked for NWSC, but about as well for internal contracts with employees as for external contracts with foreign operators.

Why wasn’t performance better under private management? The limited degree of delegation inherent in any management contract, and exacerbated by the exclusion of production, might be thought to have minimized the impact. But our conclusion holds for the variables that were under their control. The short duration of both contracts may have minimized operator incentives to undertake long-term change. For KRIP, part of the

<sup>16</sup> See especially the three papers by Mugisha and others listed in the Bibliography, as well as the paper by Thelma Trische.

problem may be traced to non-competitive selection of a firm with experience in designing and constructing water systems, but with experience running only a single very small system. NWSC learned from this and the OSUL contract was competitively and transparently bid. But incentives went the other way. Under KRIP the operator kept 25% of collections and responded with significant improvement in this area. Under OSUL, this was dropped to 10% and a non-continuous trip-wire incentive was added. But it was small (only 7% of the management fee) and its structure meant that if one is unlikely to make the target (which proved to be the case), one should give up and do nothing because even if 99% is achieved, the bonus will be zero.

In sum, this is not a rousing success story for private management contracts. But, if someone wants to do a case study of successful and sustained public enterprise reform, NWSC might be a fine candidate.

## APPENDIX A: ADDITIONAL TABLES

**Table 16: Performance of Kampala Operation Using Economically Relevant Flows (million Ush.)**

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>Output</b>	5,803	12,898	14,554	15,609	15,625	17,028	16,237	18,534	19,691	22,630	25,736
<b>- Intermediate Inputs</b>	3,427	5,245	5,466	4,996	5,689	9,112	6,335	8,153	9,906	7,674	7,073
<b>= Value added</b>	2,377	7,653	9,089	10,613	9,937	7,916	9,902	10,381	9,785	14,956	18,663
<b>- Return to Labor</b>	1,211	1,854	1,932	1,766	2,010	3,220	2,239	1,717	2,078	2,712	3,464
<b>= Total Return to Capital/ Profit/ Quasi-rent</b>	1,166	5,799	7,157	8,847	7,926	4,696	7,663	8,663	7,707	12,244	15,198

Note: numbers refer to fiscal years ending on June 30th of the reference year.

Sources: NWSC and authors' calculations.

**Table 17: Performance of Kampala Operation Using Flows at Constant 1997 Prices**

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>Output</b>	9,605	10,100	15,124	15,609	17,837	18,514	21,216	21,912	23,571	25,236	26,869
<b>- Intermediate Inputs</b>	4,597	6,139	5,582	4,996	5,482	8,516	5,554	6,732	7,892	5,840	5,141
<b>= Value added</b>	5,008	3,961	9,543	10,613	12,354	9,998	15,661	15,180	15,679	19,397	21,728
<b>- Return to Labor</b>	1,831	1,807	1,859	1,766	1,748	1,528	1,228	1,293	1,183	1,117	1,204
<b>= Total Return to Capital</b>	3,177	2,154	7,684	8,847	10,606	8,470	14,434	13,887	14,497	18,279	20,524

Note: numbers refer to fiscal years ending on June 30th of the reference year.

Sources: NWSC and authors' calculations.

**Table 18: Decomposition of Kampala Profit Into Price & Quantity Effects**

Change in	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Output										
P	6,781	-3,702	580	-2,064	797	-3,083	1,752	-232	1,498	1,593
Q	314	5,358	474	2,080	606	2,291	546	1,389	1,441	1,513
V	7,095	1,656	1,055	16	1,403	-791	2,297	1,157	2,939	3,106
Intermediate Inputs										
P	552	723	114	193	183	567	411	305	446	348
Q	1,267	-503	-584	500	3,240	-3,344	1,407	1,447	-2,679	-949
V	1,818	220	-470	693	3,423	-2,777	1,818	1,752	-2,232	-600
Value Added										
P	6,229	-4,426	466	-2,257	614	-3,650	1,340	-537	1,052	1,245
Q	-953	5,862	1,058	1,580	-2,635	5,636	-861	-59	4,119	2,462
V	5,276	1,436	1,524	-676	-2,020	1,986	479	-596	5,171	3,707
Employee Benefits										
P	659	24	-71	262	1,491	-400	-636	517	755	532
Q	-16	54	-95	-17	-282	-582	114	-156	-121	221
V	643	78	-166	245	1,210	-981	-522	360	634	752
Profit										
P	5,570	-4,450	538	-2,519	-877	-3,251	1,976	-1,054	297	713
Q	-937	5,808	1,153	1,598	-2,353	6,217	-975	98	4,240	2,241
V	4,634	1,358	1,690	-921	-3,230	2,967	1,001	-956	4,537	2,954

Sources: NWSC and authors' calculations.



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