The Republic of Uganda

Water Sanitation Uganda

Measuring Performance
Improved Service Delivery

Water and Sanitation in Uganda

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Ministry of Water, Lands and Environment

*Measuring Performance for Improved Service Delivery*

Foreword

The Government of Uganda (GoU) places great importance on the provision of water and sanitation services in its fight against poverty. Our overall aim is for every Ugandan to have access to safe water and sanitation by the year 2015. Water and sanitation contributes to the achievement of GoU's poverty reduction targets, particularly in relation to pillars 3 (increased incomes of the poor) and 4 (improved quality of life of the poor) of the Poverty Eradication Action Plan (PEAP). Funding to the sector has increased dramatically over the past few years, from Ush 47.41 billion in FY 1996/97 to Ush 126.05 billion in FY 2002/03. This demonstrates Government's commitment to achieving the sector objectives.

We are proud of the progress that has made in increasing people's access to improved water points across the country. From around only 26% accessibility in 1991 to 68% in 2002, we are well on course to achieve the PEAP targets by 2015. We are increasingly aware, however, that this is only one, albeit important, measure of our performance. Issues of quantity, quality and affordability of water supplied; functionality of water and sanitation facilities, and equity of resource distribution are all equally important in determining the effectiveness of our interventions. We have also recognised the importance of selecting from a broad range of national, sectoral and district level data sources to confirm whether our efforts are having the desired impact.

This report, Measuring Performance for Improved Service Delivery, attempts to address these themes. It should be stressed that this is only the beginning of a process to improve performance measurement, and there is still considerable work to be done in determining appropriate performance indicators and institutional responsibilities. The purpose of the report is therefore to indicate what it is possible and desirable to measure and how this can be improved. We believe the report sets a standard for sector performance measurement in future and that it will be invaluable in helping convert water and sanitation policies into practice. In addition to our water sector reform studies and strategies, this report is timely as a contribution to the ongoing PEAP revision process.

I would like to thank our Development Partners for their continued support for water and sanitation improvement in Uganda, including their assistance in producing this report. Finally, my thanks go to the consultants from WELL and all those who participated in the report preparation.

Water is life and sanitation is dignity. Let us cherish them.
For God and My Country
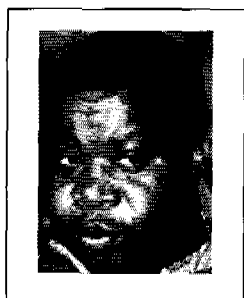
Hon. Kahinda Otafiire (Col.)

Executive Summary

In recent years there has been a substantial increase in resources provided to improve water and sanitation services in Uganda. This is a direct response to the Government of Uganda's (GoU) commitment towards poverty reduction. The increase in resources has led to a marked increase in the number of people who now have access to improved water and sanitation facilities across the country. At the same time, it is recognised that access is only one measure of the quality of water and sanitation services. Reduction in time and distance to collect water, regularity and quantity of supply, and equity of resource distribution are of equal importance in determining whether GoU's policies, objectives and targets are being met.

The need for better performance measurement was identified at the Joint GoU/Donor Water and Sanitation Sector Technical Review in March 2003. It was agreed that improved performance measurement would enable participating institutions to assess the 'value for money' from the increased investments, as well as assisting in the careful targeting of resources and efforts, in order to be more effective and efficient in working towards sector targets. The ultimate aim is to provide clear evidence of the contribution that water and sanitation is making to poverty reduction in Uganda.

This report attempts to provide a comprehensive assessment of water and sanitation performance and does this against themes (e.g. access, use, functionality, equity) rather than the traditional structure of rural, urban, water for production (WFP) and water resources management (WRM). The report is a product of an ongoing assignment to develop a performance measurement framework for water and sanitation, including the rationalisation of key performance indicators, data sources and institutional responsibilities.

Section 1 provides the **rationale** for the report in the Ugandan context. The disparity in water and sanitation targets between a number of key policy documents are highlighted. This demonstrates the need to be clear about precisely what objectives and targets performance is being measured against. An overview of sector institutional arrangements and resource allocations is also included, as are some proposed definitions of common terms used.

Section 2 highlights the ten key national **sources of data** for performance measurement and makes reference to the data source summaries in Annex 1, which indicate what types of water and sanitation information is included and the strengths and weaknesses of each data source. A detailed review and revision of the data survey/collection forms is considered necessary to ensure consistency between the various data sources.

Section 3 introduces the ten most relevant **performance themes** for water and sanitation. The themes were developed and agreed at a consultative workshop of water and sanitation sector stakeholders in August 2003. These themes are used as an assessment framework in chapters 4 to 7.

The range of potential **impacts of** improved water and sanitation on poverty reduction are identified under the key categories of income, health, education, gender and social exclusion. Because it is difficult to demonstrate direct causality between water and

sanitation service improvements and poverty reduction, this report does not attempt to do so. However, it is envisaged that this will be the focus of in-depth studies in future and will tie in with the work of the Poverty Monitoring Analysis Unit (PMAU) in the Ministry of Finance, Planning and Economic Development (MoFPED).

Section 4 examines key trends in **access** to and **usage** of improved water sources in the urban and rural sub-sectors. The Government looks certain to achieve the target of "65% of the population in Uganda are within 1.5 km of safe water by the year 2005". This reflects a strong performance, with household survey data showing access rising from little more than 20% in 1991 to almost 60% in 2002. It is noted however, that the average time taken to fetch water did not fall for the period analysed (1995-2000) and the average distance travelled actually rose. Attention now needs to turn to meeting more demanding targets which are likely to involve a review of the 1.5 km distance target, the target for population served and consideration of the establishment of goals for time spent collecting water.

With regard to sanitation, the policy target of "65% of households having good sanitation facilities by 2005" is within reach. Potential access to a latrine, however, does not equate to use of properly constructed and functioning facilities and actual use of latrines appears significantly lower. Improvements in data collection to address this issue are necessary.

Section 5 considers the **quantity** of water collected/used per person per day. The national average of 12 litres per person per day is much lower than the GoU policy target of 20 litres per person per day, and the reasons for this need to be investigated further. Relatively little information is currently available for the measurement of water quality and this is an area of focus for future performance measurement reports.

Section 6 considers **equity** issues in service provision from both an income and a geographical perspective. The non-poor have significantly better services than the poor both for water and sanitation. While differences in regional service levels are apparent, some pilot research work suggests that more substantial disparities exist at the parish and sub-county level. If the policy objective of 'some for all rather than all for some' is to be assessed, then a quantifiable policy objective is urgently required with clear targets for improving the equity of water and sanitation service distribution.

Section 7 addresses **functionality, managerial** and **value for money** performance themes. Over 30% of rural water systems in Uganda are reported to be non-functional. There are targets to reduce the failure rate to 20% by 2005 and to 10% by 2007. Substantial improvements in operation and maintenance at the local level will be needed to achieve these targets. Other areas identified for improvements in functionality include school sanitation and services in informal settlements.

To improve managerial performance, sector-wide indicators are proposed such as 'the proportion of budgeted funds that have been spent' or 'the proportion of staff positions filled'. These can be cascaded down as part of the development of sub-sector indicators. Better inter-departmental co-ordination has been identified as a priority for improving sanitation services.

The National Water and Sewerage Corporation (NWSC) has shown steady improvements in urban water performance against key indicators in the larger towns, particularly in areas

of operational efficiency. Yet much remains to be done in extending piped water services to poor and unserved areas. While services in small towns are improving, better performance measurement can assist stakeholders in managing reforms.

Preliminary value for money (VFM) assessment has shown that:
- investments in rural areas give significantly more return in terms of numbers of extra people with improved water services compared to the urban sub-sector.

- it is difficult to obtain and analyse data with respect to sanitation investments (partly because the responsibility for sanitation spans three different ministries).

- greater clarity is required regarding the scope of future VFM studies.

Section 8 sets out **recommendations** collated from other sections in the report. This chapter particularly focuses on the nature of future status reports, indicators to be used for performance measurement, data collection methods, policy implications and other key issues.

In conclusion, this report provides a benchmark for continual improvement in performance measurement of water and sanitation in Uganda, to become an integral part of the water and sanitation Sector Wide Approach (SWAp) framework.

Acronyms and Glossary

CBM	Community Based Management
DFID	Department for International Development (UK)
DWD	Directorate of Water Development
GoU	Government of Uganda
HIASS	Health inspectors' annual sanitation survey
GDP	Gross Domestic Product
ICWP	Improved Community Water Point
IDA	International Development Assistance
IRC	International Water and Sanitation Centre
JSR	Joint Sector Review
LSHTM	London School of Hygiene and Tropical Medicine
M&E	Monitoring and Evaluation
MoFPED	Ministry of Finance, Planning and Economic Development
MIS	Management Information System
MTEF	Medium Term Expenditure Framework
NEMA	National Environment Management Authority
MoWLE	Ministry of Water Lands and Environment
NWSC	National Water & Sewerage Corporation
O&M	Operation and Maintenance
OSUL	A private water consortium in Uganda including ONDEO, a large French water company
PEAP	Poverty Eradication Action Plan
PMA	Plan for the Modernisation of Agriculture
PMAU	Poverty Monitoring and Analysis Unit
PMS	Poverty Monitoring Strategy
PPA	Participatory Poverty Assessment
PRSP	Poverty Reduction Strategy Paper
SWAp	Sector Wide Approach
SWG	Sector Working Group
UBOS	Uganda Bureau of Statistics
UDHS	The Uganda Demographic and Health Survey
UNICEF	United Nations Children's Fund
UNHS	The Uganda National Household Survey
UPHC	The Uganda Population and Housing Census
UNSDS	Uganda National Service Delivery Survey
UPPAP	Uganda Participatory Poverty Assessment Programme
VFM	Value for Money
WEDC	Water Engineering and Development Centre (UK)
WELL	Resource Centre Network for Water, Sanitation and Environmental Health including WEDC (UK), LSHTM, IRC and Delta Partnership
WHO	World Health Organisation
WFP	Water for Production
WatSan	Water and Sanitation
WRM	Water Resources Management

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Section 1

Background

1.1 Introduction

This is the first report of its kind to be presented to the Joint GoU/Donor Water and Sanitation Sector Review (JSR). It differs from previous years in that it attempts to provide a more comprehensive assessment of water and sanitation performance in Uganda and does this against themes (e.g. access, use, functionality, equity) rather than the traditional structure of rural, urban, water for production (WFP) and water resources management (WRM).

The need for better performance measurement was identified at the Water and Sanitation Sector Technical Review in March 2003, particularly to provide evidence of the contribution of water and sanitation to poverty reduction in Uganda. The report is the by--product of an ongoing assignment to improve performance measurement, which included a consultative workshop in July 2003 to develop indicators, data sources and institutional responsibilities. It is envisaged that it will set the scene for future reports to the JSR and become an integral part of the water and sanitation Sector Wide Approach (SWAp) framework .

1.2 Report objectives

This study report has been developed to achieve the following:

- A review of all the key elements of performance within the Uganda water and sanitation sector

- A discussion of appropriate indicators – drawing on the deliberations of a stakeholder consultation workshop as well as the review of available data;

- A review and comparison of the various data sources available at national and district level for measuring water and sanitation performance.

- An analysis of the trends in water and sanitation performance over the past decade using the indicators and data sources adopted.

- Conclusions and recommendations to help improve future performance measurement and, in some cases, performance itself

- A baseline that will be useful in identifying future progress.

1.3 Water and sanitation and poverty reduction

Uganda has made significant progress in reducing poverty over the past few years. According to a background paper presented at the Consultative Group Meeting, Kampala on 14-16 May 2003, the incidence of poverty has fallen from 56% in 1992 to 44% in 1997 and to 35% by 2000. For the last 15 years, the country's economic policies geared towards poverty reduction have mainly been grounded in the Poverty Eradication Action Plan (PEAP), which is an offshoot of the Government Vision 2025.

To keep in line with the changing macro-environment, the PEAP is currently being revised. The main objectives, goals and strategies of the PEAP are organised around four *interrelated themes referred to as 'pillars' under which the government's sectoral plans* and programmes are developed and implemented. Water and sanitation interventions are of direct relevance to two pillars of the PEAP:

- Pillar 3 – Actions which directly increase ability of the poor to raise their incomes

- Pillar 4 – Actions which directly improve the quality of life of the poor.

The programmes and activities pertaining to these pillars include provision of water and sanitation services for domestic, industrial and commercial use, and provision of water resources for rural electrification, and plan for modernisation of agriculture.

The pivotal importance of the provision of water for poverty reduction is evident, for example, in supporting programmes for pastoralism as a way of life, which are heavily dependent on the availability of water for cattle (particularly in Karamoja). Other communities benefit from improved water supply for agriculture. All Ugandans benefit from improved water for domestic use and from improved sanitation facilities.

Improving access to safe water and sanitation is a key strategy for tackling poverty. Uganda's first Participatory Poverty Assessment (PPA) in 1998/99 identified lack of safe water as a major problem for poor people while poor health and disease was felt to be the number one cause of poverty in the 2001/02 PPA[1]. Poor sanitation is a widely perceived and scientifically proven cause of poor health[2].

The importance of water and sanitation (watsan) is recognised in various policy documents. As noted above, the overarching policy framework is provided by the PEAP framework. Hence people are rightly interested in how the water sector is performing against targets set to measure progress. The 2003 Uganda Poverty Status Report identifies the relevant targets as:

- Increasing safe water coverage to 65% of the population in 2005, and to 95-100% of the total population in 2015.

- Increasing the proportion of rural people with access to a safe water source within 1.5 km to 60% by 2004.

- Increasing the proportion of rural people with access to good sanitation facilities to 60% by 2004.

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1. PPA2 p.16
2. PPA2 p.126 and MFPED (2002)

Other targets are given in water, sanitation and health sector strategy documents that aim to translate the medium term PEAP goals into concrete actions. These are discussed in detail later. The point to note here is that this report is about measuring progress in watsan service delivery and this is a vital part of monitoring broader progress in poverty reduction.

1.4 Goals and their measurable targets

There are a number of important policy documents that set out broad goals for water and sanitation and more or less specific targets against which performance can be assessed. These targets point in the same direction, but sometimes differ in detail - this makes it more difficult to track progress. Table 1.1 summarises the targets elaborated in various policy documents. There are many other documents that use these targets and rather than repeat these we simply quote one source for each target.

It is evident from Table 1.1 that because there are so many objectives and targets, many of which either are either different or duplicate, there is a risk of them becoming statements of intent rather than committed targets for the sector to be measured against. For example, MWLE's target of 65 % coverage by 2005 is different from the target figure in the Health Sector Policy. This emphasises the fact that objectives tend to be seen as "departmental" rather than "sectoral". This also demonstrates the need to be clear about precisely what objectives and targets we are measuring performance against.

Table 1.1. Varying sector objectives

Policy document	Stated targets
1 Water sector medium-term budget framework FY 2002/03 to FY 2004/05 (Ministry of Water Lands, and Environment, 2001 & 2002)	• Sustainable safe water within easy reach of 65% of the rural population and 80% of the urban population by the year 2005 with 80-90% effective use and functionality of facilities. • Sustainable safe water within easy reach of all the urban population by 2010 and all rural population by the year 2015 with 80-90% effective use and functionality of facilities.
2 Effective implementation of Uganda's Poverty Eradication Action Plan: The role of M & E in the Health, Education and Water Sectors (November 1992)	• 60% of the population in Uganda are within 1.5 km of safe water by the year 2004 • 60% of the population in Uganda have good sanitation facilities by the year 2004
3 Poverty Monitoring and Evaluation Strategy (Ministry of Finance, Planning and Economic Development/ The Poverty Monitoring Network, May 2002)	• 60% of the population in Uganda are within 0.5 km of safe water by location, by the year 2004 • 60% of the population in Uganda have good sanitation facilities by the year 2004
4 Framework for Sector-Wide Approach to Planning (SWAP) Water Supply and Sanitation Sector: A presentation to the Joint Govt/Donor Review of the Water and Sanitation Sector, September 2001	• Coverage from 50% to 55% by 2003 for rural areas, and from 50% to 65% for large urban towns • 80% of the systems functional • Average investment cost per beneficiary not more than $50 for rural areas and $150 for large urban areas • Increased satisfaction with WSS services (measured by annual service delivery surveys, household surveys and periodic participatory poverty assessments)
5 National Water Policy (Section 5.4.1 - Service Level Criteria), 1997	• 20-25 Litres per capita per day • Within 1.5 km of water supply for rural population • Within 0.2 km of water supply for urban population • Each public water point should serve no more than 300 persons
6 National Water Policy (Water for production sub-sector)	No quantitative target but objective "to promote development of water supply for agricultural production in order to modernise agriculture and mitigate effects of climatic variations on rain-fed agriculture and to support rural industrial production"
7 National Water Policy (Water Resources Management sub-sector)	No quantitative target but objective "to promote and ensure the rational and sustainable utilisation and development and effective management and safeguard of water resources, for social and economic welfare and development as well as the equitable sharing and adequate protection of trans-boundary water resources"

1.5   Institutional arrangements

Water and sanitation in Uganda has been undergoing significant reform in recent years, in order to build the capacity to fulfil GoU's mission of "Integrated and sustainable management, development and use of water resources in Uganda for the present and future generations". The major objectives of this reform are to provide services with increased performance and cost effectiveness, while decreasing the government burden, yet maintaining the government's commitment to equitable and sustainable provision of services.

A water and sanitation SWAp has been developed over the past 3-4 years, bringing together the Government of Uganda (GoU) and its development partners under a common planning, budgeting and reporting structure. This includes the adoption of the JSR as a means for assessing performance on an annual basis. To date performance has been

measured against the JSR policy matrix and duplicated by the World Bank Poverty Reduction Support Credit (PRSC) matrix. This year an attempt will be made to merge these two into a common framework that will enable output/outcome performance assessment, whilst still allowing undertakings to be measured against intermediate outputs.

Water and sanitation programmes and activities bring together a number of ministerial departments and non-governmental organisations. The main institutions responsible for the sector include:

1. Ministry of Water, Lands and Environment (MWLE) Headquarters which is responsible for formulating national policies, and for setting national standards. The Planning and Quality Assurance Department and the Policy Analysis Unit are housed at the Headquarters. The other vital institutions under the Ministry of Water, Lands and Environment are:

   a) Directorate of Water Development (DWD), the lead agency responsible for managing water resources, water guidance, co-ordinating and regulating all water and urban sanitation activities, as well as provision of support services to local governments and other service providers.

   b) National Water and Sewerage Corporation (NWSC), an autonomous corporate organisation that is responsible for delivery of water and sewerage services to 16 larger urban centres.

2. Ministry of Finance, Planning and Economic Development (MFPED) has the role of planning, resource mobilisation and allocation, as well as co-ordination of donor inputs.

3. Ministry of Local Government, has the mandate to establish, develop and facilitate the management of efficient and effective decentralised government systems capable of delivering the required services to the local communities.

4. Ministry of Health has the mandate of providing household sanitation services and hygiene promotion.

5. Ministry of Education and Sports has the responsibility for providing school sanitation services with its accompanying hygiene promotion

6. Ministry of Agriculture, Animal Industries and Fisheries is responsible for leading in the venture for modernisation of agriculture, which involves some management aspects of provision of water for production.

7. Ministry of Gender, Labour and Social Development is responsible for spearheading and co-ordinating gender responsive development and community participation in the water and sanitation programmes.

8. District councils co-ordinate rural water and sanitation activities at the local level.

9. Town councils co-ordinate urban water and sanitation services in the smaller towns not managed by NWSC, either directly or working with private sector service providers.

10. The National Environment Management Authority (NEMA) is a separate agency (under the MWLE) that acts as the environmental regulator.

The above organisations are represented on a Sector Working Group (SWG), chaired by the Permanent Secretary, MWLE. The SWG has been constituted to agree on priority investments and projects and to coordinate inputs under the SWAp framework and to review performance through the JSR.

The sector also includes the NGO and private sectors, educational institutions and community groups, all who have roles to play in the provision of improved water and sanitation services.

1.5.1 Summary of sub-sectors

For the purpose of providing specialised efficient services, water and sanitation is divided into the following sub-sectors:

1. Rural water and sanitation services: At the district and lower local government levels, this sub-sector is mainly responsible for construction of safe water facilities such as boreholes, shallow wells, gravity flow schemes, rainwater harvesting systems. The sub-sector also promotes ecological sanitation in rural growth centres. In carrying out these activities, the sub-sector is guided by demand-driven approaches, decentralisation of services, integrated packaging of both hardware and software services, community-based gender-sensitive maintenance systems, and public private partnerships for maximised efficiency and effectiveness.

2. Urban water and sanitation services: Urban areas in Uganda are defined as gazetted towns with populations of at least 5,000 people. Water and sewerage services to larger towns is the responsibility of National Water and Sewerage Corporation. Water and sanitation services to smaller towns are managed by local town councils either directly, or through management contracts with local private operators. The role of DWD is investment management and minimal regulatory functions for smaller towns being managed by private contractors.

3. Water Resources Management: Since all the water resources in Uganda are part of the River Nile basin, Uganda has an international obligation to manage its water resources in a viable and an environmentally sound manner. Following preparation of the Water Action Plan in early 1990s, DWD has been building capacity to manage the country's water resources, formulate policies/strategies and negotiate international water issues. The department participates in international and regional collaborations with riparian states such as the Lake Victoria Environmental Management Programme and the Nile Basin Initiative programmes.

4. Water for Production: This sub-sector provides water resources for agricultural irrigation, livestock and fisheries, as well as for rural industries and recreation. Water for production is considered to be an area of increasing importance for Uganda's future development of the agricultural sector in line with the Plan for Modernisation of Agriculture (PMA).

The above represent the four sub-sectors set out in the Medium Term Budget Framework (MTBF) for the water and sanitation sector. A fifth sub-sector could be identified in relation to sanitation and environmental health functions carried out by other Ministries.

5a. Environmental Health Division of the Ministry of Health: This division is responsible for policy development, overall coordination and guidance on sanitation and safe water services, as well as technical support to the districts. The division also focuses

raising awareness in the population to the relationships between their health and their surroundings.

5b. Schools sanitation, Ministry of Education. This Ministry is responsible for the construction of latrines for schools and for the provision of hygiene education in schools.

Ministerial responsibility for sanitation is set out in a Memorandum of Understanding signed by the MWLE, MoH and MoE in 2001. The co-ordination of these institutional responsibilities is still less than perfect and more work is needed to understand resource flows in particular, and the best means of co-ordinating sanitation as a cross-cutting issue in future.

1.6 Resourcing

According to figures from MoFPED, the total flow of resources to the sector approximately doubled from Ush. 47.41 bn. in 1996/97 to Ush 94.34 bn. in 2001/02. The contribution from Government over this period increased almost tenfold resulting in a higher Government share to the water and sanitation sector in the MTEF from 0.5% (1997/98) to 29% (2001/02). The resources contributed by donors doubled over the same period. Overall, donor projects were three times higher than the Government contribution.

The share of water and sanitation sector resource allocation compared to other social sectors and as a share of the overall Government budget and of GDP is shown in Table 1.2. The table shows that, in recent years, there has been a significant increase in

Table 1.2. Sectoral Allocations of GoU Budget[1]

	99/00		00/01		01/02	
	% GDP	% GB	% GDP	% GB	% GDP	% GB
Education	3.8	26.3	3.9	24.9	4.4	24.2
Health	0.9	6.5	1.2	7.3	1.6	9.0
Roads	1.2	8.1	1.4	8.6	1.7	9.1
Water	0.2	1.5	0.4	2.4	0.5	2.8
Total Social Sectors	6.1	42.4	6.9	43.2	8	45.1

1. Source: Ministry of Finance, Planning and Economic Development, November 2001. GB=General Budget

sector spending. The rate of increase between 1999 and 2002 was the highest for any of the 'social' sectors.

Sub-sector trends

The broad allocation of resources among the water and sanitation sub-sectors is shown in Figure 1.1. Over the period from 1992 to 2001 there was an overall increase in resources from US$34m to US$51m. The proportion devoted to WRM and WFP has tended to increase over time and by 2001 stood at 11.2% of the total. The proportionate split between rural and urban water and sanitation has fluctuated quite widely. In 1995/96, 74%

of resources (excluding WFP and WRM) were targeted at urban areas, whilst by 2000/01 61% of this figure was being directed at rural areas.

