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Sector Capacity Study
Water and Sanitation

Final Report

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TABLE OF CONTENTS

Page

Abbreviations

ACCA	Association of Chartered Certified Accountants
ADC	Area Development Committee
AfDB	African Development Bank
AG	Auditor General
APM	Area Pump Minder
CABS	Certificate in Accounting and Business Studies
CDA	Community Development Assistant
CEO	Chief Executive Officer
CDO	Community Development Officer
CIMA	Chartered Institute of Management Accountants
CP	Cooperating Partner
CU	Commercial Utility
Danida	Danish International Development Assistance
DIP	Decentralisation Implementation Plan
DISS	Department of Infrastructure and Support Services
DTF	Devolution Trust Fund
DLGA	Department of Local Government Administration
DPI	Department of Planning and Information
DWA	Department of Water Affairs
ECZ	Environmental Council of Zambia
EHO	Environmental Health Officer
EHT	Environmental Health Technician
FNDP	Fifth National Development Plan
GRZ	Government of the Republic of Zambia
GTZ	German Technical Cooperation
GWP