Figure 1.1. Investments in sub-sectors 1992 to 2001[1]
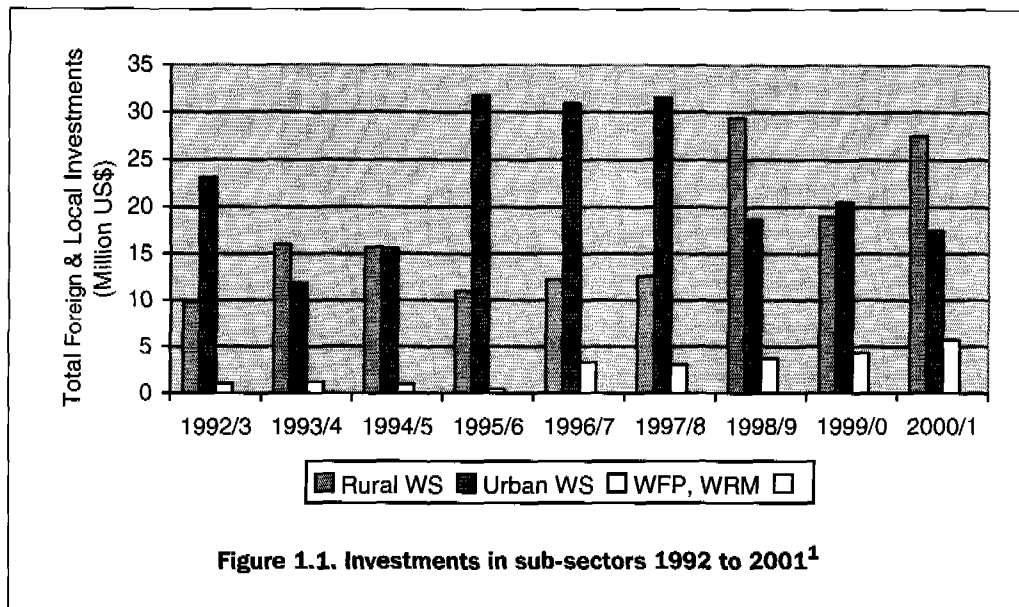
1. Source: DWD Report on the water sector performance (2003)

Sanitation trends

It is difficult to identify the amount of resources that have been allocated to sanitation as opposed to water supply. This is because three separate Ministries spend money in this area and these amounts are sometimes grouped together with water supply activities. Table 1.3 separates out estimates of funding for sanitation over the past 5 years in Uganda, but the data should be considered as first estimates and must be used with considerable caution.

Table 1.3. Elements of environmental health funding for 1998-2002

Source	Note	UShs million				
		1998/99	1999/00	2000/01	20001/02	2002/03
DWD budget	1	3,464	2,808	11,091	5,585	5,818
MoH budget	2	251	241	665	438	587
MoE budget	3	1,462	3,237	4,368	6,277	6,367
Total		5,177	6,286	16,124	12,300	12,772

Note 1: Rough estimates for rural latrine construction and hygiene promotion.
Note 2: Rough estimates for environmental health.
Note 3: Rough estimates for school latrines and hygiene promotion in schools.
None of the figures include staff costs. Estimates for urban expenditure (except for schools) are excluded.
Ministry of Health (MoH)
Ministry of Education (MoE)
Source of data: Colin and Thomson (2003)[3].

3. Colin J, Howard A G, Thomson M and Bazeyo W, (2002), Uganda Environmental Health Scoping Study WELL Task 2064

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Urban sanitation estimates over the same time period have not been obtained. However, Colin and Thomson (2003) estimated that around US$ 30 million (UShs 54,000 million) was spent every year on urban water and sanitation in Uganda, of which an estimated US$ 2.1 million (UShs 3,780 million) per annum was spent on urban sanitation. Again, these figures need to be interpreted with considerable caution.

1.7 Proposed definitions

Throughout this report there are a number of terms used for which the following definitions are proposed:

Sustainability: *continuous*, satisfactory, functioning and effective[4] use of WSS services

Equity: fairness (men and women, rich and poor) having equal voice and choice in decision making, equal access to information/ opportunities/benefits.

'Coverage' is an initial estimate of the proportion of people receiving a service, based on assumed theoretical figures or 'norms' for the number of people who may use each type of technology option. These assumed norms may be substantially different from actual use. **'Access'** is the preferred alternative term for coverage that is used in this report.

The term **'Access'** in the WHO/UNICEF global water assessment(2000) report refers to proportion of people who can use the *'improved'* service options. Examples of *improved* water and sanitation options are listed in section 5.5 (Table 5.1) on quality of water. The term *'improved service options'* is used instead of the term *'safe'*, because it is not possible to guarantee that safe options will be safe in every situation.

Usage is the actual proportion of people who use each particular technology or service options, based on well designed consumer surveys.

Indicators

Indicators that are related to agreed objectives, can be used at various stages of the project process, to allow effective analysis of the development and provision of services. Indicators are useful for each of the following aspects:

- Inputs (eg. financial, physical, human and natural resources available);

- Process (eg. community water plans agreed, committees formed, contracts let, hygiene courses held);

- Outputs (eg. pit latrines constructed, Increased numbers of water points provided, increased cost recovery); and

- Impacts (eg. average time to collect water reduced, poverty reduced, living conditions improved).

A variety of indicators can enable effectiveness to be tracked and questions to be addressed. For example, does the number of women on a committee have any impact on the services provided or on the equity of service provision?

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4. Effective: use by the majority in a health promoting, productive and environmentally sound manner

When setting targets based on indicators it is beneficial to consider defining quantity, quality and time factors for each indicator. For example, if the basic indicator statement is 'water samples meet standards', applying the quantity, quality and time factors, the target could be: '50 water quality samples analysed each month, and 98% meet national standards.'

Section 2

Data availability

2.1 Overview

There are ten national data sources that have a role to play in monitoring water and sanitation performance[5]. These are:

1. The Uganda Population and Housing Census (UPHC)

2. The Uganda National Household Survey (UNHS);

3. The Uganda Demographic and Health Survey (UDHS);

4. The Uganda National Service Delivery Survey (UNSDS);

5. The Ministry of Health, Health inspectors' annual sanitation survey (HIASS);

6. The Uganda Participatory Poverty Assessment Process (UPAP);

7. Directorate of Water Development Management Information System (DWD-MIS);

8. National Water and Sewerage Corporation management information system (NWSC-MIS);

9. Financial tracking studies; and

10.Technical Audits

The first five of these are regular national household surveys while the sixth is based on group discussions within 60 communities. Both types of data are well suited to asking those people who are meant to benefit from investments whether they have received the intended water and sanitation services. There are issues of how well the specific questions used in the surveys capture service delivery and the extent to which there is comparability across data sources (these issues are explored in Annex 1). The focus in all of these surveys is on the *outcome* of investments.

It is important to note that data from the latest census and the UNHS was not officially available as of August 2003 and therefore have not been used in this report. Note also that UPAP has been developed specifically for the PEAP revision process.

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5. There are certainly more data sources that could be drawn on such as ad hoc surveys that include a water and sanitation (watsan) component e.g. Kampala City Council Household Survey. The justification for only concentrating on regularly collected data is that the main concern is with developing a sustainable framework for monitoring past and future performance.

The DWD and NWSC management information systems capture the services provided (boreholes or piped connections for example) in rural areas and large towns respectively. This data can be combined with Census data to measure outcomes of investment in terms of services provided to households at a local level – down to the village – which the other data sources cannot. Unlike the survey or UPAP data, the users of water or sanitation services do not tell us how much they actually use. The focus is on provision of services to *potential users* in a given area. However, as data is available at a local level, it is possible to look at how services are distributed within districts and to explore how equitable service provision actually is.

Tracking studies and technical audits differ from the foregoing data sources as these are concerned with monitoring the flow of resources, efficiency of systems and delivery of the outputs of investment (boreholes sunk for example). They do not focus on the outcomes of this investment (e.g. people with safe water supply). In addition to playing an important role in identifying how services are being developed in each area and the associated cost, the results of these studies can be compared with the evidence of outcomes to help us identify where we are getting the best value for money.

Annex 1 summarises each data source in tablular format, highlighting their respective strengths and weaknesses. These tables can be used to enhance the effectiveness of surveys and performance measurement of service delivery.

2.2 Data Comparability

In order to identify changes in service provision using data collected by various sources over time, it is important to have consistent definitions of what is being measured (such as "safe" water or "improved water source"). This applies particularly to the household surveys as these address common water and sanitation issues (water source and type of latrine owned, for example). In practice, there is a tendency for basic definitions to vary across surveys and even across time for a given data source.

Sometimes there is an appropriate common definition (such as an agreed performance indicator for access to water) that all surveys can adopt. In other cases, there is no obvious "right answer" and there just needs to be some coordination between line ministries and UBOS to choose a common wording of the question. The review of each major data source in Annex 1 notes where there is consistency and inconsistency with other relevant Ugandan data sources. Some examples of conflicts within the current data sources are given in Box 2.1 below.

Data does not just vary between information sources; it can also vary over time. As an indicator is looked at in more detail and assessors gain experience, the accuracy of the information can improve. Thus trends over time need to be read in the light of the changing quality of the data.

2.3 Conclusions

Availability of data that is accurate, verifiable, relevant and timely is essential for good performance measurement. Some key conclusions are:

- A detailed review of the coordination of data between all the various sources would be useful

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Box 2.1. The difficulty of comparing existing data sources: an example

Both the annual UNHS and the biannual UNSDS provide valuable information on distance to and usage of improved water sources as well as sanitation facilities in the home. It would be very useful to compare the results of both surveys to check consistency and to bring together the data that is only captured in one or other of the surveys, e.g. the level of income poverty in a region (UNHS) and perceived service quality (UNSDS). Currently, however, this is impossible because each survey records access to water in a completely different way. For example, the UNSDS reports the distance and water collection waiting times for the **main** water source rather than separating out protected drinking and other sources used by the UNHS in 1995, 96 and 99.

- This would allow a revision of data collection forms, ensuring that all key data are collected, and reducing the burden of collecting less important data

- Agreement is needed on the definition of key terms such as 'improved water source' or 'safe water'

Subsequent sections of this report provide more in-depth reviews of data for particular aspects of performance. The findings are combined with more general issues set out in this section of the report to provide a more comprehensive set of recommendations for improved data collection – these are given in section 8 of the report.

Section 3

An overview of performance

'Performance' encompasses a range of issues that are important when assessing how well the water and sanitation sector is doing, both at the operational and strategic levels. International definitions vary, but 'performance' commonly includes each of the three following aspects:

Table 3.1. Aspects of performance measurement

Aspect of performance	Definition	Example
Economy	Obtaining inputs of the right quality at the right price	Procurement of quality spare parts for water pumps at the lowest possible cost
Efficiency	Converting inputs into outputs with as few resources as possible	Construction of as many functional bore holes as possible from a given level of investment
Effectiveness	Achieving desired objectives	Adoption of improved hygienic practices

In most countries and in most sectors, performance measurement has historically focused on the review of inputs and outputs, separately, and less has been done to assess the relationship between inputs and outputs (efficiency) and to assess whether outcome and impact objectives have been achieved (effectiveness). This report reviews a broad range of performance issues across in the Uganda water and sanitation sector.

Improved performance measurement will have the following benefits:

* More focused and better integrated performance data

* Easier identification of good and poor performance

* Strengthening of mechanisms for identifying the causes of good or poor performance

* More focused institutional roles for assessing and acting on sector performance

* Integration of all the 'tools' of performance measurement, e.g. operational monitoring, value for money review, technical audits, financial tracking studies, evaluation etc.

* Improved information for assessing the effectiveness of water and sanitation policy and for enabling better policy making

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• A more credible system for arguing for more resources for the water and sanitation sector.

A separate draft performance measurement framework report for the Uganda water and sanitation sector is being developed, as a means of increasing the prospects of achieving the benefits highlighted above.

3.1 Performance themes

For performance measurement to be improved, there is a need to review current approaches and to learn from best practice elsewhere. Performance in the rural water and sanitation sub-sector, for example, is currently primarily measured using the DWD database which focuses mainly on "coverage". Coverage is calculated based on new water points installed multiplied by a theoretical figure of numbers of users for each type of technology – 300 for tubewells, 200 for springs. The 300 for boreholes is based on the number of people that could use a facility drawing 20 litres per day if the pump is pumped for 6 hours. These are therefore 'assumed' coverage figures. NWSC also use coverage figures based on assumed use for water and sanitation in large towns.

This is a good approach for project planning purposes but it is not ideal for assessing actual usage of service options. It does not take into account density (i.e. whether the same people are being served twice) and does not account for all the other possible thematic parameters e.g. functionality.

The following 10 themes have been adopted as the most relevant for water and sanitation performance measurement in Uganda.
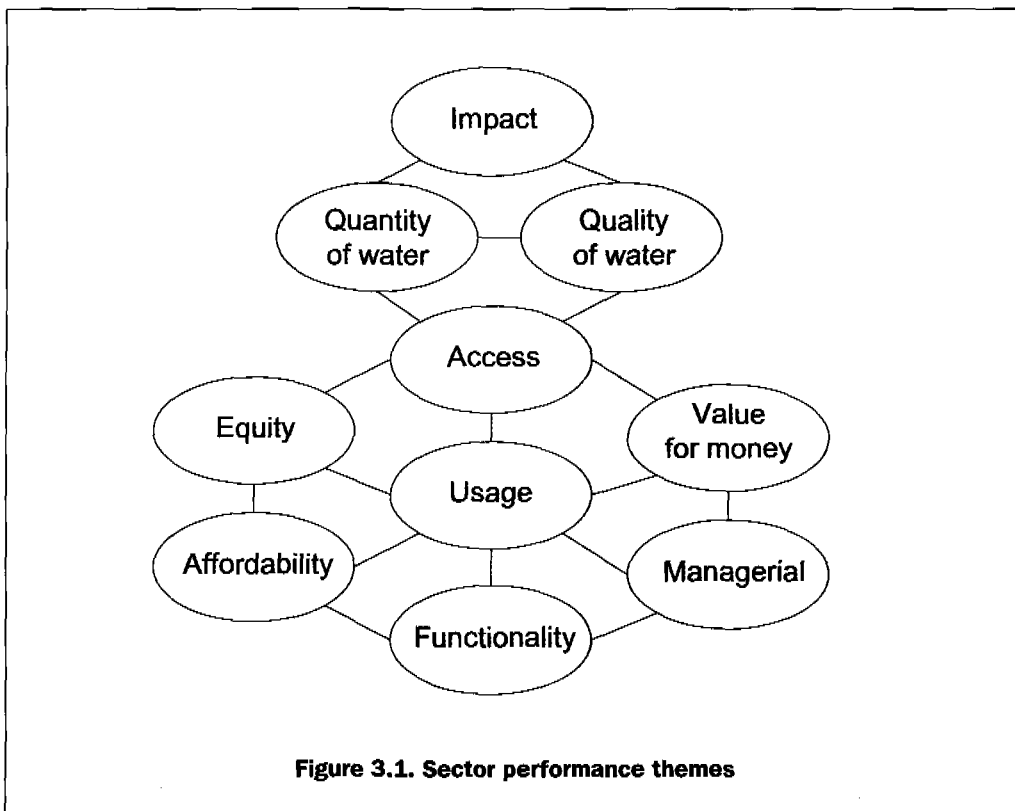
Figure 3.1. Sector performance themes

These broad performance themes are defined as:

- Impact (or overall importance) – this assesses the 'big picture' of water and sanitation initiatives such as the effect on improving the health of the population and productivity

- Access and usage – these are inter-related themes that assess whether water and sanitation facilities are located in places where they can and are used

- Quantity and quality – these measure the extent to which there is enough water resource of the right quality to meet sector needs

- Equity and affordability – these consider whether facilities are fairly distributed and whether there are within the means of the population

- Functionality and managerial – these can be termed 'operational issues' as they are necessary to ensure the operation of water and sanitation infrastructure and the reliability of services

- Value for money – this assesses whether investments in the sector are delivering the results that should be expected

'Coverage' has not been adopted as a separate theme in itself. . This is essentially because it is considered as a broader term, encompassing various of the other themes, particularly access, usage, quantity, quality and functionality. Similarly, 'sustainability ' has not been selected as a separate theme – this includes elements of quality, value for money, affordability, functionality and possibly other themes as well. 'Poverty' has not been chosen either, but this relates closely to the themes of equity and affordability.

Performance indicators for each of the above themes are still being developed as part of the performance framework development assignment[6].

Key parts of this assignment recommend the:

a) Agreement of 3 to 5 'golden' sector indicators – these are the most important indicators for assessing performance that could be cascaded down to the District level to assess local government performance,

b) 10 to 15 sector indicators covering all the ten performance themes to allow a broader assessment of sector performance,

c) 5 to 8 key indicators for each sub-sector, based on a mixture of performance themes.

3.2 The range of potential impacts

There is clear evidence around the world of the health and economic benefits of improved water supply and sanitation for households and individuals. Table 3.2 highlights the key effects or adverse impacts of inadequate water supply and sanitation on poverty dimensions such as household income, health, education and gender/social inclusion. Low income communities with poor services are particularly prone to the adverse effects listed in the table.

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6. The development of a performance framework development is being carried out in parallel with the writing of this report

Table 3.2. Linkages between water & sanitation and poverty[1]

Poverty Dimensions	Inadequate Water, Sanitation & Hygiene – Potential Key Effects
Income	High proportion of household budget used on obtaining water Reduced income earning potential due to: Poor health Increased time spent on collecting water Less opportunity for businesses requiring water inputs
Health	Water and sanitation related illnesses Stunting from diarrhoea caused by malnutrition Reduced life expectancy
Education	Reduced school attendance by children (especially girls) due to ill health, lack of available sanitation or water collection points
Gender and social inclusion	Burdens borne disproportionately by women, limiting their entry into the cash economy.

1. Source: Adapted from C.Bosch et al, 'Poverty reduction strategy sourcebook - Water, sanitation and poverty chapter', World Bank, 2001

These aspects listed in the table are important when considering the PEAP objectives: Pillar 3 – Actions, which directly increase ability of the poor to raise their incomes and Pillar 4 – Actions which directly improve the quality of life of the poor.

Effective programmes that focus on water supply and sanitation services for all income groups can have positive contributions to alleviating the problems highlighted in Table 3.2, particularly when combined with appropriate hygiene promotion. Demonstrating that such benefits are the results of specific water and sanitation programmes can however, be difficult, because many other factors such as education and nutrition, also contribute to these benefits.

Despite difficulties in measuring all the beneficial impacts of water and sanitation programmes, the Government of Uganda has recognised the importance of maintaining investments in this sector as a means of poverty reduction.

The intention of the subsequent sections of this report is to demonstrate what can currently be measured and what it would be most useful to measure in future. This is not meant to be a definitive statement of performance at this stage, but more of a standard for future performance measurement. This can only really be done when a more complete performance framework, including institutional responsibilities, has been adopted.

Because it is difficult to demonstrate causality between water and sanitation service improvements and poverty reduction, the report does not attempt to do so. However this should be the focus of indepth studies in future and should tie in with work by the PMAU in MoFPED.

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Section 4

Access to and usage of water and sanitation services

4.1 Introduction to the themes

A number of water and sanitation policy targets are specified in terms of household access to improved water or sanitation facilities. Few refer to actual usage. This section of the report identifies the main access and usage indicators that are available and reports progress against them. It is often necessary to consider the changes in rural and urban watsan progress in isolation of each other as there are genuinely different trends and causal factors.

4.2 Performance indicators

There is currently a wide range of data sources that provide data for access and use indicators. Table 4.1 shows the indicators for these performance themes that are currently reported in national surveys.

The most appropriate indicator for measuring access and usage at present is:

- % of population within 1.5 km (for rural) and 0.5km (for Urban) of an improved water source with a supply of at least 20 l per capita per day

However the target of 1.5km and 0.5km may need to be reviewed as, firstly, there is international evidence that suggests that per capita consumption of 20l/day cannot be obtained if water has to be carried 1.5km[7]. Secondly, while an urban target of 0.5km is commonly cited in the international literature, the target in Uganda National Water Policy is actually 0.2km.

For urban households, the percentage within 0.2 or 0.5km of an improved water source target should be considered alongside average distance and time taken to collect water from improved sources[8]. This will help identify a situation where people are relatively close to an improved source, but cannot use it as queues are too long. In addition, very recent research on the Ugandan urban water sector has suggested that it is necessary to disaggregate consumers by piped, yard tap, neighbour, water kiosk/standpost or other

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7. Evidence reviewed by Billig, Bendahmane and Swindale (1999).
8. This is also consistent with two key indicators from the WHO Global Water Supply and Sanitation Assessment 2000 Report:
   % with 20L per capita/day supply within 1 Kilometre
   % with 20L per capita/day and <30 minute total collection time.

Table 4.1. Indicators currently reported in the National Surveys

Survey Indicator	UNHS	UPHC	UDHS	UNSDS	HIASS	DWD-MIS
Access to improved water	$95,96^{1a}$	91^2		2000^4	2002^2	$91\text{-}2000^5$
Usage of improved water	$99, 02^{1b}$		2000^3			
Time taken to collect water	95,96		$95,2000^7$	2000^8		
Distance to water source	95,96,99, 00					
Litres collected	95,96,99		95,2000	2000		
Availability of improved water	$95,96,99^6$			2000		
Latrine access	92,95,96,99	91	95,2000	2000		
Latrine use	02					
Access to functioning latrine					91,96,98,00 02	

Table Notes:
1a ACCESS to improved water sources = piped, boreholes, protected wells/springs
1b USE of improved water sources = piped, boreholes, protected wells/springs
2 ACCESS to protected water source=piped, borehole, protected spring, other protected
3 USE of improved drinking water source = piped, borehole, gravity flow, rain or bottled water + protected well in 96 & 2000
4 ACCESS to improved water supply = piped, borehole or protected well/spring
5 ACCESS to protected sources installed=springs, wells, boreholes, gravity feed x assumed users per source/population [rural & small towns]
6 Indirect information on "unreliability of source" is available as a cause for using unprotected water sources.
7 Median collection time and % with < 15 minutes collection time reported
8 Waiting time for water collection only

source[9]. This is clearly necessary for planning and could be very useful for monitoring progress in the sub-sector in future.

4.3 Analysis of access to improved water sources within a certain distance

National level

As Figure 4.1 below shows, there has been a significant increase in the proportion of households in Uganda that have access to improved ("safe") water sources over the past decade. The Census and NHS data is consistent and indicate that access has risen from around 26% in 1991 to 68% in 2002. Taking into account distance travelled (discussed in the section below), the Government looks certain to achieve the policy target of "65% of the population in Uganda are within 1.5 km of safe water by the year 2005". However, as noted below, other targets will be more difficult to meet.

9. Sansom et al (2003)

Although data is not available for each year, it is straightforward to plot a trend through the 1995, 1996, 1999 and 2002 UNHS data (using a two year moving average). This suggests that after rising rapidly from 1991-95, access to improved water sources declined from 1995-97 but has again risen rapidly since then. These trends are shown in Figure 4.1.
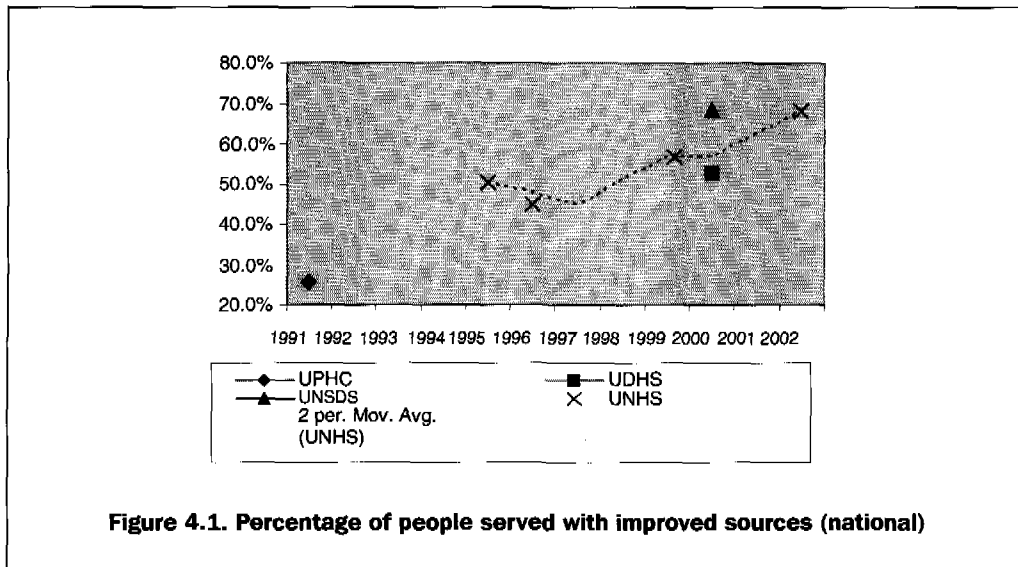
Figure 4.1. Percentage of people served with improved sources (national)

Rural

Disaggregating the results by rural and urban sectors reveals how this national trend is made up. Figure 4.2 illustrates access to improved water sources for rural households.
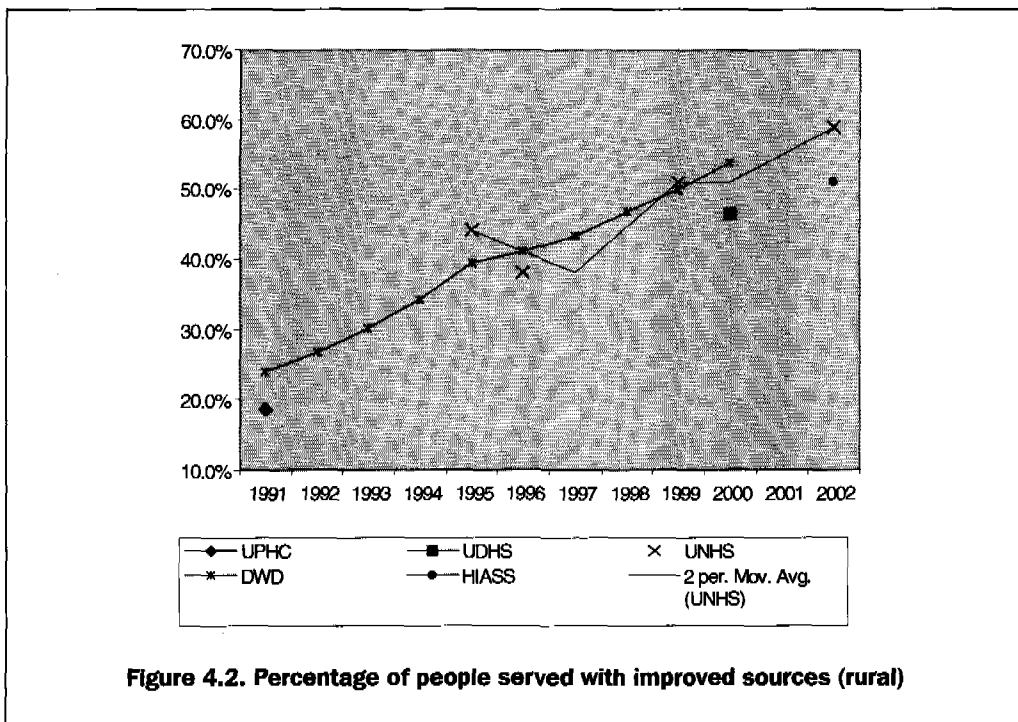
Figure 4.2. Percentage of people served with improved sources (rural)

The two sources of data that can be analysed over a number of years – DWD and UNHS provide a convincing account of increased access to improved water in rural areas – rising from coverage of little more than 20% in 1991 to almost 60% in 2002. The other data sets also suggest very large increases in accessibility but that current levels may be closer to 50% than 60% (although the HIASS data is not compiled from household survey interviews). There is certainly a strong positive trend in rural water coverage but whether the Government will be able to reach the stated target of "Sustainable safe water within easy reach of 65% of the rural population by 2005" depends both on how "easy reach" is defined and which data sources are used.

While the UNHS suggests that access to safe water fell in 1995/6 – 1996/7, the DWD data indicates a slowdown in growth over this period. This is likely to reflect the different way in which coverage is measured (as any switching from improved to unimproved sources will not be captured in the DWD data). Sampling and non-sampling errors, however, cannot be ruled out as being the cause. It does illustrate the value of using multiple sources of data to monitor progress (triangulation) and of monitoring annually.

Looking at the 1999 UNHS data, in rural areas, households that do not use a protected water source say the main reason is that one is simply not available (58%) and 30% say the reason is that the protected source is too far away. Unreliability of water supply accounts for only 3% of non-use.

In rural areas, larger families are more likely to have access to improved water sources and the bigger the household size, the *nearer* is the drinking water source. People that travel a long way to collect water are less likely to have improved water.

Urban

Figure 4.3 illustrates changes in access to improved water sources for urban households.

Figure 4.3. Percentage of people served with improved sources (urban)
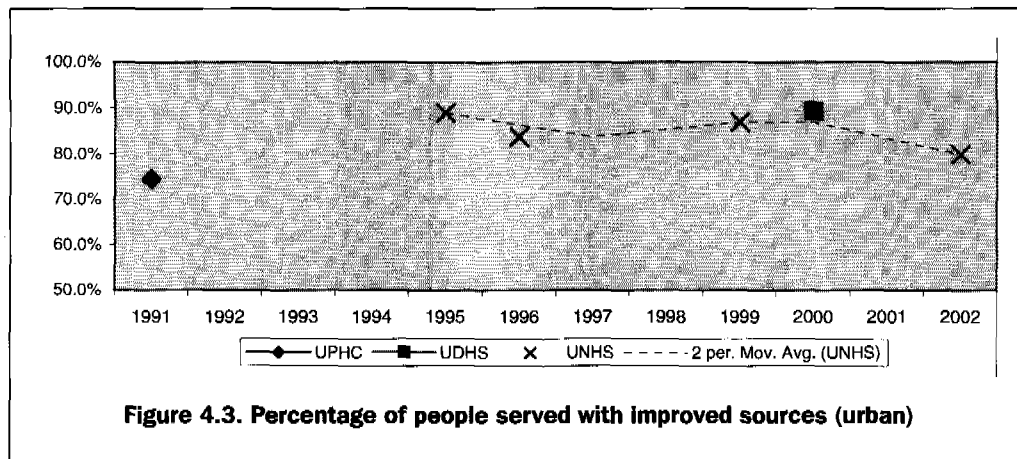
In contrast to the rural sub-sector, there have been much smaller gains in access to improved urban water sources. Indeed, it appears that after rising from 75% access in 1991 to nearly 90% by the mid-1990s, access rates have fallen back to around 80% today. This probably reflects the rapid growth in peri-urban and informal urban settlements that have outpaced the supply of improved water points in these areas. Out of these only 16-

18% of urban households have their own piped water connection and around 28% rely on standposts (public taps) The rest use point water sources e.g. springs, boreholes, etc.

Sansom (2003) reports that there is a growing trend away from standposts in favour of yard connections. This is a general national trend. It will be interesting to note how this will impact on access to services. The high rates of urban access to "safe water" reflect a significant reliance on protected springs that are, in practice, liable to be contaminated in informal settlements in urban areas, especially Kampala. So while UNHS data may indicate that the sector target of "Sustainable safe water within easy reach of 80% of the urban population by the year 2005" is likely to be met, the decline in effective access in the urban sector should be addressed.

The USDS of 2000/1 provides a potential way of checking on this apparent decline in coverage since the mid-1990s. This survey included a very useful question on whether respondents felt that the provision of clean water in their community had changed over the past five years. Unfortunately, the response is only reported at a national level (a small majority says coverage is the same (39%) or has worsened (14%)). If it were reported for rural and urban areas it would be a useful check on the UNHS data.

Returning to the 1999 UNHS, our analysis indicates that in urban areas, a wide variety of reasons are given for why the protected water source is not used but the main ones are as for rural households: a protected source is not available (36%) or that it is too far away (33%). Unreliability accounts for 5% of non-use.

Larger families are also more likely to have improved water sources, but they travel further to collect water. In general, in towns, people that travel further to collect drinking water are also less likely to collect safe water (suggesting that people do not have a choice).

4.4 Analysis of time to improved water sources

Time taken to collect water is a specific indicator of access. Distances may be short, but if terrain is difficult or queuing time is long, then time taken to collect water can be longer than expected. Time to collect has a correlation with the amount of water collected and therefore influences usage.

The UDHS reports two measures of the time taken to go, collect water and return (abbreviated as "collect water") in 1995 and 2000:

- The median time; and

- The proportion of households taking less than 15 minutes.

Rural
There was very little change in rural water collection times between 1995 and 2000 and the median collection time remained at 30 minutes. Given that around 85% of households are rural, the national figures also changed very little over this period. These figures are consistent with our analysis of 1996 UNHS data which also indicates a median figure of 30 minutes for rural households. However, the mean figure of 40 minutes suggests a skewed distribution with some rural households taking a lot longer than 30 minutes to collect water.

Given the objective of monitoring performance, it is certainly worthwhile including a regular question on "how long it takes to collect water" – ideally annually or bi-annually. What is less clear is if the indicator of performance should be "% collecting within 15 minutes". The WHO Global Water Supply and Sanitation Assessment 2000 Report uses "% collecting within 30 minutes" as the appropriate indicator.

Urban

As Figure 4.4 and Figure 4.5 show, the median (typical) time taken to collect water fell significantly for urban households between 1995 and 2000 (15 to 9 minutes) and this led to 13% more urban households obtaining their water in less than 15 minutes (50% to 63%). Given that urban access to improved water worsened over this period, the time saving may reflect a higher proportion of households using "unsafe" but nearer water sources. It is therefore important to consider the water collection time statistics together with access measured by distance.

Figure 4.4. Median time to collect water

Figure 4.5. Percentage less than 15 minutes to collect water
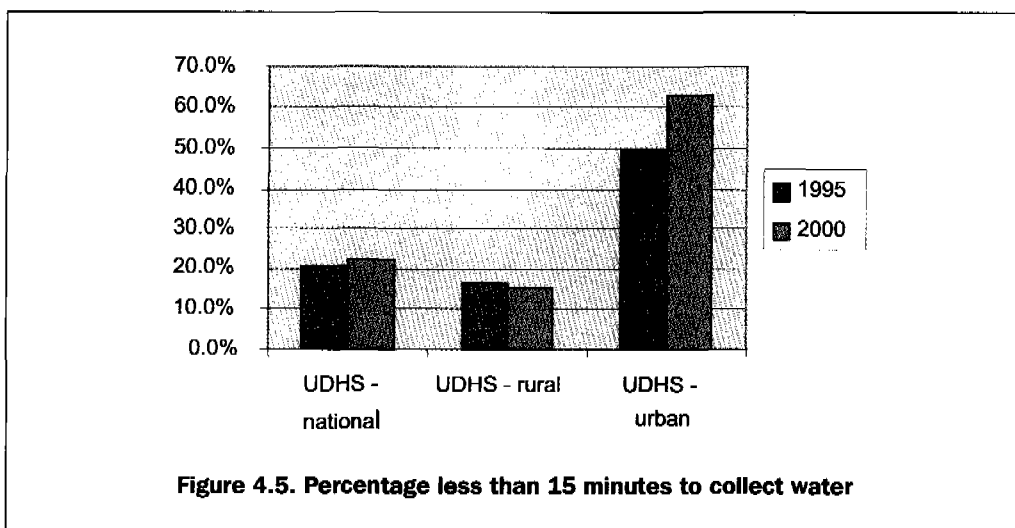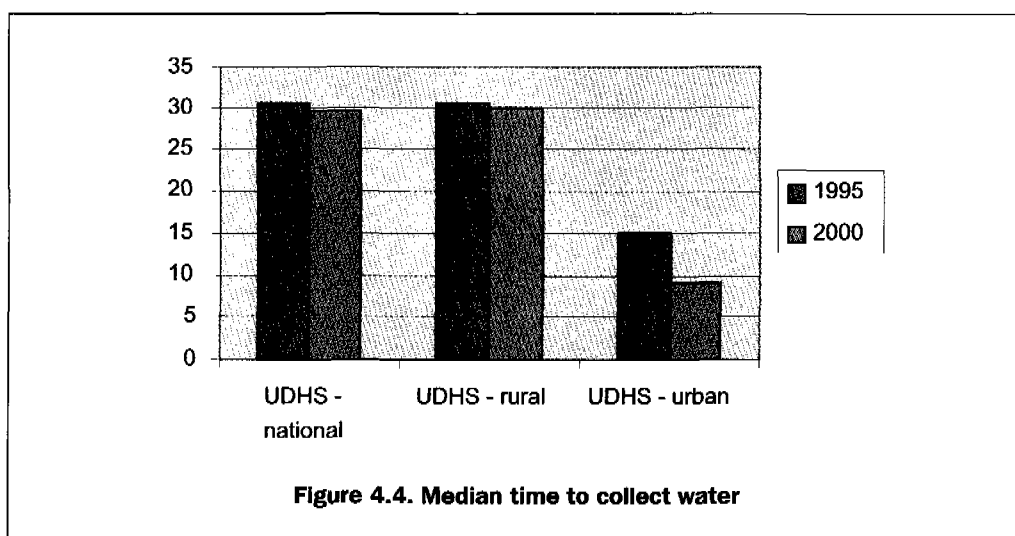
4.5 Analysis of distance to improved water sources

National

Data on distance to drinking and other water sources was collected in the UNHS in 1995, 97 and 1999 but was dropped from the 2002 survey as there was no evidence that distance data had been analysed. This is a pity as "distance" combined with "time taken to collect water" indicators would provide extremely useful performance monitoring information. It is also worth noting that the 1999 UNHS included a recall question on the distance of the water source in 1992 (if it was different the one currently used). This could be used to derive a distance to water source for 1992 based on recall (as NEMA appears to have done in their Status Report for Uganda 2002), but recall of distances travelled seven years previously is unlikely to be reliable.

Distance from water source data does not appear to have been correctly captured or entered in the UNHS as the mean distance to drinking water source from the raw data is:

1995	1996	1999
0.925487	1.714948	114.809

UBOS will need to verify this data.

The 1.5 km distance target does seem to be of limited value. International evidence suggests that it is too far for those carrying water on foot to collect 20l per capita and analysis of the 1996 UNHS data indicates that more than 85% of households were less than 1.5 km from their water source. Perhaps surprisingly, 64% were within 0.5km. The key problem is absence of safe water sources in the village and not that these are just too far away.

The 2000 UNSDS reports mean distance to the main water source in the wet and dry seasons as 1.165 km and 1.474 km respectively. This suggests that the UNHS should record distance and time taken in both seasons if the respondent feels that there is a significant difference. Otherwise, there is a risk that variation in performance between years will simply reflect the time of year at which the survey was conducted.

Rural

Figure 4.6 illustrates average distance travelled to improved water for rural households for 1992-99. Even allowing for the fact that 1992 data is not really comparable[10] and that 1997 data reflects a very dry year (especially in the East), rural households did seem to be travelling further to improved water in all regions apart from the North.

Urban

The average distance travelled to safe water for urban households for 1992-99 is shown in Figure 4.7. In contrast to rural households, over the period 1996-99 when distance travelled fell (for which data should be reliable), average distances travelled by urban households seems to have fallen. Given that access to safe water fell for urban households

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10. The 1999 UNHS included a recall question on the distance of the water source in 1992 (but only if it was different from the one currently used). This only applies to a sub-group of households and recall of distances travelled seven years previously is unlikely to be reliable.

Figure 4.6. Average distance travelled to safe water - rural
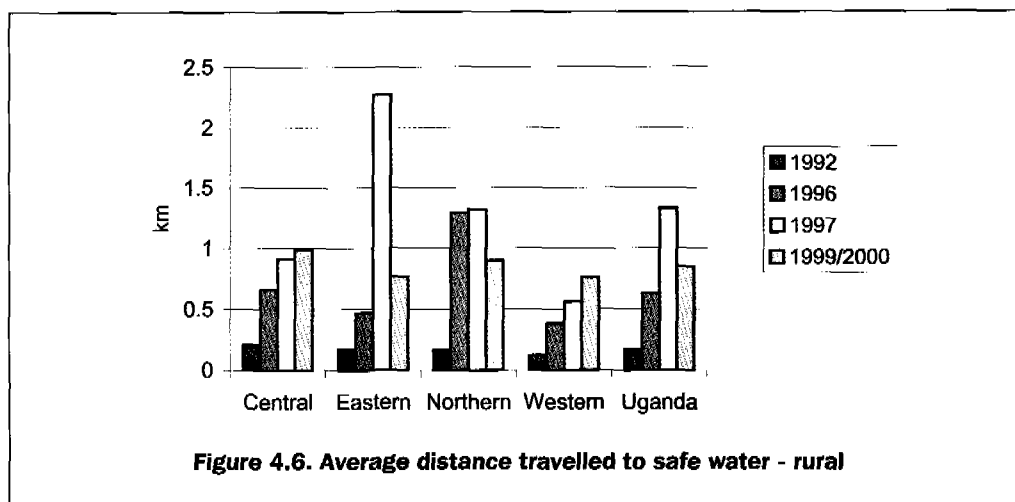
over this period and the time taken to collect water also fell, this may actually reflect increased use of unsafe sources of water.

Figure 4.7. Average distance travelled to safe water - urban
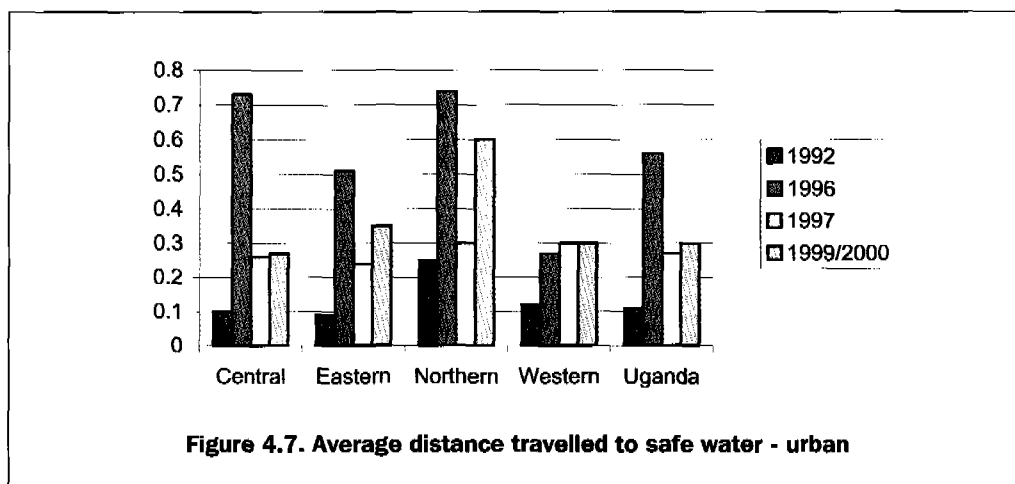
Source: NEMA (2002) analysis of UNHS data[11]

It is also worth noting that the assumed target of a safe water supply within 0.5km for urban households is easily met in all regions apart from the Northern region. Those that are using a safe water supply are typically travelling less than 300 metres. The major problem appears to lie with those urban households that do not have access to safe water rather than those that are travelling more than 0.5km to collect safe water.

4.6 Analysis of toilet/latrine use

Most national survey questions in Uganda have asked whether a household has a pit latrine of a given type or a flush toilet. A small number (including the 2002 UNHS) have asked whether particular types of latrines are used – which typically results in a lower level of confirmation as some households will own a crude pit latrine but will not

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11. Note the disparity between distance to source for the northern region in this chart with the data quoted in Section 6.7.

regularly use it. Finally, the HIASS data is based on health assistant visits to record functioning pit latrines that the households say they use.

National

Despite the change from "ownership" to "use" of a pit latrine in 2002, the UNHS data shows a clear trend of improved sanitation access (see Figure 4.4). There appears to have been some levelling off between 1995 and 1999 but there has been a strong improvement since then with estimated access from this data source exceeding 90%.

While the HIASS data shows much lower levels of effective access (around 55%), a very similar trend to the UNHS data can be seen – access does seem to have risen - particularly between 1997 and 2002. This positive finding is further corroborated by the 2000 UNSDS which asked respondents if they felt that useable latrine access had improved in their community in the past five years: 65% said that it had[12]. Figure 4.5.
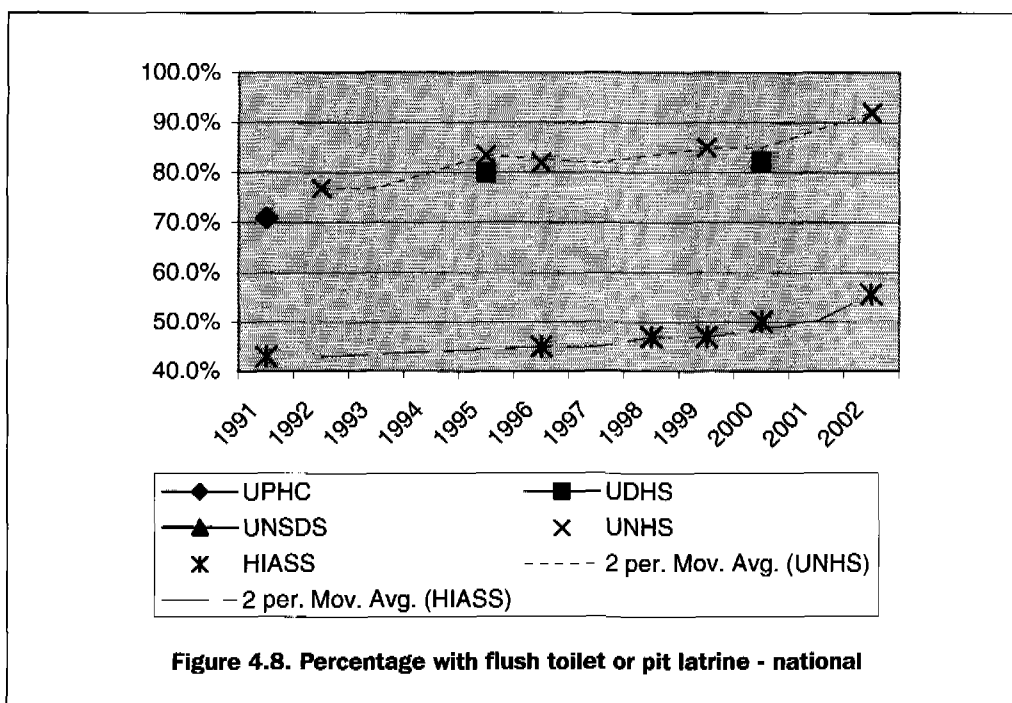
Figure 4.8. Percentage with flush toilet or pit latrine - national

The difference in access levels produced by the national sample surveys and the HIASS partly reflects the elimination of un-useable (full) pit latrines. It also seems likely that respondents do not like to admit that they mainly use the bush or fields when they have a pit latrine at home. The 2000 UNSDS provides circumstantial evidence to support this theory as 46% of respondents said that some households in their neighbourhood used the bush, field or lake because they did not have a toilet. Consequently, the household surveys overstate the level of effective latrine use.

At the same time, more could be done to increase the reliability of the HIASS data. Funds should now be available to ensure that health assistants actually visit the areas they are meant to report on. Intuitively, this type of census is much more likely to be reliable in

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12. The UNSDS data is not, unfortunately, reported by rural and urban sectors. It would be useful to have this indicator by sector to triangulate with the results from the various surveys reported below.

rural areas (with homesteads that are visited) rather than high population density urban areas in which a census of latrine facilities is very difficult to carry out as a by-product of general environmental hygiene work.

Rural

The UNHS data provides evidence of a strong increase in sanitation access that is effectively driving the national statistics we have discussed above. Rural pit latrine access is reported to have risen from below 75% in 1992 to nearly 90% in 2002. UDHS data in 1995 and 2000 confirms an upward trend although at a slightly lower level. The 2002 HIASS data (the only year we have for the rural sector separately) indicates that effective use is very much lower –around 55% - for the reasons already mentioned, refer to figure 4.9.
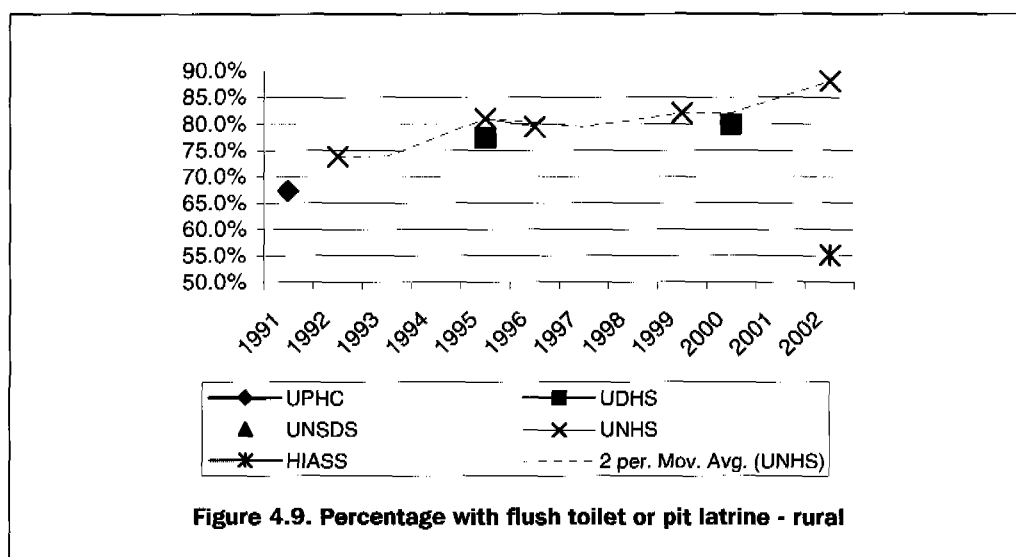
Figure 4.9. Percentage with flush toilet or pit latrine - rural

Urban

In contrast with the rural sector, Figure 4.10 shows that urban sanitation access rates have probably not increased since the mid-1990s and may even have decreased. This would be consistent with the rapid growth of peri-urban settlements during this time. Nonetheless, claimed latrine use remains above 90%.

It would certainly be useful to have field-tested HIASS data to give an indication of effective sanitation access – at least in some key comparator districts.

4.7 Conclusions

It is possible to use existing household survey data to monitor progress in access to and usage of watsan facilities. The results from this exercise show that some policy targets will be met. For example, the Government looks certain to achieve the target of "60% of the population in Uganda are within 1.5 km of safe water by the year 2004". This reflects a strong performance in rural water supply with household survey data showing access rising from little more than 20% in 1991 to almost 60% in 2002. This is a genuine achievement, although it should be noted that the average time taken to fetch water did not fall for the period analysed (1995-2000) and the average distance travelled actually rose.

Figure 4.10. Percentage with flush toilet or pit latrine - urban
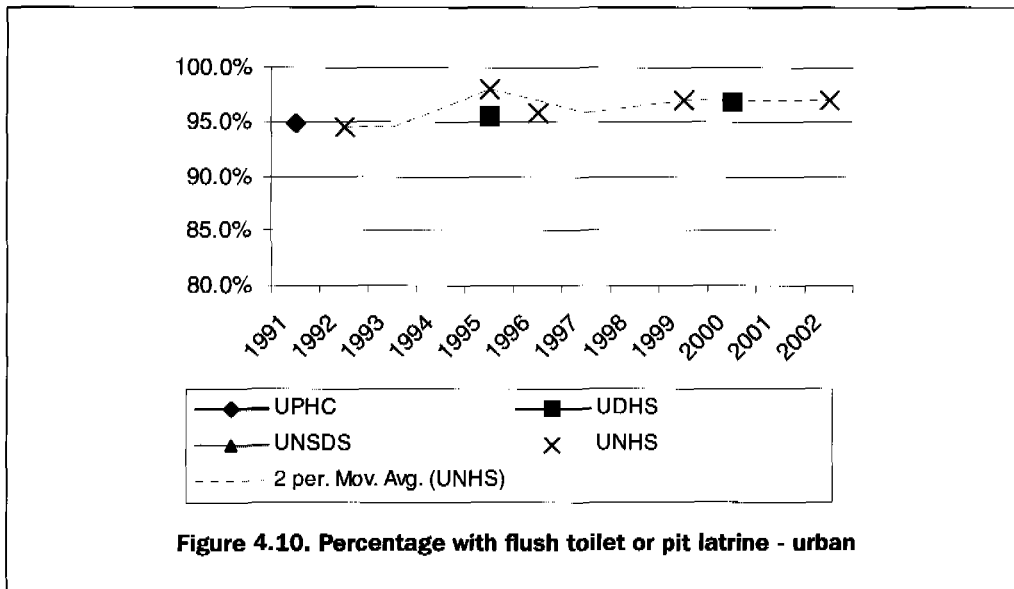
Attention now needs to turn to meeting more demanding targets which are likely to involve a review of the 1.5km target, the target proportion of the population served and consideration of the establishment of goals for time spent collecting water. Also, the availability of supply and the daily per capita water supply targets could be reviewed and linked in with the access and usage targets

There does not appear to have been such progress in the urban water sector. Indeed, after rising from 75% in 1991 to nearly 90% by the mid-1990s, access rates have fallen back to around 80% today. Moreover, the relatively high rates of urban access to "safe water" reflect a significant reliance on protected springs that are, in practice, liable to be contaminated in informal settlements in Kampala. So while UNHS data indicates that the target of "Sustainable safe water within easy reach of 80% of the urban population by the year 2005" could be met (depending on how we interpret "sustainability and easy reach"), the decline in access in the urban sector is worrying. The average time taken to fetch water and distance travelled both appear to have fallen for urban households over this period which is consistent with an increased reliance on convenient but unprotected water sources.

A divergence between rural and urban sector progress also emerges when use of sanitation facilities (latrine use) is analysed. Progress appears to have been made by rural households while the urban situation has probably deteriorated. The policy target of "65% of households having good sanitation facilities by 2005" is likely to be met if these facilities are defined as pit latrines (and the tiny proportion of flush toilets) rather than being defined as 40% with no latrines. Unfortunately, potential access to a latrine does not equate to use of properly constructed and functioning facilities. The HIASS data suggests that if we use this more demanding (and technically sound) definition the policy target will be missed by a considerable margin.

More could be done to increase the reliability of the HIASS data re. sanitation. Funds should now be available to ensure that health assistants actually visit the areas they are meant to report on. Intuitively, this type of census is much more likely to be reliable in

rural areas (with homesteads that are visited) rather than high population density urban areas in which a census of latrine facilities is very difficult to carry out as a by-product of general environmental hygiene work.

Household survey data already allows "improved water point use" as well as "access to improved water" to be measured. However, given the multi-dimensional target for access to water, it would be useful to monitor progress against a composite indicator of distance, functioning, time taken and per capita consumption (much in the same way that the UN Human Development Report uses an index to capture quality of life rather than a simple measure of per capita income). This could form one of the key 'golden indicators' for the sector that are referred to in section 3.

Section 5

Quantity and quality of water

5.1   Introduction to the themes

In the Uganda context water is provided for the following purposes:

- Water for domestic use, to be used for human consumption, washing, cleaning and other domestic chores, and subsistence agriculture.

- Water for production purposes, such as agriculture, livestock, aquaculture and for rural industries.

The quantity and quality of water requirements varies in each category. Sector reform studies recommend that water has to be provided as part of a demand-responsive approach. However, these aspects of demand are not always clear, as users may know the current usage, without knowing how a change in supply will affect their future use. Particularly in the case of water for production, there is a need for water professionals to advise users based on their experience in similar situations. Dividing water in to domestic and production may not suit the needs of the user, where domestic water supplies are used for productive activities, such as small scale agriculture. This has an impact on the potential of water to improve the economic status of poor people.

The quantity of water for domestic consumption is set at a minimum of 20 litres per person per day (excluding wastage). For urban areas the design criteria may vary depending on the level of service to be provided. The actual level of consumption will depend on several factors, the main one being convenience of the supply. Distance travelled, time taken to draw the water, type of service level and energy spent in drawing the water all contribute to the convenience. Other factors are the cost of the supply, and affluence level of the household.

Water quality demand is even more difficult to quantify, as many of the users are unaware of all the factors that affect quality. Users tend to be more interested in aesthetics such as taste and colour and appearance than more important aspects such as bacteriological quality. The water professional can provide advice to users on what is feasible and acceptable. The professional advice could be based on new World Health Organisation standards, or the National standards for potable water (1995) quality.

The picture is further complicated by people's use of several sources of water, often selected for different uses and available at different times of the year.

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5.2   Performance indicators

Sample performance indicators for quantity are:
* Average daily per capita consumption

* Percentage increase in amount of water provided to meet dry season water demand for livestock, irrigation and/or rural industries

* Percentage of change in ground water and surface water levels over a given time

* Percentage of total estimated needs (productive and domestic use) that are met

* Percentage of consumers that are satisfied with quantity of water provided.

Sample performance indicators for quality are:
* Percentage of water samples that comply with national water quality standards

* Percentage of improved water sources that comply with national water quality standards

* Percentage of industrial and municipal effluent samples that comply with national effluent standards

* Number of days samples were taken per year

* Percentage of consumers that are satisfied with the quality of water provided

* Number of water samples taken per year.

Further work is required in prioritising and agreeing suitable indicators, so that performance in these two thematic areas can be assessed in a structured way.

5.3   Quantity of domestic water supply

The 1995, 1996 and 1999 UNHS collects information on how much water is collected/ used each day per household.

National level data
As Figure 5.1 below shows, the typical (median) person reported using 12 litres of water in 1996 and 1999 (corresponding to household use of 60 litres per day). Mean consumption appears to have fallen slightly over the period but the recorded decrease of 3% could easily be due to measurement error. The average per capita consumption is well below the policy target rate of 20 litres/day, which is a cause for concern. As there are doubts about the accuracy of these figures, it would useful if more in-depth surveys were conducted to verify or update the data.

Rural
Rural water consumption per capita per day fell slightly between 1996 and 1999 to stand at just under 13 litres, as shown in Figure 5.2. This is clearly well below the target level of 20 litres/person/day. International evidence suggests that distance from source is an important determinant of the amount consumed. What is clear is that consuming too little water contributes to malnutrition and this is a major cause of disease and death[13].

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13. Prüss, Kay, Fewtrell and Bartram (2002) note that the global impact of water scarcity on the disease burden is more than double that from diarrhoeal disease.

Figure 5.1. Litres per capita daily water consumption (national)[1]
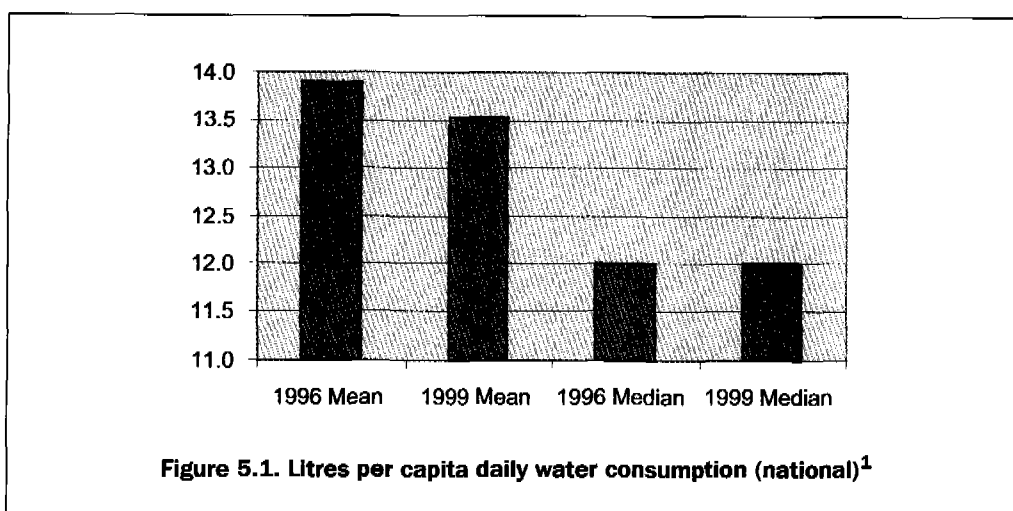
1. Source: UNHS

For this reason it is worth monitoring per-capita water use particularly, as we shall see later in section covering equity issues, for poor rural households.

Figure 5.2. Litres per capita daily water consumption (rural)[1]
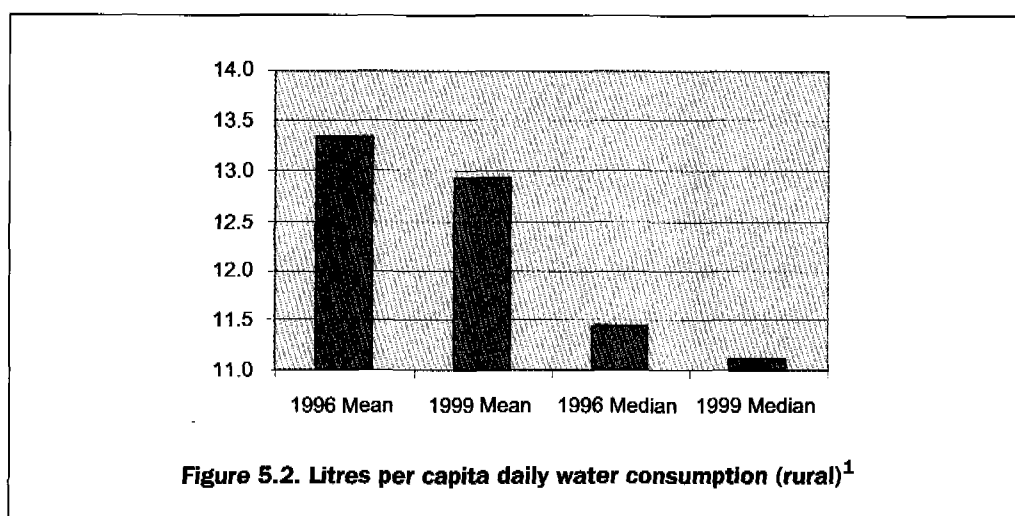
1. Source: UNHS

Urban

As shown in Figure 5.3, the UNHS for 1996 and 1999 indicates that urban water consumption is below 17 litres per capita per day. While this is around 30% higher than for people in rural areas, it is low by international standards. Part of the explanation is that only around 16% of urban households have a piped connection — these are the people who are likely to consume significantly larger amount of water. The remaining majority of urban households without pipe connections are likely to have relatively low consumption. The majority may also use water at alternative point sources such as springs and wells for clothes washing, where it would be difficult to estimate their consumption. Hence, the 17 litres per capita per day may be an under-estimation of total water use.

Figure 5.3. Litres per capita daily water consumption (urban)[1]
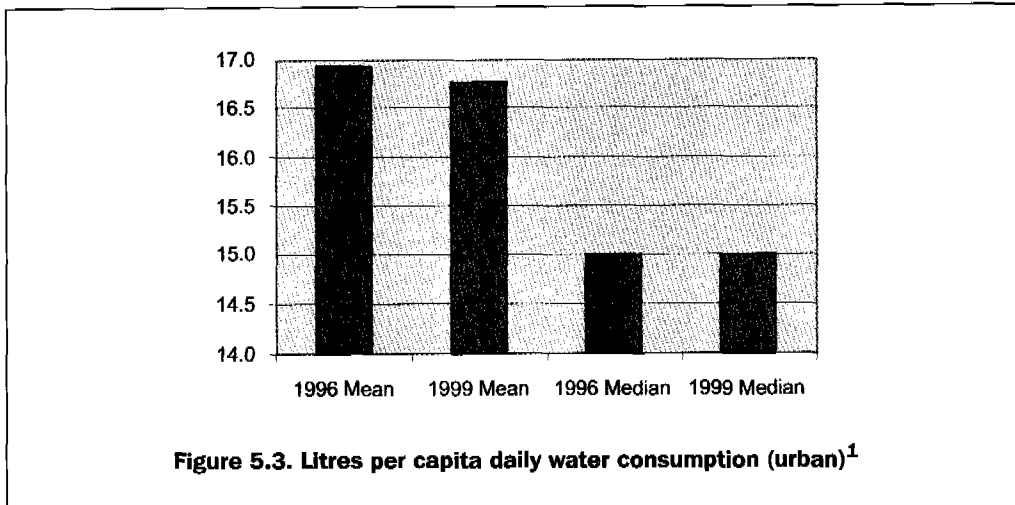
1. Source: UNHS

NWSC data

In line with the Performance contract between NWSC and Government of Uganda, NWSC provides annual data on water produced in larger urban areas. Figure 5.4 shows the trend over the past six years of bulk water produced in 16 NWSC towns.

Figure 5.4. Trends in NWSC bulk water supply[1]
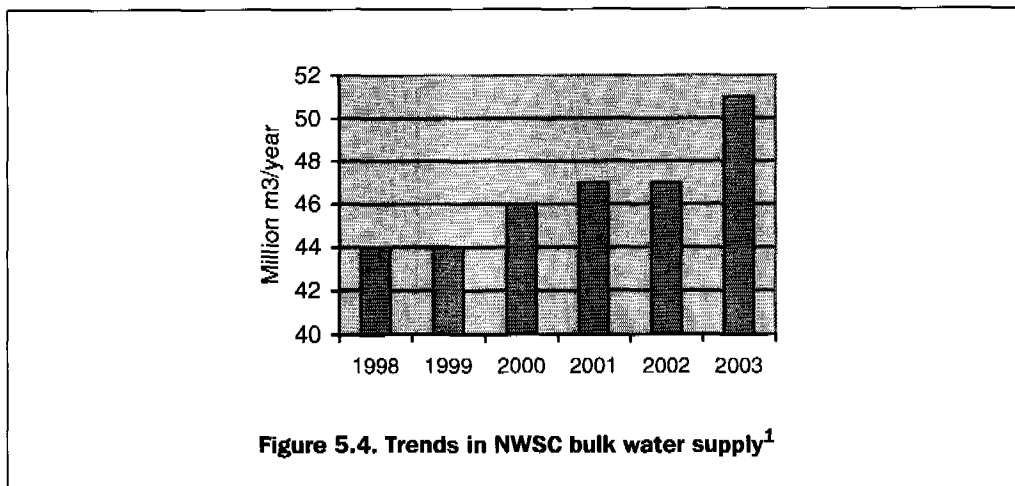
1. Source: NWSC Corporate Services Department

In addition to increasing the volume of treated water available, NWSC has also been actively providing more new connections, as a means of increasing the quantities of water supplied to its customers. In 2001/02 an encouraging 14% growth in new connections was achieved, plus a 17% growth in turnover.

NWSC now favour the use of yard connections with on-selling of water to neighbours as alternative to public stand posts or kiosks. This is due to the low rates of payment for kiosk water bills and the consequent high percentage of disconnections. Increased numbers of yard connections in low income and poorly served areas offers good prospects for increasing the quantity of water used by consumers.

This indicator can be un-reliable when collected by national household surveys for reasons such as:

- Urban consumers without water meters may find it very difficult to estimate how much water they use; particularly if they use a variety of water sources

- Interviewers may not confirm the capacity of receptacles used to carry water, although water sector professionals in Uganda consider that standard jerry can sizes are typically used in most areas, and

- Consumers may not consider water used outside the home (e.g. for washing clothes at a spring) in the same way as they recognise water collected and carried to the house.

Despite the limitations in accurately measuring daily water consumption per household or person, it does provide valuable indicative information on water quantity, which is central to achieving potential water supply benefits.

5.4 Quantity of supply of water for production

Emergency activities have been conducted in recent years, including the construction of dams and valley tanks, in order to alleviate the acute shortage of water for production in the drier parts of the country. This has resulted in an increase in cumulative storage from 10.5 million cubic metres to 13.2 million cubic metres in the last four years (Source: DWD Issue paper no. 4 – Water for Production, Sept, 2002). Institutional reforms are being considered so that more systematic planning and implementation is undertaken to meet demands for:

- Water for crop production

- Water for aquaculture

- Water for livestock, and

- Rural industries.

More analysis of water for production trends and needs should form part of future performance reports.

5.5 Quality of Water

Policy direction for Water Quality testing and monitoring is: protection of public health by ensuring compliance with National Water Quality Guidelines and preventing degradation of sources. The following are the existing water quality policy operational in Uganda.

- Urban water supplies is based on the Uganda National Standards for Drinking (potable) water (1994).

- World Health Organization (WHO) Guidelines, 19 used with due consideration to specific local conditions and water use habits.

- Rural water Supplies are based on the Uganda National Water Quality Guidelines (1996).

- The Wastewater discharge (1998) is based on the National Effluent Standards for discharge into receiving water bodies and land (environment).

The routine work undertaken through the pilot project on urban water supply surveillance by the Ministry of Health (and subsequent activities in urban and rural districts) provides information to support the sustained delivery of safe drinking water. This is especially important where water supplies are community-managed and thus expertise for supply monitoring is limited.

This is combined with the development of water safety plans (as outlined in the new 3rd edition of the WHO Guidelines for Drinking-Water Quality), the training of community operators in preventative maintenance, and sanitary inspection.

The Water Resources Management Department carry out monitoring of quality and quantity of various surface and ground water bodies and constructed water points for the rural water sector. However, at the time of this study, information on the sampling plan and the use of water quality information was not available.

In the urban sub-sector, water authorities (NWSC, urban councils, and private operators) undertake routine quality monitoring of their water supplies and process control at the treatment works. They also have recently prepared a water safety plan and a health risk assessment has been undertaken.

Mainstreaming of National water quality monitoring is being done through the development of a strategy/guide your urban water quality monitoring. A draft document has been produced by water quality division.

Many people in urban areas often resort to using local springs which is cheaper and often closer than piped water supplies. However, a study of 25 springs in Kampala and boreholes and dug wells in Iganga revealed evidence of contamination of these sources. In such areas, the provision of convenient piped water supplies is therefore important if pollution prevention is too difficult to implement.

Improved water sources as a proxy for safe water

As there is not sufficient definitive data to say if a supply used by households in Uganda meets a particular water quality standard, the terms "improved" and "unimproved" water sources are used as a proxy for "safe" water. The following definitions shown in Table 5.1 are drawn from Cairncross and Feacham (1993) and are often cited in the international literature.

In order to improve water quality of water the GoU are promoting improved water sources as a means of improving water quality. Additional analysis of trends in water quality and interpretation of the results should be part of future water and sanitation performance reports.

5.6 Conclusions

The median quantities of water collected/used per person per day (derived from the UNHS (1999/2000) are low both for the rural and the urban sub-sectors . The national usage of water, estimated at 12 litres per person per day is substantially lower than the Ugandan policy target of 20 litres per person per day. The results can in part be attributed to the low percentage of households with piped water connections. It is also common practice in Uganda to use alternative sources such as springs and hand dug wells for

Table 5.1. Improved and unimproved sources

Water supply		Sanitation	
Improved	**Unimproved**	**Improved**	**Unimproved**
Household connection Public standpipe Borehole Protected dug well Protected spring Rainwater collection	Unprotected well Unprotected spring Vendor-provided water Bottled water Tanker-truck water	Connection to a sewer Connection to a septic system Pour-flush latrine Simple pit latrine VIP latrine	Service or bucket latrine (where manually emptied) Public latrines Latrines with an open pit

activities such as clothes washing, for which it is very difficult to calculate water collected or used.

Estimating the daily amount of water collected/used per day by consumers may be unreliable in some cases, but this indicator is important in determining potential benefits such as the PEAP pillar 4 objective of improving the quality of life for the poor. Independent surveys should be commissioned to verify or update the figures for average quantities of water collected/used per person per day.

In the urban water sector, NWSC are moving away from the concept of kiosks to yard taps and on-selling to neighbours. This provides good prospects for increasing water consumption in urban areas Future surveys should capture the extent of yard taps and on-selling to neighbours, as well as resultant increase in the average volume of water used.

It has been difficult to obtain data that summarises the trends in water quality in Uganda. Key indicators need to be agreed and steps taken to measure this theme more systematically.

Other key aspects to consider for future performance reviews with respect to water quantity and quality are:

- Conduct of further studies on per capita water consumption in both the rural and urban sub-sectors to confirm/update trends.

- Analysis of the results of water for production trends, against agreed indicators.

- Review of water quality information systems, particularly in the light of the adoption of the 3rd edition of the WHO Guidelines for Drinking-Water Quality.

- Assessment of rural water quality initiatives such as the use of community water operators in preventative maintenance

Section 6

Equity and affordability issues

6.1 Summary of themes

Equity in water and sanitation service delivery has a number of dimensions. How access and usage vary for the economically poor and non-poor is of particular concern, but variation according to income distribution more generally and by geographic area is also of interest. The distribution of actual resources between poorer and richer locations or households will also be of interest to policy makers. In this report, various analyses of equity have been performed to review whether the GoU policy objective of "some for all – rather than more for some" is being met. Future reports might perform more of this sort of analysis.

Affordability is linked to equity . What is affordable to a rich person might not be affordable for a poorer one. With the move towards greater self-financing of water and sanitation schemes in Uganda, affordability will become an increasingly important theme to measure.

6.2 Sample performance indicators

Table 6.1 below summarises a selection of equity and affordability related indicators that can currently be measured from existing data sources. The indicators themselves are the same as those used in previous sections of this report (to measure overall access and use), with two exceptions. The first is the indicator of affordability: the proportion of total household expenditure recorded as being spent on water. It should be noted that the UNHS is not designed specifically to record this percentage and it is quite possible that some water expenditures (such as operation and maintenance spending in villages) is missed out. The second new indicator is a direct measure of the variation in the population of a district per improved water point. This is estimated for four sample districts.

Note: the ticks denote that the analysis is possible from current data sources.

Other possible indicators of equity and affordability that have been considered include:

For equity:

* % of water user committees who are women
* % of the poor with active pipe connections
* % of water collected by women and children.

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Table 6.1. Overview of current data availability to measure equity aspects of performance

	Poor/Non-poor	Expenditure quintile	Region	Sample district
Access to improved water	✓	✓	✓	
Litres p. c/day	✓			
Latrine ownership	✓	✓		
Distance to improved water			✓	
Persons/water point			✓	✓
Water as % of total expenditure		✓		

For affordability:

- % of users that are paying operation and maintenance costs

- % of household income spent on water

- Average price per jerry cans paid to water vendor

- Average monthly household water bill

Analyses based on current data availability are provided below.

6.3 Analysis by poverty status - water

Figure 6.1 presents how access to improved water sources varies using data on poverty status derived according to Appleton (1998) and supplied by UBOS.
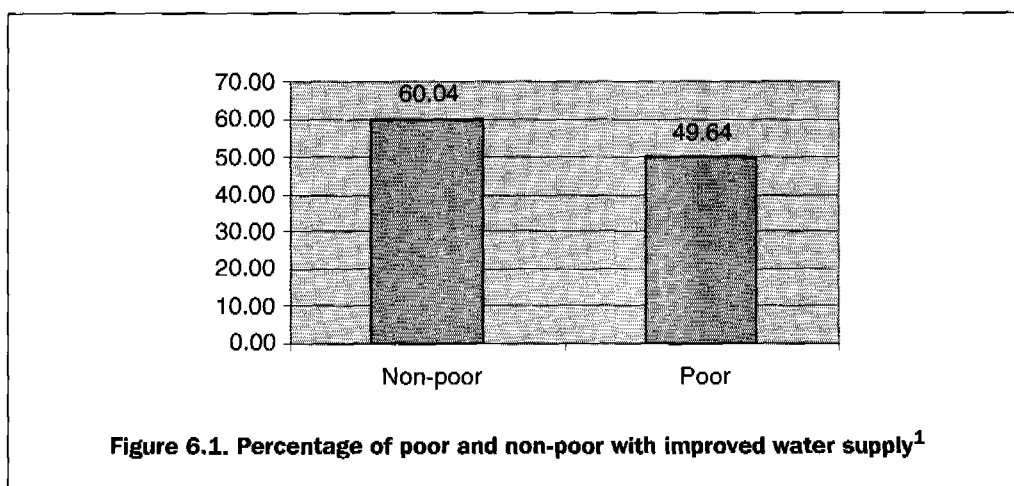
Figure 6.1. Percentage of poor and non-poor with improved water supply[1]

1. Source: UNHS 1999

As Figure 6.1 shows, poor households (that make up around a third of all households) were somewhat less likely than non-poor households to have access to improved water

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sources in 1999. Yet this overall difference hides the particular reliance of poor households on boreholes for improved supplies, the virtual absence of public tap supply to poor households and their reliance on unprotected well/spring sources. These details are given in Table 6.2.

Table 6.2. Drinking water source poor & non-poor households[1]

	Non-poor	Poor	All
Piped in dwelling	1.5%	.1%	1.1%
Piped outside dwelling	2.6%	.2%	1.8%
Public tap	10.3%	1.5%	7.7%
Borehole	20.9%	29.8%	23.6%
Protected well/spring	24.2%	17.5%	22.2%
Unprotected well/spring	31.4%	41.8%	34.6%
Rain water	.6%	.6%	.6%
Vendor/Tanker	2.1%	.2%	1.5%
Other	6.4%	8.4%	7.0%

1. Source of data: UNHS 1999

Looking at the reasons why respondents say they do not use improved water sources in the 1999 UNHS, it is revealed that poor households tend to be located in areas without a safe supply ("protected source is too far" or "protected source not available" account for more than 85% of this group) rather than being unable to afford or use an existing safe local source.

The 1999 data indicates that poor and non-poor households consume virtually identical amounts of water (62 litres/day). However, when we adjust for household size it is clear that poor households consume far less on a per-capita basis – 10.7L Vs 14.8L/day. This is a worrying finding and suggests that the GoU consider monitoring this indicator over time. It also provides a justification for collecting water consumption data even though, as we have noted previously, it is difficult data to record accurately.

6.4 Analysis by poverty status - sanitation

Poor households have much lower levels of latrine ownership than non-poor households - as Figure 6.2 illustrates - and are much more likely to rely on the bush for excreta disposal. Less than 10% of non-poor households reported not having a flush toilet or pit latrine in 1999 whereas more than three times as many poor households had no sanitation facilities.

Sanitation targets and indicators based on rural and urban sub-sectors will not be sufficient to focus attention on the lack of service to the poor. As we have seen, 1999 UNHS data shows that nearly 85% of rural households had a latrine but a worrying high

proportion of the poor (who are overwhelmingly rural) do not appear to have benefited from the increase in sanitation coverage.

Figure 6.2. Toilet/latrine ownership - poor and non-poor[1]
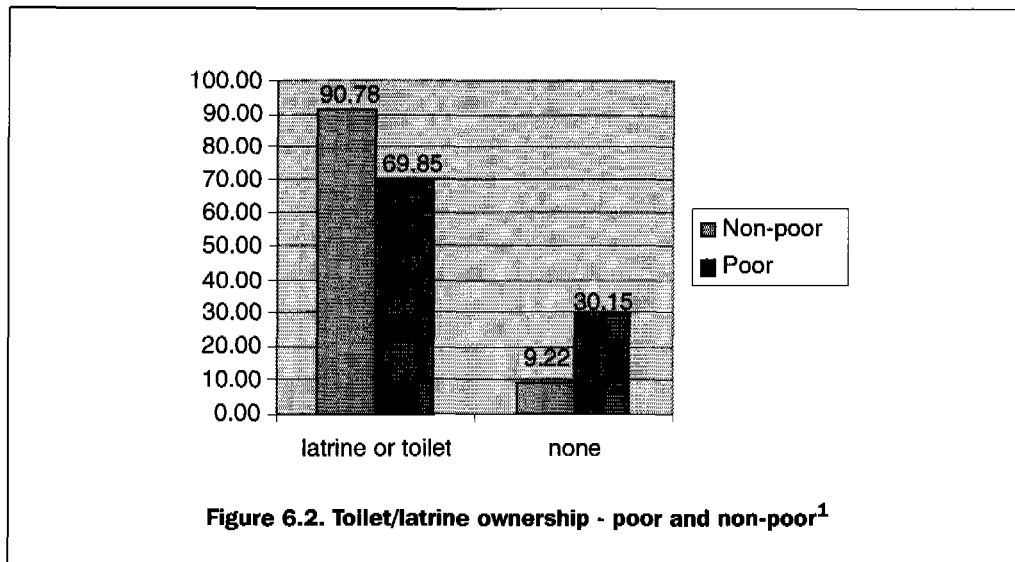
1. Source: UNHS 1999

6.5 Analysis by expenditure quintile

Another way of looking of looking at how richer and poorer households differ in their access and use of water and sanitation facilities is to use expenditure quintiles. Household expenditure can be used after adjusting for household size and composition – see Appleton (1998). From Table 6.3, it appears that the poorest 40% of households (bottom two quintiles) have a similar access to safe water, with the third and fourth quintiles having better access and the richest quintile having significantly the highest access to safe water.

Table 6.3. Access to safe water and latrine use by expenditure quintile[1]

Expenditure quintile	Access to safe water	Latrine use
Richest quintile	71%	95%
Second quintile	59%	91%
Third quintile	57%	89%
Fourth quintile	48%	84%
Poorest quintile	50%	63%

1. Source: UNHS

Latrine use also rises with household expenditure per capita, but the pattern is quite different to that of access to safe water. In this case, the poorest quintile shows has significantly lower levels of latrine use than the next richest group.

6.6 Regional differences in usage and access - water

Regional variations in the *use* of improved water sources is clearly observable in Figure 6.3 below. Just over half the households in the Western Region use improved water sources in 1999, whereas just over 60% in the Northern region use improved water sources. The Northern Region is the poorest and driest region, so this result is perhaps surprising. There are a number of possible explanations for this, the most likely being that the more arid environment in the North limits the opportunities to use unimproved water sources and improved water points are the only ones available.

Figure 6.3. Percentage of households who use improved water sources (regional)[1]
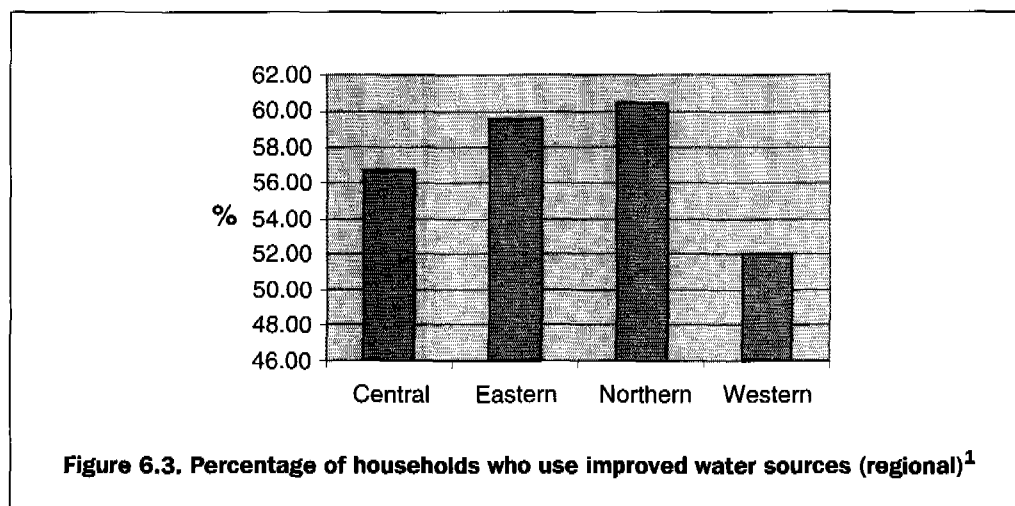
1. Source: UNHS 1999

Although a relatively high percentage of people use improved water sources in the north, they may of course have to travel further to obtain water than people living in the west. This is evident from the analysis of regional distance traveled in Figure 6.5.

Figure 6.4 shows the percentage of households with *access* to improved water sources on a regional basis, using the DWD basis for calculating assumed access i.e. 300 persons per improved borehole, 200 persons per spring etc. Note these figures are significantly different from the usage figures in the graph above, as the western region has the best access, but the worse figure for the usage of improved water sources . The likely explanation for this is that the people in the western region use more unimproved water sources compared to other regions. This is borne out by the results in the table below on drinking water sources, where 39% of people in the west use unprotected wells and springs.

These differences between the data sets, highlight the need to continually assess both the access to and usage of water sources. This should be done in terms of both improved and unimproved sources, but also in terms of the service options that are used.

It is unfortunate that the sample size of the UNHS is too small to permit analysis at the district level. Data from the 2000 UNSDS on access to protected water sources demonstrates very large variation across districts within particular regions. Within the Central Region for example, 34% of households in Kalangala report access to a protected water source, while 98% in Kampala and 84% in Luwero have a comparable supply. A

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Figure 6.4. Percentage of regional water access: DWD[1]
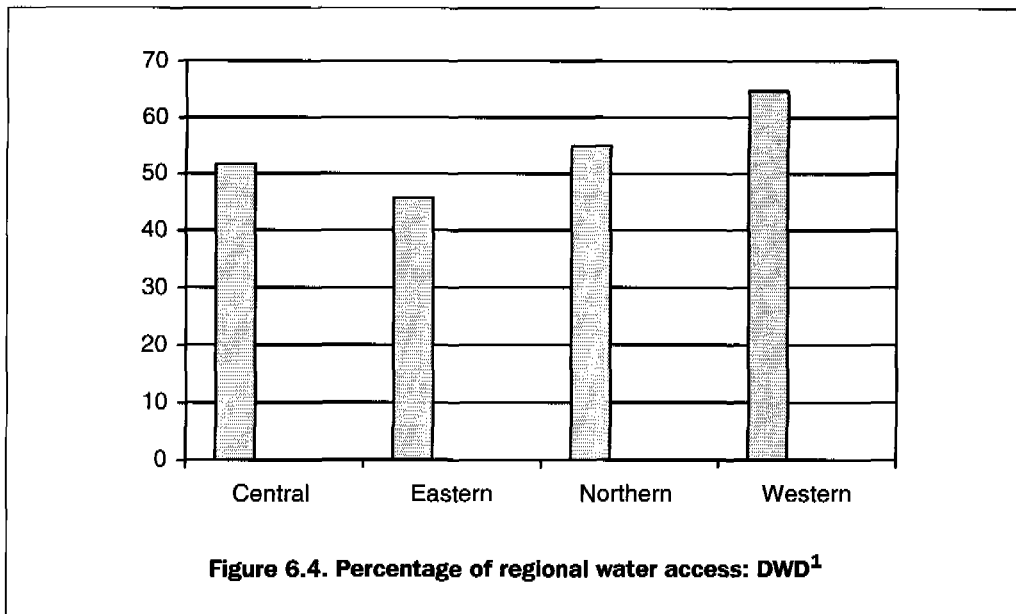
1. MIS Data, 2003

district or sub-district level analysis is necessary to address distribution issues in water access. This is discussed further below in the context of DWD-MIS data.

The 1999 UHNS does give us some idea of the variation in the method of water supply at a regional level. As shown in Table 6.4, borehole supply is the most important source of drinking water for households in the Eastern and Northern Regions, but is relatively unimportant in the Western Region.

Table 6.4. Percentage with drinking water by source in each region[1]

	Central	Eastern	Northern	Western	National
Piped in dwelling	2.05	0.69	0.06	0.97	1.08
Piped outside dwelling	3.69	0.39	0.11	2.13	1.84
Public tap	15.30	3.65	1.15	6.50	7.67
Borehole	14.96	36.02	42.46	8.15	23.57
Protected well/spring	20.08	18.16	16.10	33.59	22.16
Unprotected well/spring	31.26	35.03	33.32	39.48	34.55
Rain water	0.62	0.68	0.53	0.58	0.61
Vendor/Tanker	3.47	0.76	0.04	0.80	1.52
Other	8.57	4.62	6.24	7.82	7.01

1. Source of data: UNHS (1999)

The analysis of the 1996 UNHS data (which is unique in having a water collection time question) indicates a very large variation in distance to water source across regions (with households in Northern areas travelling more than six times as far as those in the Western Region). Figure 6.5 illustrates the average value of these indicators for each region and shows how effective this type of graphical representation can be at illustrating combinations of indicators: Western region households appear to be significantly better off than Northern region households on average in terms of both distance travelled and water collection time.

Figure 6.5. Time and distance to source by region
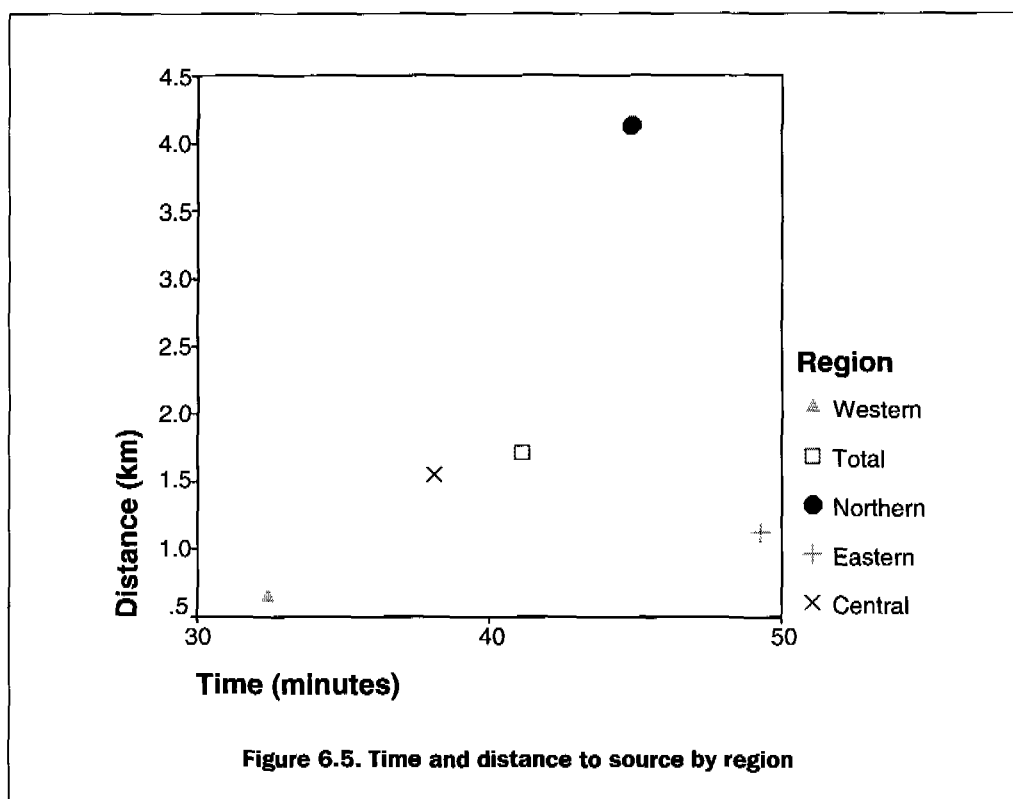
6.7 Rural water access by district

DWD-MIS data provides details of improved water points at the village level. DWD then combine this with Census data to produce an indicator of "people per water point" within each village, parish, sub-county and district[14]. While this indicator relates to access, it might affect use as if there are more people served by a water supply, queuing times will probably be longer and some people might be put off by the waiting time.

The measure of people per water point can also give important information on the equity of rural water supply. It allows an analysis of which districts have relatively more or fewer people per improved supply point and can also monitor equity of resource allocation over time. Figure 6.6 shows national variation in water point density and should be produced annually as part of the performance monitoring process. There is clearly very large variation in the population per improved water point at the district level, even between

14. This is their "Coverage IV indicator" based primarily on 2002 water point data and extrapolation from the 1991 Census. The 2002 Census data will be used from the start of 2004.

neighbouring districts. For example, in Pallisa there are more than 1,000 people per improved water point whereas in Soroti the average is less than half this. Another interesting fact illustrated in Figure 6.6 is just how difficult it is to apply the "official" coverage rates per improved water point (300 per borehole for example). District level coverage ranges from 243 to 1,774 people per improved water source installed. Hence estimates of national access to safe water on the basis of 300 persons per borehole installed are not likely to be sufficiently accurate to be useful.

Figure 6.6. Population per DWD Water Source
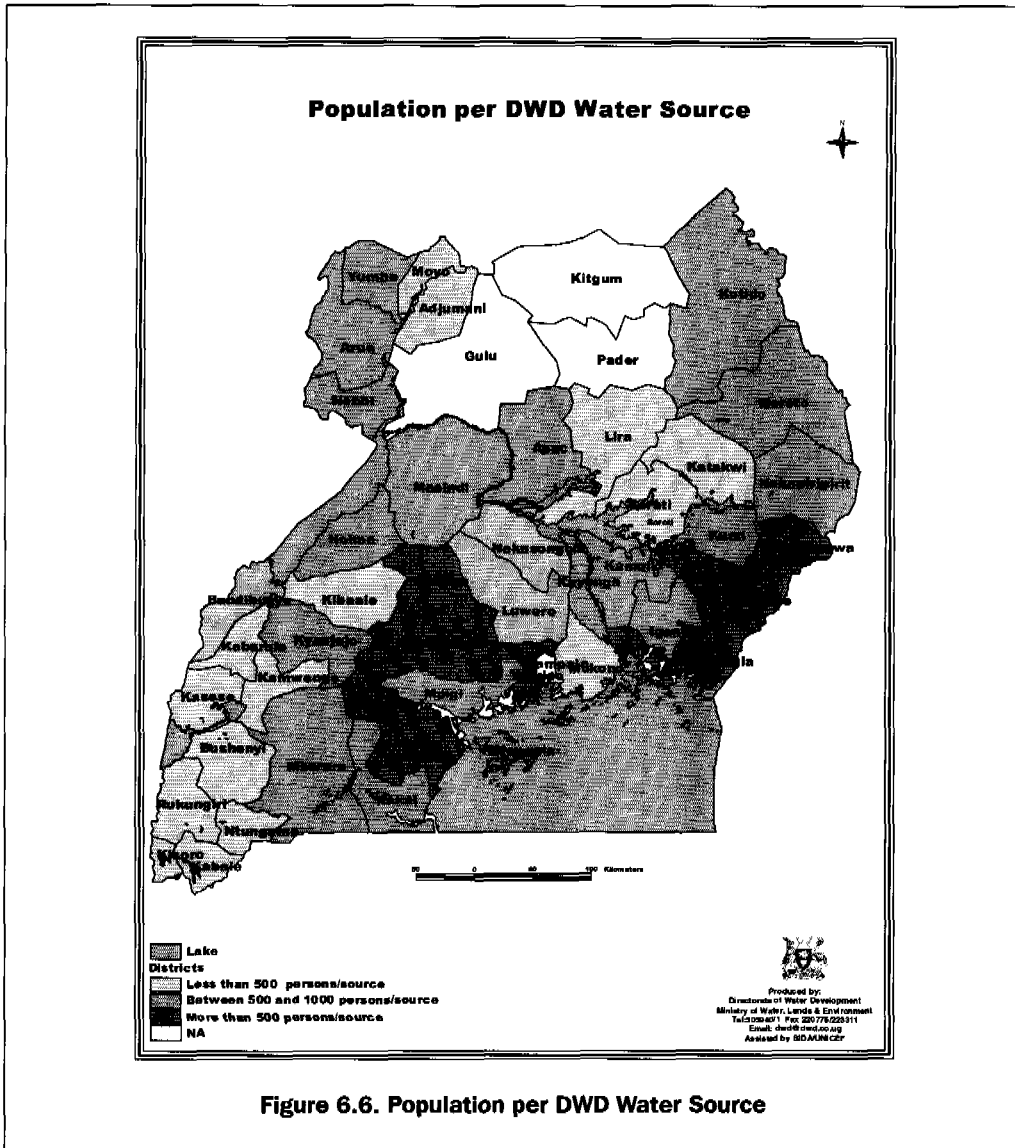
The fact that DWD improved water point and Census data is available at the parish level also allows an analysis of how equitable the coverage of improved water points is *within* each district. This is important because some commentators have claimed that in the past, the allocation of investment has followed vociferousness and relative political strength of parishes rather than need.

A preliminary study of community planning in two Ugandan districts by WaterAid, suggests that local groups with a political or religious agenda can still determine which locations receive water points[15]. Figure 6.7 shows the disparity in the 'people per improved water source' or the 'improved community water point (ICWP) density, between parishes in a sub-county (Masulita).

MASULITA FUNCTIONING

Figure 6.7. Comparison of water point densities between parishes Masulita S/C[1]
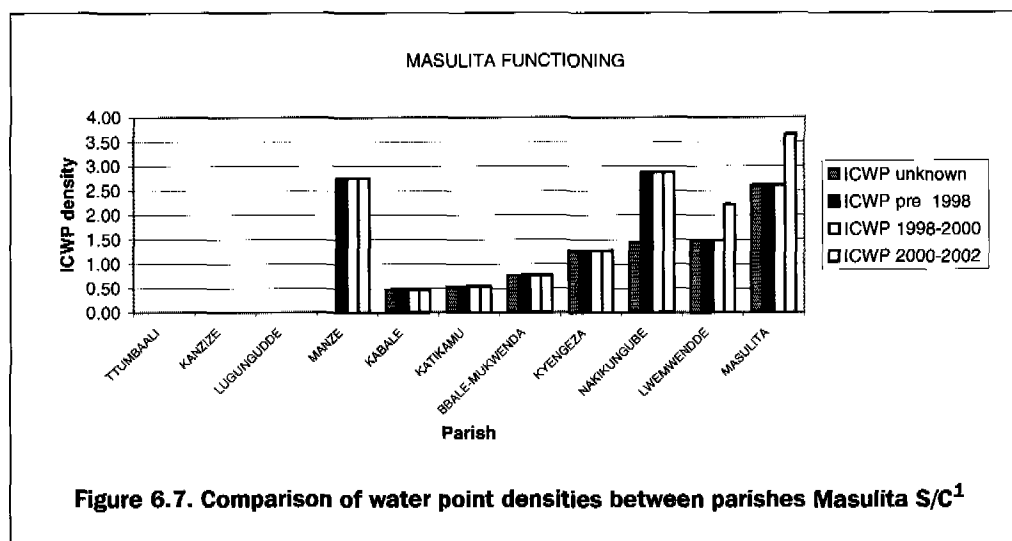
1. Source: WaterAid (2003)

Table 6.5. Comparison of water point densities between parishes Masulita S/C

Parish	Population	Unknown	Pre 1998	1998 - 2000	2000 - 2002	ICWP Unknown	ICWP Pre 1998	ICWP 1998 - 2000	ICWP 2000 - 2002
Ttumbaali	1198					0.00	0.00	0.00	0.00
Kanzize	2494					0.00	0.00	0.00	0.00
Lugungudde	1324					0.00	0.00	0.00	0.00
Manze	1090	0	3	0	0	0.00	2.75	2.75	2.75
Kabale	2119	1	0	0	0	0.47	0.47	0.47	0.47
Katikamu	1845	1	0	0	0	0.54	0.54	0.54	0.54
Bbale-Mukwenda	1300	1	0	0	0	0.77	0.77	0.77	0.77
Kyengeza	2359	3	0	0	0	1.27	1.27	1.27	1.27
Nakikungube	1394	2	2	0	0	1.43	2.87	2.87	2.87
Lwemwendde	1347	2	0	0	1	1.48	1.48	1.48	2.23
Masulita	20296	20	5	0	5				

15. [1] Kanyesigye & Joseph Anguria (2003), Translating National Rural Water And Sanitation Sub Sector Objectives Into Local Equitable And Sustainable Services For Poverty Reduction: A Review Of The Current WES Planning Interventions And Monitoring In Wakiso And Tororo Districts In Uganda. Summary Of Preliminary Findings And Recommendations, Joint Project on PRSP by Wateraid and ODI.

The wide disparity in the 'improved community water point (ICWP) density' between parishes is apparent in the above figure. Some parishes have clearly received substantially more water supply investments than others. In the future, more systematic measurement of access and usage down to the parish and sub-county level, should encourage more equitable planning of service improvements.

In order to consider intra-district access (people per improved water source), an indicator can be developed similar to that proposed by WaterAid (2003).

The indicator is derived in two stages:

1. The deviation of coverage in parish from the mean coverage in this district.

2. The mean deviation across all parishes in this district.

The higher the mean deviation, the more inequitable is the distribution of water points within the district. To illustrate the potential for this indicator, DWD have provided parish level coverage and Census data for four sample districts. As Figure 6.8 shows, the distribution of water points across parishes is far more equitable in Ntungamo than Kiboga district.

Figure 6.8. Mean parish deviation from district average in persons/water point
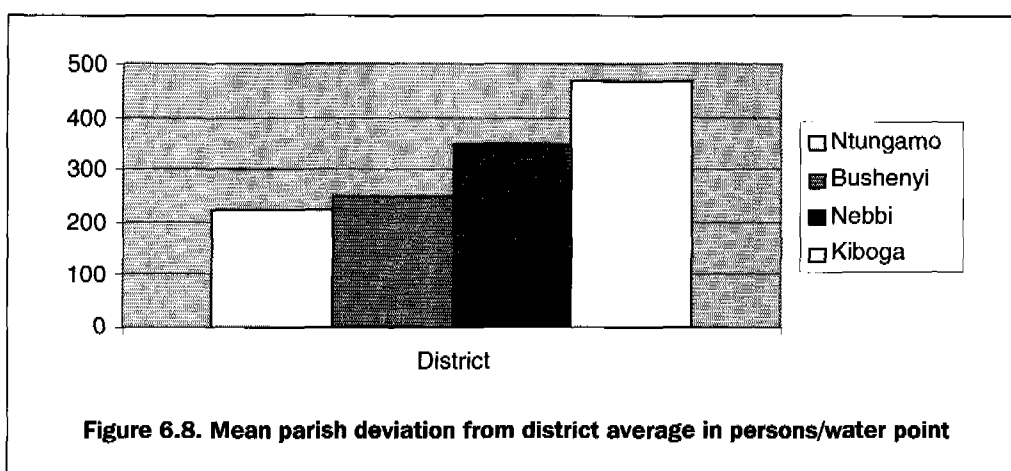
This indicator should be considered for wider application as a means of encouraging equitable planning of service improvements. Note that by combining the average deviation and average coverage indicators on one graph we can see the relative performance of these districts in both dimensions. This is shown in Figure 6.9 in this case, it can be seen that average coverage is actually better in Bushenyi than Ntungamo but that coverage is more equitable in the latter.

6.8 Regional difference in access - sanitation

Table 6.6 shows there is considerable regional variation in access to pit latrines (the principal form of safe excreta disposal) and use of the bush (the principal form of unsafe excreta disposal). Central and Western regions report very high levels of latrine use (>95%), Eastern has high levels (>75%) and the Northern region has significantly lower levels (around 55%).

Figure 6.9. Average coverage vs equity relative to best in sample
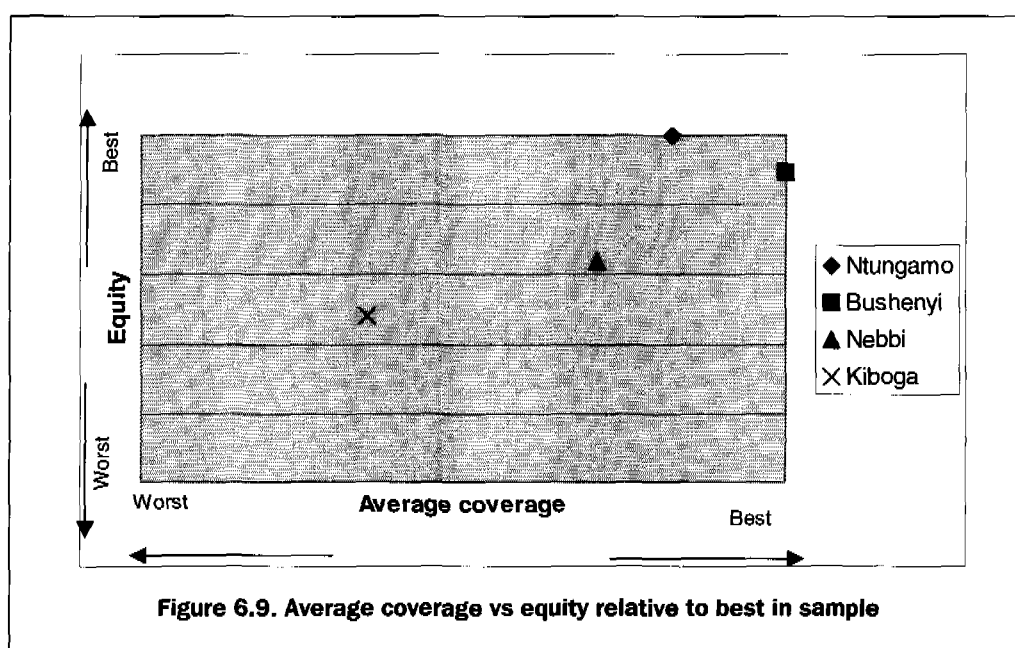
Table 6.6. Sanitation coverage by type by region[1]

	Central	Eastern	Northern	Western	National
flush toilet (owned)	1.33	0.42	0.07	0.57	0.69
flush toilet (shared)	0.53	0.15	0.14	0.29	0.31
flush toilet (pour)	0.18	0.44	0.17	0.40	0.29
pit latrine (covered)	77.10	55.14	41.57	81.30	66.08
pit latrine (uncovered)	16.28	19.99	13.54	13.70	15.98
VIP	1.36	1.50	0.64	0.96	1.15
pan/bucket	0.06	0.03	0.04	0.03	0.04
Bush	2.60	19.07	43.10	2.48	14.31
Other	0.57	3.26	0.74	0.26	1.15

1. Source of data: UNHS 1999

As with water supply, the regional picture hides very large variation at the district level. The UNSDS 2000 data for the Northern Region includes districts with 98% latrine ownership (Moyo) and 6% (Moroto). It is therefore essential that sanitation coverage is monitored at the district as well as regional level. This could be achieved using the bi-annual UNSDS.

6.9 Affordability of water and sanitation

Two sources of information on the affordability of water and sanitation have been investigated for the purposes of this report – the UNHS 1999 and UPAP2. The national

household survey asks respondents how much they spent on purchasing water and the value of any free water received. It is perhaps surprising to find that only 13.5% of households actually reported purchasing any water in the past month – around 60% of urban and 5% of rural households.

For those that purchased water, the share of household expenditure allocated to water appears to be high – particularly for the poorest two quintiles. As there are very few people actually in this group, these results have to be treated with some caution. However, it does suggest that some poor urban consumers are paying a large share of their total income on water and this is worth further investigation.

Table 6.7. Share of water in total household expenditure

Expenditure quintile	Share of water in total household expenditure – for those purchasing water
Richest quintile	9%
Second quintile	12%
Third quintile	13%
Fourth quintile	18%
Poorest quintile	22%

The UPAP2 identified a number of problems with the provision of safe water (lack of supply, time taken at crowded water points etc.), but affordability was not reported as an important concern. This tends to confirm the finding from the household data that it may be a serious issue for a small number of people but it is not a widespread problem.

6.10 Conclusions

An analysis of the equity of water and sanitation access and use, and the affordability of services is essential if the policy objective of 'some for all rather than all for some' is to be assessed. The analysis has looked at this from an income perspective and from a geographical perspective.

One over-arching point of note is that there is no specific, quantifiable policy objective with clear targets for improving the equity of water and sanitation services. This needs to be considered as a matter of urgency. Without clear definitions and measures for reducing inequity, then there will be little incentive within the sector to actually do this. Various data is already available for measuring access and usage by poor / non poor households and by region and district. This should be borne in mind when selecting key equity indicators.

In terms of access to improved water supply, in 1999 around 60% of non-poor households had access, compared to around 50% of non-poor households. However, this masks the fact that when poor households do receive improved supply, they tend to rely heavily on boreholes with a virtual absence of tap supply. The differences between poor and non-poor are much more marked for sanitation access with only 63% of the poorest 20% of the population having access to a latrine compared to 95% of the richest quintile. This

implies that investments in sanitation programmes can potentially have a bigger impact on reducing inequity in the sector than investments in water supply. However, it must be emphasised that measures to promote the hygienic use of the sanitation facilities will need to accompany the investment in the actual facilities themselves.

Differences between the regional water access data produced by DWD and the water usage data from the UNHS, highlight the need to continually assess both the access to and usage of water sources. This should be done in terms of both improved and unimproved sources, but also in terms of the service options that are used.

Turning to a regional analysis, surprisingly data suggests that the Northern region has the highest percentage of households who use improved water sources (compared to the lowest figure of around 52% in the West). However, care is needed when interpreting this analysis as households in the arid north are less likely to have a nearby water source of any sort and therefore rely more heavily on specially constructed improved sources.

Differences between the regional water access data produced by DWD and the water usage data from the UNHS, highlight the need to continually assess both the access to and usage of water sources. This should be done in terms of both improved and unimproved sources, but also in terms of the service options that are used.

People in the north travel further and spend longer collecting water than in any other region on average. This implies that careful measurement of time and actual distance are important considerations when monitoring regional (and district) equity.

There are no clearly defined policy objectives and targets surrounding the affordability of water and sanitation services. However, with moves towards cost recovery and financial sustainability of projects, there is a more pressing need to develop affordability indicators

Section 7

Operational Issues

7.1 Introduction to the theme

The key performance themes of functionality, managerial issues and value for money, that are dealt with in this section are primarily related to the improvement of the sustainability of water and sanitation services in Uganda. These themes are critical to the longer term performance of the sector. The measurement of performance is generally less well developed for these aspects, compared to the performance themes in previous sections, although NWSC does regularly review progress in the urban water sector against key functionality, managerial and value for money indicators in the urban water sector. Also, various other value for money type studies have been performed in the recent past.

7.2 Functionality of facilities

At the end of the International Water Supply and Sanitation Decade (1981-1990) it was estimated that internationally between 30-40 % of water supply systems in low-income countries were inoperative due to poor operation and maintenance practices (Evans, 1992). Functionality of water supply and sanitation systems relates to whether potential users are receiving the benefits from infrastructure facilities, as planned. Functionality is mainly a measure of efficiency and effectiveness of operation and maintenance of the infrastructure.

7.2.1 Sample 'functionality' indicators

Example performance indicators of functionality are:

- Percentage of improved water and sanitation facilities that are functional or non-functional at a given time (a "snap-shot" approach)

- Average number of days per year that the water infrastructure is in operation

- Average number of service hours per day

- Average number of days per week that utility water is supplied

- The ratio of actual expenditure on planned maintenance to operating cost

- The ratio of actual expenditure on unplanned maintenance to operating cost

- The ratio of actual expenditure on planned maintenance to actual cost on unplanned maintenance

- The ratio of average available delivery capacity to required delivery capacity

The usefulness of these and other indicators need to be reviewed as more effort is devoted to improving functionality of water and sanitation facilities in Uganda.

7.2.2 Rural water and sanitation

Over 30% of rural systems in Uganda are non-functional (MWLE, 2002), which indicates that much needs to be done to improve operation and maintenance at the local level. The stated government targets are to reduce the failure rate to 20% by 2005 and to 10% by 2007 (Source: Issue paper 2 – Rural Water and Sanitation Issues, DWD, Sept 2002). This will require a substantial support programme of government support.

The following data was collected by DWD MIS in 2003, during a one-off survey on the operational status of rural water supply water points:

* Working okay

* Temporary down (i.e. out of use for less than 6 months)

* Abandoned (i.e. out of use for at least 6 months)

The results show that only 46% of districts had 80% or more of functioning facilities, which is a matter of concern. Another key question, however, is what proportion of the time these facilities were actually working. In order to answer this DWD would need to record the time (e.g. weeks or days) that each facility has been or has not been functioning during the course of a year.

A pilot study was conducted in Wakiso and Tororo districts in 2003 by WaterAid[16], which examined functionality of water points amongst other aspects. They used a "snap-shot" approach to measuring functionality where water facilities are recorded as either functioning or not functioning. This approach is valid provided a big enough sample is taken for the results to be representative. The use of GIS (Geographical Information Systems) software, that is available in these two districts is very useful in mapping the location of the water sources.

School sanitation

School sanitation has emerged as a priority means of reducing health risks. In the baseline study conducted for the 2001- 2005 GoU-UNICEF country programme the cleanliness/ status of the school toilets were assessed in 1,278 schools. The results are shown in Table 7.1.

There has been some improvement in school sanitation in recent years, but clearly more efforts are required in hygiene and sanitation promotion to achieve substantial improvements against selected indicators.

7.2.3 Urban water

For the 15 large towns covered by the NWSC's review of performance, the analysis shows that 22% of its accounts or connections are inactive, which is a high figure (although they report a modest reduction in this figure from 26% in 1999).

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16. Kanyesigye & Joseph Anguria (2003), Translating National Rural Water And Sanitation Sub Sector Objectives Into Local Equitable And Sustainable Services For Poverty Reduction: A Review Of The Current WES Planning Interventions And Monitoring In Wakiso And Tororo Districts In Uganda. Summary Of Preliminary Findings And Recommendations, Joint Project on PRSP by Wateraid and ODI.

Table 7.1. Cleanliness/status of school latrines

Status of toilet facility (by observation)	Percentage
School with latrines full or nearly full	25.4
School with latrine walls soiled with faeces	31.8
School with faeces/urine in the latrine compound	9.9
School with latrines swept	60.0
School with latrines washed clean	36.0
Schools with latrines having been washed with antiseptic	6.0
Schools with latrines that have covers for the hole (for non-VIP)	8.3
Schools with many/very many flies in the latrines	60.4

The reason why so many connections are inactive or not functioning is probably more attributable to non-payment of bills, but reasons such as low water pressure and pipe leaks are also reported, particularly in informal settlements.

The functioning of water kiosks is a concern with to up to 50% not functioning in Kampala. NWSC reports an ongoing problem of non-payment of water bills by the kiosk operators. It is for this reason that the NWSC is beginning to promote the use of yard taps and on-selling of water as the most viable alternatives.

Two key urban water functionality indicators are:

• Average number of hours of utility water supply per day

• Average number of days per week that utility water is supplied

The NWSC does not regularly report against these indicators, however a pilot survey (June 2003) was conducted in low income areas in 5 large towns in Uganda, for the Utilities Reform Unit. It showed a good level of performance compared to other Africa utilities. The water supply hours in the five towns ranged from 13 to 22 hours and the average number of days per week when water is supplied was greater than 6 days per week. In some small towns, however, improvements in the performance against these indicators are required.

7.2.4 Water for production

There has been a programme of emergency construction of reservoirs to increase the availability of water in the drier parts of the country. This has led to an increase in the cumulative storage capacity of water from:

• 10.545 million cubic metres in 1999, to

• 13.187 million cubic metres in 2003.

There has also been a sustained campaign to develop responsibility for operation and maintenance of the surface water reservoirs amongst user communities and local government. However, more work is required in this area to enhance the longer term safe and sustainable functioning of the reservoirs.

7.2.5 Functionality theme conclusions

Only limited detailed data is available on functionality of facilities in the water sector, although some indicators are regularly used in the urban water sector. Over 30% of rural

water systems in Uganda are reported to be non-functional.. There are ambitious targets to reduce the failure rate to 20% by 2005 and to 10% by 2007. Substantial improvements in operation and maintenance at the local level will be needed to achieve these targets. Other emerging priority areas are:

- Improving the functionality of water facilities in urban informal settlements. The proposed NWSC strategy for doing this is to promote yard taps and on-selling rather than just relying on water kiosks. Improving and extending of distribution pipe networks is also required.

- Improving the cleanliness and functioning of latrines, particularly in schools.

- Ensuring adequate operation and maintenance of surface water reservoirs particularly in the arid parts of the country.

More systematic performance measurement including the prioritisation, selection and use of appropriate indicators will be an integral part of improving functionality. The use of the "snap-shot" survey approach to determine whether facilities are functioning or not is a useful start, particularly for rural water facilities.

7.3   Managerial issues

7.3.1   General

Managerial issues are cross-cutting issues that are concerned with efficiency and effectiveness of human resource management (employee and manager selection, development, deployment, appraisal) management decisions, participation and ownership of water and sanitation facilities.

Sample indicators include:

- Percentage of undertakings in Joint Sector Review policy matrix that are achieved

- Percentage of staff positions filled in both central and local governments

- Percentage of water users with permits

Another useful indicator to reflect overall financial management might be the proportion of budgeted funds that were actually spent.

More work is needed to agree which are the best indicators to reflect effective and efficient management of the water and sanitation interventions.

7.3.2   Rural water and sanitation services

Rural water and sanitation (RWSS) is undergoing substantial reform including decentralisation of responsibilities to local government and communities, as well as adopting a demand responsive approach. In 2002 a 5-year operational plan (OP5) for the RWSS sub-sector was developed. The key aims of the plan are:

- Present a detailed investment/expenditure plan

- Document a common approach to RWSS

- Mobilise resources

- Define and cost the National Programme Support for capacity building and sector reform.

Ultimately the plan is a contribution to the implementation of the SWAp. A number of tracking studies have been conducted to assess the release and use of water sector conditional grants. All budgeted funds were found to be released to district water accounts, but there were delays in some cases in the processing time by various stakeholders.

An important factor necessary for improving performance in rural water and sanitation provision is capacity building. Some relevant capacity indicators from the OP5 national support programme are:

- Technical Support Units (TSUs) fully staffed and functioning

- TSUs exit strategy implemented and disbanded by 2007.

- Spare parts availability is satisfactory (3 weeks delays maximum) for 80% of communities by 2004

- At least 60% of districts have functioning MIS (2006)

- Capacity building plan completed and implemented (2004)

Potential indicators that could be used at the community level include:

- Percentage of villages with caretakers/operators available

- Percentage of villages with functioning committee

- Percentage of villages with agreed water management plans in each district

- Percentage of villages where women and men participated in the siting of facilities

- Percentage of villages who made contribution in cash or kind

- Percentage of villages who have adequate funds for maintenance of facilities

As capacity at the district and local level has been identified as a major constraint, more specific human resource management indicators can be considered, such as:

- Percentage of district staff with agreed job descriptions

- Percentage of staff appraised against agreed job descriptions

- Percentage of districts who have agreed training analysis studies

- Percentage of districts who have agreed capacity development strategies

- Percentage of districts who are implementing their capacity development strategies.

The above indicators can be combined with more output and outcome focused sector and sub-sector indicators in an overall performance measurement framework.

More work is needed to prioritise the most important managerial indicators for the rural sub-sector, to collect data and to analyse the results.

7.3.3 Urban water and sanitation services

More managerial data is currently available for urban water and sanitation service provision. NWSC is currently responsible for managing services to the 15 largest towns, while town councils are responsible for the smaller towns, with support provided by DWD. The private sector is increasingly being utilised in the management of water services. NWSC has a current management contract with OSUL (a private operator) for Kampala and a number of towns have management contracts with local operators. Further use of the private sector and sector reforms are envisaged with a proposed 10 to 15 year lease contract with an international operator for a number of large towns.

NWSC has generally good information available on its managerial performance against internationally recognised water utility indicators. Information is available for managerial performance in a number of small towns, but there is currently no systematic collection of data for all the smaller towns.

A commonly used indicator for efficiency in the management of urban water supplies is Percentage of Unaccounted-For-Water (UFW). Figure 7.1 shows the trend of UFW for NWSC for the past six years.

Figure 7.1. Trends in NWSC unaccounted for water
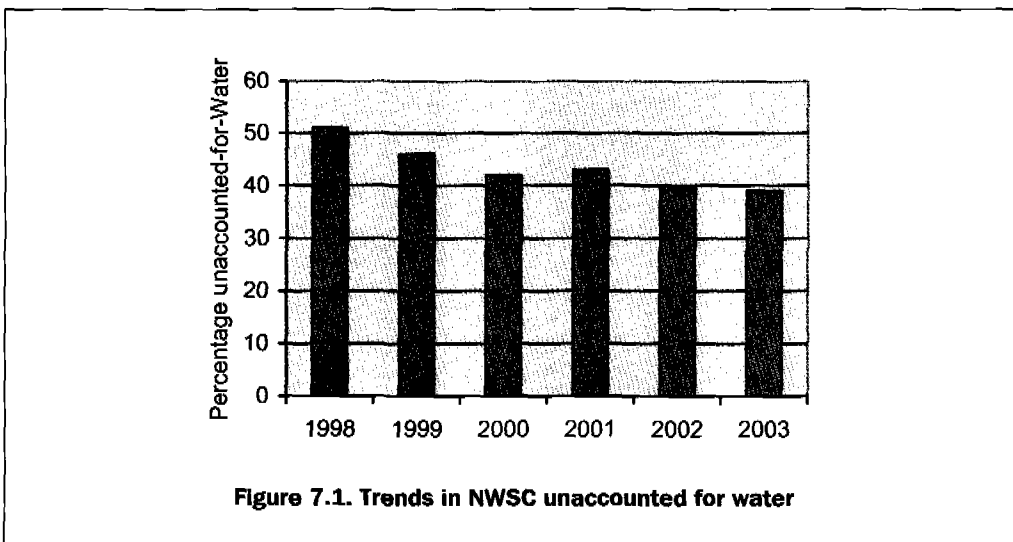
While UFW or non-revenue water is reducing slowly from 1998 to 2003, through the reduction of physical and commercial losses, it is apparent that this figure should still be reduced substantially, as has been done in many other countries.

Substantial improvements have however, been made in the number of staff per thousand connections, from 35 in 1998 to a figure of 11 in 2003, in as is shown in Figure 7.2. This is indicative of prolonged efforts to improve efficiency at NWSC. The ratio of staff costs to operational costs also has a positive trend, as shown in Figure 7.3.

Another key managerial aspect of urban water and sanitation performance is revenue collection and financial sustainability. Government funds are limited, so it is important that utilities generate sufficient internal revenues to expand service coverage to existing unserved consumers and cope with urban population growth.
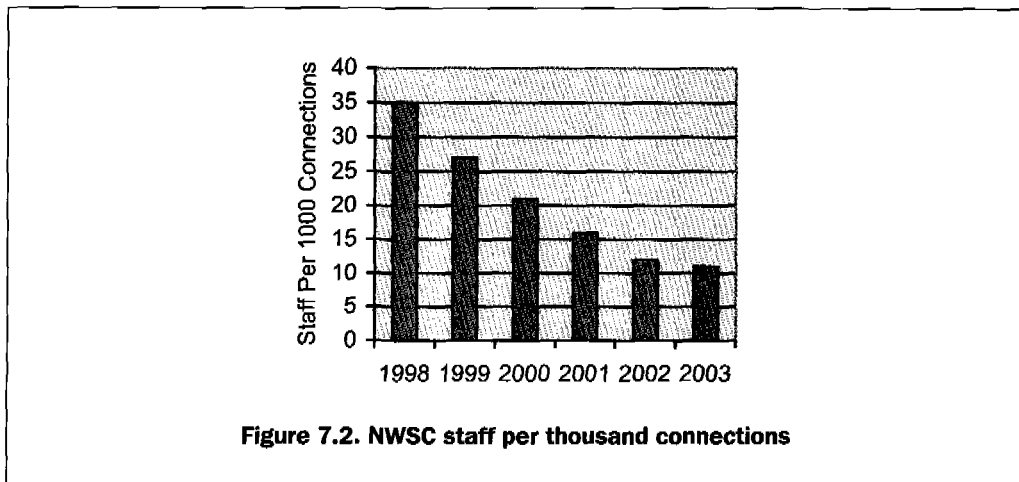
Figure 7.2. NWSC staff per thousand connections
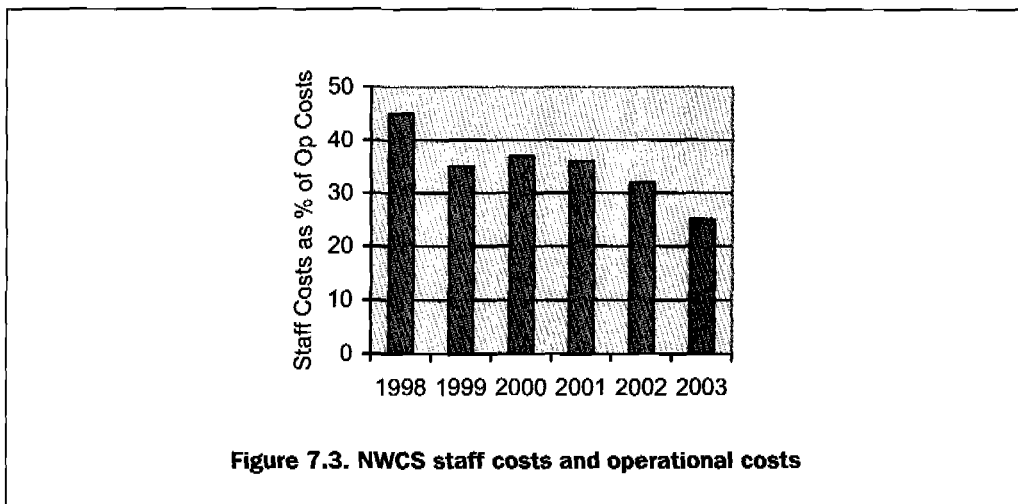
Figure 7.3. NWCS staff costs and operational costs

The positive trend in NWSC's operating ratio (operating expenses/operating revenues) is depicted in Figure 7.4. In 2002/03 the operating ratio was 0.75 or 75% in percentage terms. This would mean that the corporation is now generating sufficient revenues to fund its depreciation costs. However, this is only true if the GoU, EDF and IDA grants of UShs 3.97 billion are taken into account. If we exclude these grants, the operating (costs/income) ratios are 88%, 85% and 90% for 1999/00, 2000/01 and 2001/02 respectively. International best practice suggests a target value of 0.5 (50%), which usually enables full cost recovery, including loan payments. However NWSC has social obligations to serve the poor, so a less ambitious target is likely to be appropriate.

The Return on Fixed Assets (ROFA) values on the same graph also show a positive trend, achieving a positive value of 1% in 2002/03, but again this includes grants from various sources. International commercial utilities would seek a ROFA value of 6 to 8%, but it is recommended that a lower target value would be appropriate for NWSC. This can enable a future focus on the improvement of services to poor areas, which require some GoU or external funding and this has been agreed in principle.

NWSC commenced an innovative 'Stretch-out' programme in 2002, which is aimed at improving operational and financial performance of its area offices. Each area has raised
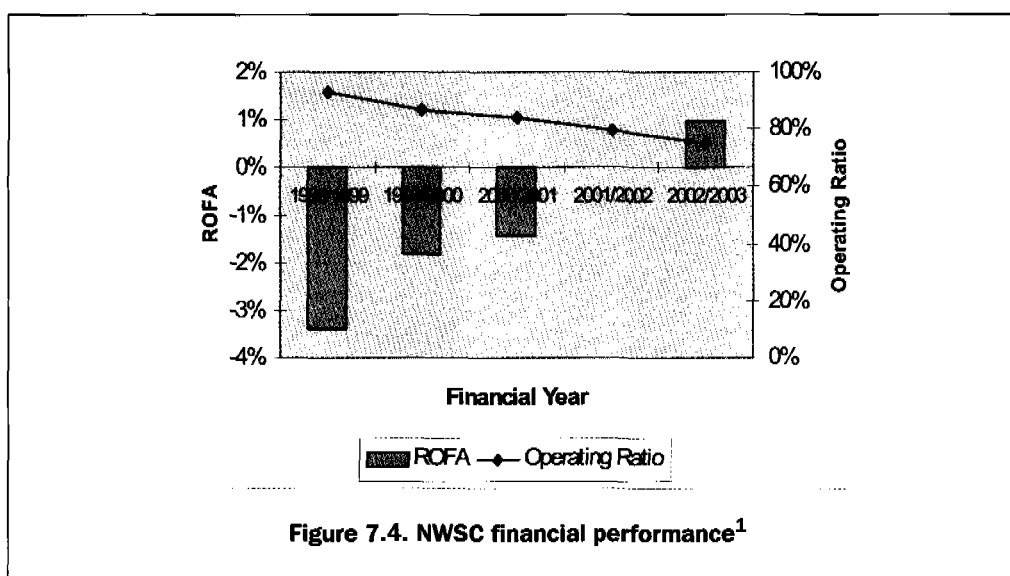
Figure 7.4. NWSC financial performance [1]

1. *Notes*
   Source of data NWSC
   Note: Operating ratios and ROFA might be said to overstated to the extent that GoU, EDF and IDA grants are included in the figures for NWSC income.

its performance targets and, in return, the area offices are offered incentive pay mechanisms. This is documented in a memorandum of understanding between NWSC central division and the area offices. Payment is based on making satisfactory progress towards the agreed targets. There are good prospects that this will lead to further service improvements.

One area of concern in the urban sector surrounds services to informal settlements or low income areas. This is increasing being recognised by key stakeholders as important, particularly as a longer term lease contract for water services is being envisaged. This will entail collecting separate disaggregated data on service levels and coping strategies in those low income areas.

Urban sanitation is generally under the jurisdiction of local town councils, although NWSC is responsible for the limited sewerage networks in the larger towns. A sanitation master plan is being developed for Kampala in 2003. This subject should be examined in detail in future annual sector performance reports.

7.3.4 Managerial theme conclusions

It would be useful to agree performance indicators to measure managerial performance of the water and sanitation sector as a whole. These might include the proportion of budgeted funds that have been spent or the proportion of staff positions filled. These could then be cascaded down as part of the development of sub-sector indicators.

The rural water and sanitation sector has embarked on a substantial reform programme including decentralisation of responsibilities to local government and communities, as well as adopting a demand responsive approach and community management of facilities. A SWaP involving international donors has been adopted. Funds are being dispersed to district councils and projects are being implemented with conditional grants. However,

considerable capacity building of key stakeholder organisations is required, if targets such the 80 to 90% functionality of facilities are to be achieved.

As the OP5 develops, appropriate sub-sector indicators need to be considered, reviewed, piloted and agreed that will both promote improved performance and enable effective monitoring and evaluation. Specific indicators need to be developed in the following focus areas both for the management of rural water and for the management of rural sanitation:

• Community level work before construction of facilities

• Community level work after the construction of facilities

• Development of human resources at district and sub-county level to facilitate/support work at the community/village level.

NWSC has shown steady improvements in urban water performance against key indicators in the larger towns, particularly in areas of operational efficiency. For example, unaccounted for water has fallen from just over 50% in 1998 to below 40% in 2003. Staff numbers per 1,000 connections have fallen from around 35 to just over 10. The return on fixed assets has also improved over the same period. Yet much remains to be done in extending piped water services to poor and unserved areas.

Potential focus areas for future annual sector performance reviews using management efficiency and effectiveness indicators in the urban sub-sector are:

• Urban sanitation

• Rural sanitation

• Water services in all the small towns

• Water services to low income areas.

7.4   Value for money in the sector

7.4.1   Introduction
'Value for money' is a term that is frequently used, but can mean different things to different people. In the international audit area, 'value for money' audit refers to a review of programmes to see if they are operating under the 'three E's':

• Economy – obtaining inputs of the right quality at the lowest possible price

• Efficiency – obtaining the maximum number of outputs (e.g. bore holes) form a given level of inputs (e.g. money invested)

• Effectiveness – achieving desired objectives (e.g. improved use of safe water)

An alternative definition of value for money is 'getting what you want at the lowest possible overall cost' (DFID Procurement Training Manual, 2000). This narrower definition is perhaps more appropriate for performance measurement in the Uganda water and sanitation sector as some aspects of the wider definition of VFM are captured by some other of the 10 performance themes contained in this report. Other work conducted in 2002 resulted in a series of 8 VFM study reports for the water and sanitation sector, but

these focused mainly on operational issues such as procurement practices to the exclusion of an analysis of the relationship of inputs with outputs and outcomes. What is required in Uganda is an agreed definition for value for money.

Example indicators for VFM discussed in the consultative workshop include:

• Per capita investment costs for sanitation

• Per capita investment cost for water supply

• Percentage increase in safe water usage as a proportion of amount invested

• Average cost of maintenance per user

• Cost per million litres of water provided

• Percentage of sector budget spent on administration

• Average cost per water quality test

The remainder of this section presents analysis of data that was readily available.

7.4.2 Trends in VFM for rural water supply

A value-for-money study was conducted for the whole rural water sub-sector in FY 2000/01, covering a five year period from 1996/67. The study was organised in relation to the existing 8 Technical Support Units in the country, and comprised of field visits and assessment of district water plans and budgets, district progress reports, and PAF monitoring reports. The main areas covered by the VFM study were:

• Financial disbursements, including community contributions, as well as actual expenditures.

• Physical achievements as achieved targets, in light of planned targets.

• Sector planning and management capacity, with specific reference to human resource capacity for application of Sector Wide Approach to planning

• Functionality of operation and maintenance of structures for water sources

• Financial management, reporting and accountability

• Average cost of outputs, and computation of VFM

• Capacity of the private sector in provision of decentralised services

Table 7.2 gives rural water supply cost analysis and shows that unit costs for installing infrastructure facilities for safe water service provision, went up by 46% in 2000/01 compared with 1996/07. The second highest increase occurred in 1998/99 when unit cost went up 35% compared with 1996/07.

Two key elements of the analysis are shown as Figure 7.5 and Figure 7.6.

The increases in unit price shown in Figure 7.5 suggest poorer value for money over time in providing water in rural areas. However, the changes may in part have been caused by

• a high proportion of resources being spent on repairing and maintaining default water sources

Table 7.2. Cost of improving access to safe water in rural areas[1]

	1996/97	1997/98	1998/99	1999/00	2000/01
Total Cost, U-Shs billion (2000/01 prices)	15.345	15.047	37.584	29.640	44.676
Total Costs, US$ millions	9.03	8.85	22.11	17.44	26.28
Average per capita cost (US$/person)	17.79	8.81	50.01	22.60	25.95
Index of average per capita cost (1996=100)	100	50	281	127	146
Costs of technology mix used each year (US$/unit)[2]	4,558	5,893	6,154	5,884	6,632
Price index of technology mix (1996=100)	100	129	135	129	146

1. Source of data: Paper prepared for the Regional Workshop on "Water Supply and Sanitation in Poverty Reduction Strategies" held in Nairobi, June 17th – 19th 2002
2. Unit cost of technology mix is the weighted average of prices, for each year, of the various technologies used during the last 5 year; where the weight were given by the frequency of usage of each technology.

Figure 7.5. Trends in the unit cost of technology mixes in rural areas
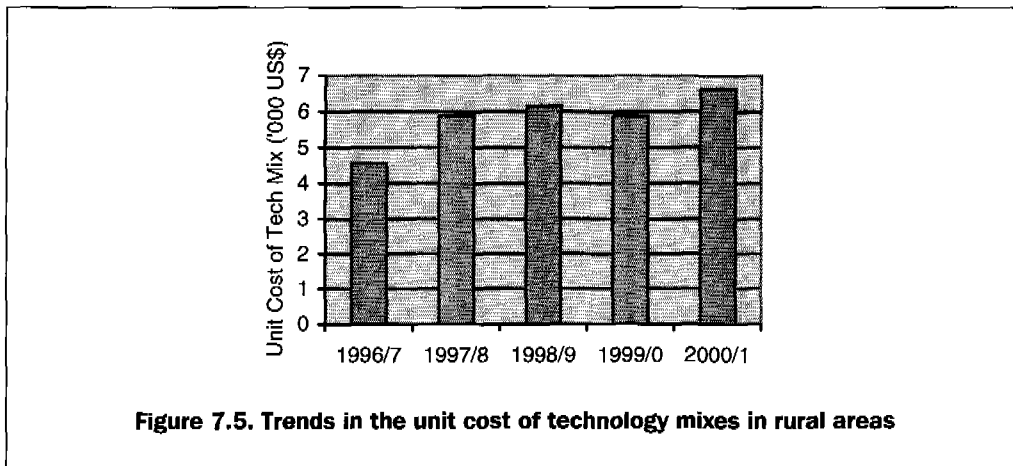
- the decentralization process of Rural WSS implementation that started in 2000/2001 where over 15% of the funds had to be spent on capacity building to raise the low district capacity

- a switch in technology preferences

- having to resort to more distant or expensive water sources as local populations increase

More investigation is required before concrete conclusions can be made.

Figure 7.5 shows large variations in the cost of supplying an extra person with water in rural areas. Assuming the data is accurate, the conclusion is that VFM of additional rural water supply has fluctuated since the increase in funding to the sector. Again, further analysis would be required to identify the main causes of this.

7.4.3 Trends in VFM for urban water supply

No similar analysis of value for money in the urban sector has been performed. This would be a valuable exercise for future a future sector performance report.

Figure 7.6. Trends in the cost of providing an extra person with water supply in rural areas
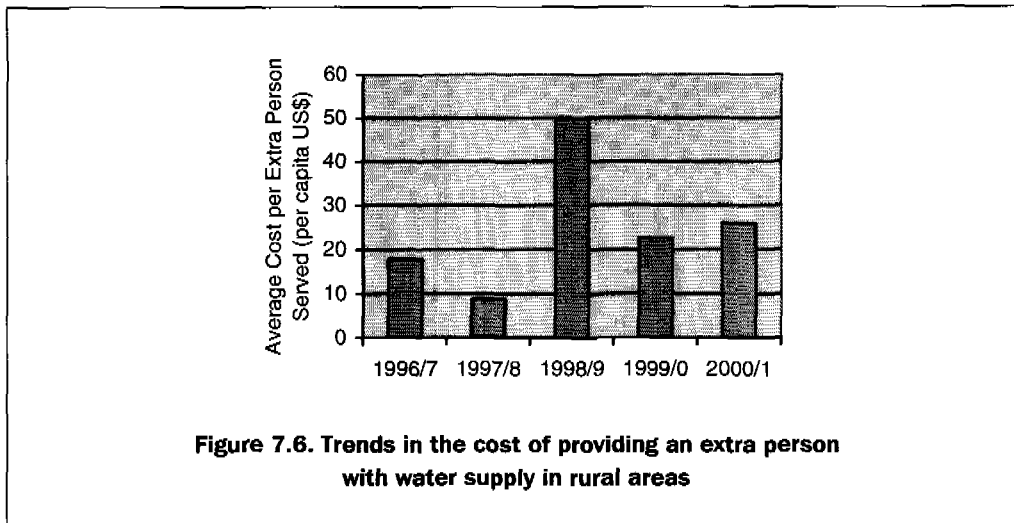
7.4.4 Trends in investments compared to increased access

Little analysis has been found that reviews value for money of the water and sanitation sector more broadly. At the most general level, comparisons such as the following will be of interest: amount of investment compared to increase in water supply access.

Figure 7.5 shows amounts of money invested in both rural and urban water supply for each year from 1992 to 2000 with the corresponding change in access to safe water that year.

Figure 7.7. Water sector investments compared to changes in access (1992 to 2000)[1]
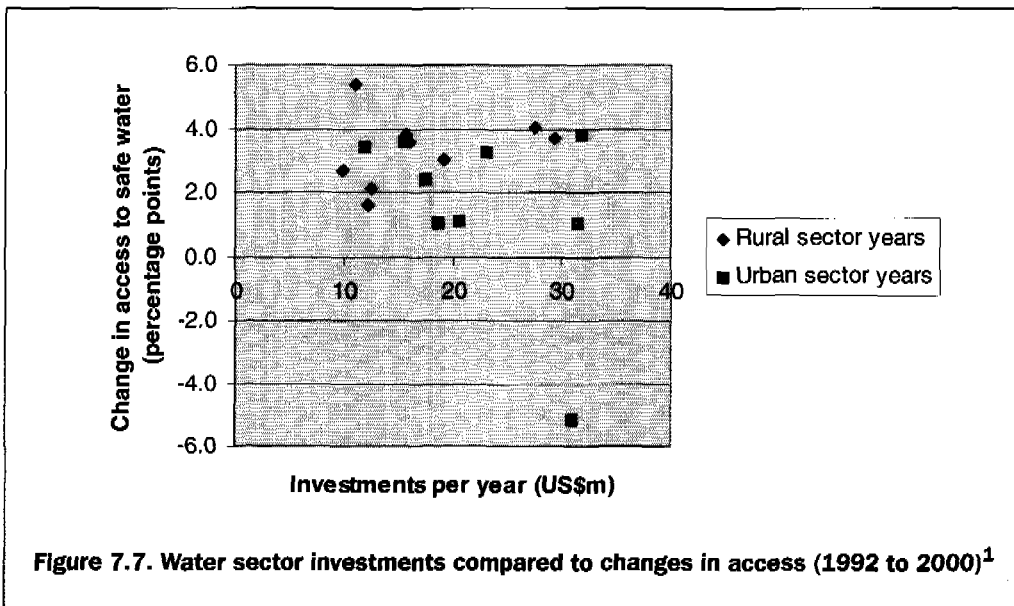
1. Note: Each mark on the graph represents a year between 1992 and 2000.
    Sources of data:
    Investment data contained in Report on the Water Sector Performance, DWD (2003).
    Access data for rural areas obtained from DWD MIS system.
    Access data for urban areas obtained from UPHC, UNHS and UDHS. Data not available for all years so average trends calculated when no data available.

The information shown in Figure 7.7 must be treated with caution since the access data for urban areas was not all obtained from the same source. The graphs suggests that investments in rural areas have given better value for money than those in urban areas (for a given level of investment, changes in access rates have tended to be greater). This might be because access rates are starting from a lower base and it costs less to increase access rates when existing rates are low. The fact that rural technology costs may be less is also a factor to consider.

The above analysis is interesting. However, it does not capture all the value for money issues between rural and urban areas. This is because the actual population in rural areas is much higher than in urban areas, and any percentage point increase in the rural areas represents a much higher number of people than a similar increase in urban areas.

Figure 7.8 takes population numbers into account and plots total amount of money invested per additional person with access in both urban and rural areas. Again, the data should be treated with caution, but whereas annual investments in the rural sector have worked out at between $US12 and 45 per extra person with access person, equivalent figures for the urban sector work out at around US$160 to 1,140.
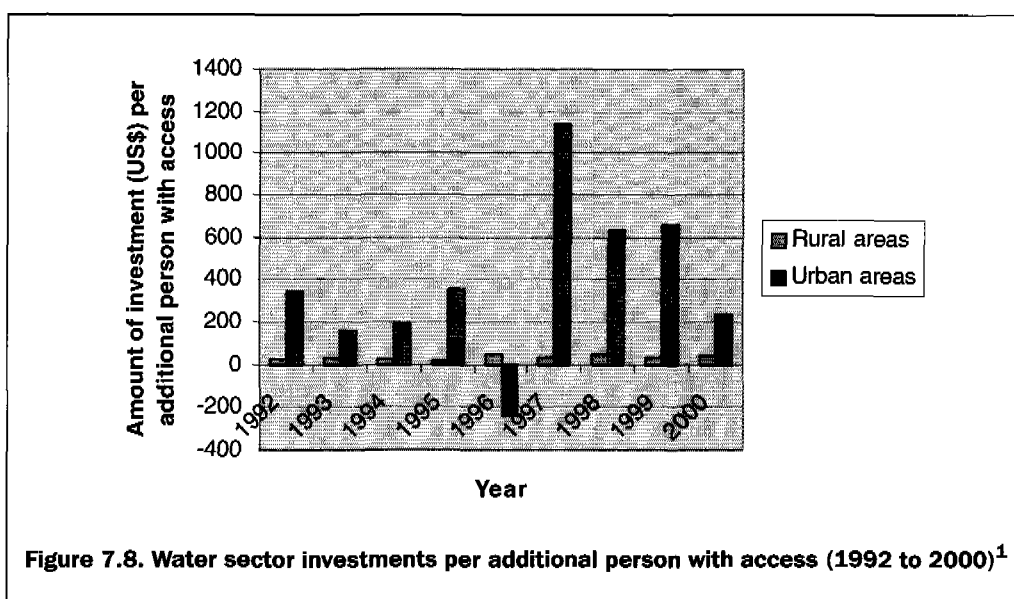
Figure 7.8. Water sector investments per additional person with access (1992 to 2000)[1]

1. Note: Data is indicative only as various different sources are used. There is a negative figure for urban areas in 1997 as access rates fell.
   Sources of data:
   Population data from 'Global Water Supply and Sanitation Assessment 2000 report', UNICEF. Both urban and rural populations assumed to increase by the same percentage each year between 1990 and 2000.
   Investment data from 'Report on the Water Sector Peformance', DWD 2003.
   Access data for rural areas obtained from DWD MIS system.
   Access data for urban areas obtained from UPHC, UNHS and UDHS. Data not available for all years so average trends calculated when no data available.

There are quite large fluctuations in the figures shown in Figure 7.8. One important point to bear in mind is that investment is not purely for the purposes of increasing access – money has also to be set aside for maintaining and rehabilitating existing infrastructure and varying proportions of this might explain some of the variances.

VFM performance analysis is particularly difficult as there are many factors to consider when interpreting data. However, the analysis that we have conducted above suggests that it is well worth investing more time to analysing and interpreting VFM data and to reviewing sector policies and resource allocation decisions in light of this.

7.4.5 Value for money theme conclusions

There have been various studies done over the past few years to assess 'value for money' in the water and sanitation sector of Uganda. These have varied from operational reviews of procurement and other processes to more output focused analyses. This report has focused on the latter and presented some existing and some new analysis of VFM trends. Although the analysis is preliminary and caution is needed, the following draft conclusions can be made:

- there is some evidence to suggest that the unit costs of technologies in rural areas are increasing

- the cost of providing an extra person with safe water in rural areas has been fluctuating with no obvious trend

- more work is needed to study VFM aspects of urban water supply

- investments in the rural sector give significantly more return in terms of numbers of extra people with safe water – this has typically ranged from between 10 and 20 times the return in urban area

- it is difficult to obtain and analyse data with respect to sanitation investments (partly because the responsibility for sanitation spans three different ministries)

- greater clarity if required regarding the scope of future VFM studies

The key potential policy implications of these conclusions are presented in Section 9.

Section 8

Recommendations

8.1 Future status reports

This is the first report of its type, primarily focusing on ten performance themes rather than focusing on sub-sectors. This has resulted in a broad assessment of water and sanitation performance as a whole which has produced large number of wide-ranging recommendations.

It is envisaged that future reports will build on the performance data so far presented and analysed. The following issues should be borne in mind for the future:

- It might be useful for future reports to focus on one or two performance themes in particular detail – this would give a different slant to each report and make for a more interesting read

- Once key indicators have been agreed for the sector, these should be reported on in every annual report – it is recommended that that there be no more than 15 of these (to keep the information manageable) spread across the ten performance themes

- It would be beneficial to provide capacity building support to a team within the sector to produce future reports so that there was no longer the need to rely on external consultants

8.2 Performance indicators

There is a need to agree on which are the 'key' indicators for water and sanitation performance measurement. It is recommended that these indicators are grouped into three types:

- 3 to 5 'golden' sector indicators – these are the most important indicators for assessing performance that could be cascaded down to the District level to assess local government performance

- 10 to 15 sector indicators covering all the ten performance themes to allow a broader assessment of sector performance

- 5 to 8 key indicators for each sub-sector, based on a mixture of performance themes

A separate report has been prepared on a 'Performance Measurement Framework' that would be required to institutionalise improved sector performance assessment. This contains a review of current roles and responsibilities, suggestions on how to prioritise

indicators, required organisational roles, necessary linkages with the current GoU planning and budgeting cycle and capacity building needs. The report ends with a suggested outline action plan for implementing improved performance measurement with the Uganda water and sanitation sector. This plan should be reviewed and used as the basis for the further development of performance measurement.

8.3 Data collection methods

The preparation of this report involved considerable time, reviewing and searching for water and sanitation sector data. Various recommendations are suggested below, so that future tasks of data collection and analysis are facilitated.

1. Data collected on the following variables would be very useful:

- Access to improved water sources

- Actual usage of improved water sources

- Time taken to collect drinking water

- Distance to drinking water source

- Litres water collected

- Availability (functioning) of improved water

- Latrine use (not ownership)

A case can also be made for regular data on:

- Soundness of latrine structure and substructure

- Hand washing (facility & practice)

- Protection of water source

- Affordability of water

This list will need to be reviewed once the 'golden', sector and sub-sector indicators have been finalised.

Various pieces of data are currently collected by five regular household surveys. There are likely to be considerable benefits from:

- Thinking through which survey instruments should be used to collect which data;

- Ensuring consistent variable definitions

- Ensuring that key variables are collected in the same survey (to allow consistent monitoring);

- Identifying which data has to be available at the district level; and

- Identifying which water and sanitation data needs to be analysed by household poverty status.

Some relevant issues to consider are:

- Which water and sanitation questions are essential to ask annually (those relating to key sector indicators and headline targets) and by which survey mechanism can these be measured?

- Will broader watsan questions be picked up in the UNSDS in future? (if not, how will they get asked?)

- How to assess the "affordability" of water? (this is perhaps best addressed by including expenditure on water in the UNHS, but at the moment it does not seem to be picking up expenditures such as operation and maintenance for rural water users)

- How do we want to analyse performance at the district level? (and how can we use UNSDS or revise UNHS?)

- How important is having both analysis at the district level (for PAF monitoring and a disaggregated picture of watsan performance) and an accurate poverty status for households (to allow tracking of access and coverage by poor and non-poor)? (if both are required, the best option may be to expand the UNHS, if a less accurate poverty status is acceptable, the main survey instrument for watsan could be the bi-annual UNSDS].

2. It is better to use the term "improved" rather than "safe" water sources as the latter cannot be directly measured in practice.

3. The current water and sanitation questions in the UNHS do not include time taken to collect water or the time the usual improved source is available each year. These questions should be added as soon as possible. The time taken should be monitored alongside distance travelled to get a meaningful picture of water availability - particularly in urban and peri-urban areas. It may be necessary to split this between wet and dry seasons as the 2000 UNSDS confirms that there are significant differences – this is a lower priority, however, and is something to discuss for future work. Note that where responses are split by wet and dry season, it is important to ask how long each season is according to the respondent (this was not done in the UNSDS).

4. UNSDS results for water and sanitation need to be reported by rural/urban categories (and not just regions) in order to compare with other survey results.

5. If the UNSDS is going to be an important survey instrument for monitoring progress against watsan targets it will be necessary to use the same asset list and other variables most closely associated with poverty status (from analysis of UNHS) to allow predicted poverty status to be estimated for each household in the UNSDS (It is relatively straightforward to use econometric analysis on the UNHS data to check how well we would predict poverty using this method and this could be done immediately using the 1999/2000 UNHS data)

6. The apparent inconsistency between "distance to drinking water source" data in the 1995, 1996 and 1999 data sets will need to be checked.

7. Household perception data on whether coverage has improved is collected in the 2000 UNSDS and appears to be a useful check on the standard quantitative data. It is worth keeping this in future UNSDS survey rounds.

8. For the UNSDS:

- The main water source question should be split into water for "drinking" and "other" – consistent with UNHS

- Similarly, distance, time and litres consumed should be requested for "drinking water" and "other water" separately

- The number of containers of water collected and capacity of container in litres should be asked for

- If it is wanted to continue to ask for wet and dry season figures separately, the number of months that the respondent considers the wet and dry seasons to last should be obtained

9. Wider use should be made of the MoH HIASS data. If this was shared with UBOS it would permit triangulation with household survey data. Adjustment to the headline sanitation coverage figure derived from UNHS for the proportion of latrines that are non-functional would be possible.

10.The Ministry of Health Disease Surveillance team should be able to provide regular data on the incidence of diarrhoeal disease among children and this impact should be monitored on a yearly basis

11.The new DWD-MIS is likely to be very useful for performance monitoring but we know that the assumed coverage figures (e.g. 300 persons/borehole) can be very inaccurate and improved water coverage projections should not be made on the basis of these assumptions. The DWD-MIS and Census data should be used to regularly report coverage in terms of population per improved water points for each parish, sub-county and district. Tables could be published in national newspapers to increase public discussion and performance monitoring.

8.4 Policy implications

The performance measurement analysis presented in this report points to several areas of policy that might usefully be reviewed. Table 8.1 sets out suggested areas for review.

Table 8.1. Suggested areas for policy review

Report section	Key analysis results	Suggested areas for policy review
Impact of water and sanitation	The best way of monitoring health impacts is through the incidence of diarrhoeal disease in children. Other factors (such as nutrition) will also influence diarrhoea, but there are fewer confounding effects than with other broader measures of health status. The 'average time to collect water' and 'the average distance to water source' are key indicators for assessing the economic benefits of water and sanitation (Pillar 4)	Determine which factors are the most important for reducing diarrhoeal disease (hand washing facilities, quality of water, type of latrine, health education etc.) and review resource allocation accordingly Future assessments of the time savings and reduced distance to travel to water sources can be considered to determine the economic benefits of improved water sources.
Quantity of water	The median quantities of water collected/used per person per day are low both for the rural water sector and the urban water sector. The national average usage of water is estimated at between 12 and 14 litres per person per day. This is a matter of some concern as consumption is substantially lower than the Ugandan policy target of 20 litres per person per day.	Confirm that the NWSC policy of moving away from the concept of kiosks to yard taps and on-selling to neighbours is increasing water consumption and consider devoting more resources to this. Determine the best methods for improving the quantity of water in rural areas.
Quality of water	It has been difficult to obtain data that summarises the trends in water quality in Uganda.	Key indicators should be agreed and steps taken to measure this theme more systematically. Sector targets for water quality would also be useful.
Water access and use	The Government looks likely to achieve the target of "65% of the population in Uganda are within 1.5 km of safe water by the year 2005". This reflects a strong performance in rural water supply with household survey data showing access rising from little more than 20% in 1991 to almost 60% in 2002. However, the average time taken to fetch water did not fall and the average distance travelled actually rose. For urban areas, after rising from 75% in 1991 to nearly 90% by the mid-1990s, access rates have fallen back to around 80% today. The average time taken to fetch water and distance travelled both appear to have fallen for urban households over the period which is consistent with an increased reliance on convenient but unprotected water sources.	Attention now needs to turn to meeting more demanding targets which are likely to involve a review of the target distances, the target proportion of the population served and consideration of the establishment of goals for time spent collecting water. Also, the availability of supply and the daily per capita water supply targets could be reviewed and linked in with the access and usage targets
Sanitation access and use	A divergence between rural and urban sector progress also emerges when access to sanitation facilities is analysed. Progress appears to have been made by rural households while the urban situation has probably deteriorated. The policy target of "60% of households having good sanitation facilities by 2004" is likely to be met if these facilities are defined as pit latrines (and the tiny proportion of flush toilets) rather than being defined as 40% with no latrines.	Unfortunately, potential access to a latrine does not equate to use of properly constructed and functioning facilities. The HIASS data suggests that if we use this more demanding (and technically sound) definition the policy target will be missed by a considerable margin. Options should be assessed for how to increase the use of sanitation facilities and how to improve environmental health more generally.

Table 8.1. Suggested areas for policy review

Report section	Key analysis results	Suggested areas for policy review
Equity and affordability	In terms of access to improved water supply, in 1999 around 60% of non-poor households had access, compared to around 50% of non-poor households. However, this masks the fact that when poor households do receive improved supply, they tend to rely heavily on boreholes with a virtual absence of tap supply. The differences between poor and non-poor are much more marked for sanitation access with only 63% of the poorest 20% of the population having access to a latrine compared to 95% of the richest quintile. Regional variations in access to improved water supply are relatively small (ranging from 52 to 60%). However, variations in the access to improved sanitation are greater -. , Central and Western Regions report very high levels of latrine ownership (>95%) with around 75% in the East and only 55% in the North.	There is no specific, quantifiable policy objective with clear targets for improving the equity of water and sanitation services. This needs to be considered as a matter of urgency. Without clear definitions and measures for reducing inequity, then there will be little incentive within the sector to actually do this. There are no clearly defined policy objectives and targets surrounding the affordability of water and sanitation services. However, with moves towards cost recovery and financial sustainability of projects, there is a more pressing need to develop affordability indicators Regional variations can mask big variations between and within districts and it is useful to consider developing a indicator to measure these. This would also allow better targeting of investments to improve the equity of access. The analysis implies that investments in sanitation programmes can potentially have a bigger impact on reducing inequity in the sector than investments in water supply.
Functionality	Only limited detailed data is available on functionality of facilities in the water sector, although some indicators are regularly used in the urban water sector. Over 30% of rural water systems in Uganda are reported to be non-functional. Improving the functionality of water facilities in urban informal settlements is an important issue. The proposed NWSC strategy for doing this is to promote yard taps and on-selling rather than just relying on water kiosks. Improving the cleanliness and functioning of latrines can have significant benefits, particularly in schools.	There are ambitious targets to reduce the failure rate to 20% by 2005 and to 10% by 2007. Substantial improvements in operation and maintenance at the local level will be needed to achieve these targets Review and consider allocating more resources to the development of yard taps and on selling to neighbours in poorer urban areas There is a need for more systematic performance measurement including the prioritisation, selection and use of appropriate indicators will be an integral part of improving functionality.

Table 8.1. Suggested areas for policy review

Report section	Key analysis results	Suggested areas for policy review
Managerial issues	The rural water and sanitation sector has embarked on a substantial reform programme, including decentralisation of responsibilities to local government and communities, as well as adopting a demand responsive approach and community management of facilities. However, considerable capacity building of key stakeholder organisations is required, if targets such the 80 to 90% functionality of facilities are to be achieved NWSC has shown steady improvements in its urban water sector performance against key indicators in the larger towns, particularly in areas of operational efficiency. For example, unaccounted for water has fallen from just over 50% in 1998 to below 40% in 2003. Yet much remains to be done in extending piped water services to poor and unserved areas.	It would be useful to agree objectives, performance indicators and targets to measure managerial performance of the water and sanitation sector as a whole. The implementation of a capacity building strategy for the water and sanitation sector is needed for full performance improvement potential to be realised A future focus of policy analysis should be on how best to manage urban water supplies for poor areas
Value for money	There is some evidence to suggest that the unit costs of technologies in rural areas are increasingInvestments in the rural sector appear to give significantly more return in terms of numbers of extra people with safe water - the data need to be treated with caution, but the rural return has typically ranged from between 10 and 20 times as much as the return in urban areaIt is difficult to obtain and analyse data with respect to sanitation investments (partly because the responsibility for sanitation spans three different ministries)	Review mix of technology or service options and guidelines for prioritisation so that VFM is improvedReview criteria for allocating resources between the rural and urban water sectorsConsider the establishment of a fifth sub-sector for sanitation with a clear allocation of sector resources to this.

8.5 Other issues

Various other recommendations have come out of this report. These are summarised below:

Definitions

Definitions of key terms such as sustainability, equity, access and usage are proposed in section 1.7. It is recommended that such definitions be agreed/amended and widely endorsed, to aid more effective performance measurement and development in the sector.

Water quantity and quality

- It would be useful to conduct further studies on per capita water consumption in both the rural and urban sectors to confirm/update trends, capturing the extent of yard taps and on-selling to neighbours, as well as resultant increase in the average volume of water used.

- More analysis of the results of water for production trends, against agreed indicators is required in future.

- There is a need to review water quality information systems, particularly in the light of the adoption of the 3rd edition of the WHO Guidelines for Drinking-Water Quality.

- Work should be done to assess rural water quality initiatives such as the use of community water operators in preventative maintenance

Access and use

- Given the multi-dimensional aspects of access and use of water, it would be useful to monitor progress against a composite indicator of distance, functioning, time taken and per capita consumption (much in the same way that the UN Human Development Report uses an index to capture quality of life rather than a simple measure of per capita income).

- Regular reporting on performance in terms of access and usage in both the rural and urban water and sanitation sectors, is important for determining sector benefits.

Equity and affordability

- DWD have produced a very useful map of Uganda which shows differing access to 'safe' water by district as measured by people per water point. This type of analysis should be introduced on a regular basis to monitor equity between districts.

- WaterAid have taken some of the DWD analysis further to produce a suggested indicator for equity within districts by calculating a mean parish deviation from the district average of the number persons per water point This indicator can be used to provide very useful data to guide the locating of future water points in order to improve equity.

Operational issues

- The use of the "snap-shot" survey approach to determine whether facilities are functioning is a cost-effective way of monitoring, particularly in the rural water and sanitation sector

- As the OP5 develops, appropriate sub-sector indicators for effective management of rural water sanitation and sanitation facilities need to be developed:

- The potential focus areas for future annual sector performance reviews of managerial issues urban sanitation, rural sanitation, water services in all the small towns and water services to low income areas.

- It would be very beneficial to review the nature of VFM work conducted in the water and sanitation sector, clearly defining the scope of work and devote more time to focusing on comparisons of inputs with outputs and outcomes

Section 9

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Section 10

Appendices

Annex 1: Data Sources

The Uganda population and housing census (UPHC)

Sample	Census, 100% of households
Years covered	1991, 2002
Most recent data	1991 (2002 available end 2003/2004)
Data collection method	Household survey
Smallest analysis area	Village
Water coverage info.	Source type
Same for each year?	Yes
Sanitation coverage info	Toilet type
Same for each year?	Yes
Data strengths	Ability to monitor progress at sub-regional level Direct measurement of population as well as household coverage Can compare household results with UNHS & UDHS

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The Uganda national household survey (UNHS)

Sample	National, 10,000 households (6000 in early 1990s)
Years covered	1992/3-2002/3 (92,95,97,99,02 have watsan info)
Most recent data	2002/3 headline data only, 99/00 complete data
Data collection method	Random sample of households
Smallest analysis area	Region, 15/46 Districts can be analysed for the 99/00 Survey
Water coverage info	Water source – in 1992 protected & unprotected wells/ springs are not separated and boreholes are not identified separately from wells so we cannot identify improved sources (sfame applies to the UDHS 95). Water source (95,96,99,02) - consistent with 91 Census Water source for drinking & other (95, 97, 99 only) Distance to sources (95 onwards) Time to collect water (95, 96 only) Litres collected (95, 96, 99 only) Reasons for unprotected source use (95, 96, 99 only) Comparing distance to sources in 99 and 92 (99 only)
Same for each year?	Asks for **main** source of water in 2002/3 Splits "open water sources or neighbours" into two categories in 2002/3
Sanitation coverage info	Toilet type (92,95,96,99,02) – consistent with 91 Census (although UNHS has more categories) Distance from dwelling (95 only)
Same for each year?	Change of wording in 2002 - which toilet facility do you mainly use, not have
Data strengths	1. 1.Detailed poverty profiles have been constructed using this data – can be used for access by poor/non-poor 2. 2. Watsan data for a number of years & regular annual survey 3. 3. Panel data of @1000 & recall of water source in 92 in the 1999 survey 4. 3. Willingness of UBOS to use questions that meet MWLE objectives 5. 4. Statistically representative sample
Data weaknesses	1. 1. Household survey data does not include temporal variation (e.g. rainwater not available) or water source is working – hence tends to overstate effective coverage. 2. 2. Changes in question definitions makes it more difficult to identify changes in access to services over time 3. 3. It is only possible to analyse data at the district level for a small number of districts and only for 1999/00 4. 4. Some questions require a lot of interviewer time & skill to get accurate answers e.g. km to water source, Litres collected – current answers are probably inaccurate particularly for those with piped water. 5. 5. Fails to capture time taken to get water (v. important for urban supply when demand is rising) 6. 6. We cannot judge the impact of sanitation on health just by asking about use of toilet facilities

The Uganda demographic and health survey (UDHS)

Sample	National, 7550 households (1995), 7885 (2000/1)
Years covered	1988 (not watsan), 1995, 2000/2001
Most recent data	2000/2001
Data collection method	Random sample of households
Smallest analysis area	Region
Water coverage info	Water source (does not strictly use improved categories & is **not** consistent with the UNHS). The 1995 categories are too crude to identify improved sources. Where is water stored Litres used Time taken to collect water
Same for each year?	Water source categories were changed in 2000 – these are still not fully consistent with UNHS (the spring category is not divided into protected and unprotected) and hence the definition of safe water will differ.
Sanitation coverage info	Toilet type – which do you *have?* – same as UNHS 1999 but not UHNHS 2002 Shared with other households? (2000)
Same for each year?	Yes
Data strengths	Water and sanitation data can be analysed with health status data to potentially identify health impacts
Data weaknesses	Water and sanitation variables are not consistent with UNHS data.

The Uganda National Service Delivery Survey (UNSDS)

Sample	13,604
Years covered	2000 only (although builds on 1998 District Resource Endowment Profile Study – DREPS)
Most recent data	2000
Data collection method	Random sample of households
Smallest analysis area	District (>300 households in each district)
Water coverage info	Piped water in house or standpipe Access to a protected water source Wet season and Dry season separately: Distance to **main** water source (does not separate out drinking or other – this is inconsistent with UNHS and main water source may not be the protected source) Approximate waiting time for water collection from main source (see concern above). Is water from this source safe to drink without boiling (main source may not be used for drinking) Does household boil water before drinking (main source may not be used for drinking) Do you share the water source with animals How many 20L cans of water/day do you use for household consumption (Not consistent with other surveys that ask for litres consumed but will give an estimate of litres consumed[1]) Money spent by household per day on water Has the availability of clean water for household consumption changed in this community over the past 5 years

1. The Drawers of Water II Study notes that 91.2% of their Ugandan sample now used 20-24L jerry cans.

Ministry of Health, Health inspectors' annual sanitation survey (HIASS)

Sample	In theory, all households, aggregated to district level reports
Years covered	1993-2002
Most recent data	2002
Data collection method	Local health assistants complete forms for sub-counties, compiled for districts by the District health Inspector, all district reports are presented at the annual National Sanitation Review
Smallest analysis area	Village/Parish (in theory). Data available at District level
Water coverage info	Access to safe water %
Same for each year?	Yes
Sanitation coverage info	School & health centre sanitation and safe water access. Rural households - % with latrines, Urban - % with excreta disposal. Note that assistants should only report properly functioning systems (with superstructure & > 3ft unfilled in the pit)
Same for each year?	Yes
Data strengths	Good health assistants complete the forms as part of their local visits & can use visual inspection & local knowledge Only functioning latrines included Only functioning safe water sources included Ministry of Health Funds available to support field visits from 2003
Data weaknesses	Some health assistants do not make an effort to complete the forms accurately Some health inspectors have not seen sanitation and water quality as being as important as revenue-related issues such as permits for selling food. Hence the data quality has been highly variable. High population densities in peri-urban and urban areas make it difficult to use this system and the results for urban areas reported for 2002 do not appear robust MoH cannot find the data for 1993-1999 – paper copy only

The Uganda participatory poverty assessment process (UPAP)

Sample	36 sites PPA1 and 60 sites (PPA2), rural & urban with *purposive sampling to capture major types of communities*
Years covered	1998/9 and 2001/2
Most recent data	2001/2
Data collection method	Group interviews using PRA techniques
Smallest analysis area	District – but case studies from village sites are quoted
Water coverage info	Group views on use of unprotected water sources and problems faced (health impact, distance, costs, water quality etc.)
Same for each year?	Depends on problems identified by the groups, so may vary
Sanitation coverage info	Group views on latrine use and problems faced (health impact, costs etc)
Same for each year?	Depends on problems identified by the groups, so may vary
Data strengths	Open ended discussion – captures unexpected impacts Qualitative data provides the context for quantitative data and so helps us understand what national survey results really mean Local level data and informative case studies
Data weaknesses	Open ended discussion is not designed to monitor change in the same thing (such as distance to source) over time. If the PPA is to be used for monitoring, groups will need to address specific and common themes in each round e.g. time and distance to safe water, functioning of water points We do not know how representative the views expressed in any one village are

Department of water development management information system (DWD-MIS)

Sample	All rural areas & small towns
Years covered	2000-2003 depending on area
Most recent data	2000-2003 depending on area
Data collection method	Improved water points installed x assumed coverage per water point. GIS system from 2003 onwards. Baseline survey using GIS will be completed in 2003
Smallest analysis area	Village
Water coverage info	Improved water points by type Whether water point is functioning
Same for each year?	Yes
Sanitation coverage info	None
Same for each year?	NA
Data strengths	Water point data is combined with Census data to produce four measures of service delivery Local level data An indication of whether supply points are functioning GIS-based from 2003
Data weaknesses	Coverage data is based on the assumed average use of each type of water point. It is ball-park accurate at the national level (although not sufficient to monitor progress against targets) but can be wildly inaccurate for any village or district. The measure of functioning is too crude – we need to know *how many weeks during the year* it has been available. Current population per water point figures are based on extrapolated 1991 Census figures (should be updated with 2002 Census figures by the end of 2003)

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National water & sewerage corporation management information system (NWSC-MIS)

Sample	All larger towns
Years covered	Since early 1990s, annually
Most recent data	2003
Data collection method	No of connection in each service level category , in each town X assumed average number of people served per connection. Each service level in various towns has an assumed number of people served. This is a rule-of-thumb number derived by Corporate Planning Department
Smallest analysis area	GIS block (0.5 km by 0.5 km square)
Water coverage info	Water connections in each service level Type of customer (commercial, domestic, standpost etc) Whether water the water connection is active or inactive
Same for each year?	Yes
Sanitation coverage info	Only sewerage services
Same for each year?	Yes
Data strengths	This data is available at any time in NWSC data base Local level data An indication of whether supply points are functioning GIS-based
Data weaknesses	Coverage data is based on the assumed average use of each type of service level, which also varies from town to town. Data cannot be disaggregated for low, middle and high income areas

A tracking study of the water sector conditional grants

Sample	Primary sample of 10 districts and 6 urban centres; secondary sampling units of 10 watsan points per sampled district
Years covered	2001 and 2002
Most recent data	2002
Data collection method	21 questionnaires for different types of respondents in each district
Smallest analysis area	National
Information covered	Average number of days taken to process water sector conditional grant payments in various offices
Same for each year?	N/a
Sanitation coverage info	N/a
Same for each year?	N/a
Data strengths	Provides a double average, firstly for each district over the reference period, and then for all sampling districts
Data weaknesses	Basis for sampling not mentioned Survey aggregates can only be derived at national levels only

Value for money technical audit

Sample	All districts grouped under Technical Support Units
Years covered	Annually from 1996/97 to 2000/01
Most recent data	20021
Data collection method	Assessment of district work plans and budgets; physical inspection of sampled infrastructure
Smallest analysis area	District
Information covered	Sector Planning and management capacity; procurement process; contract supervision and monitoring; functionality of O & M of structures; financial management, reporting and accountability; private sector capacity
Same for each year?	N/a
Sanitation coverage info	N/a
Same for each year?	N/a
Data strengths	Covers all districts
Data weaknesses	Data collection method not well defined in availed documents Study carried out by eight different consultants using varying methods Most data is descriptive (e.g. VFM judged in categories such as 'Fair' or 'poor')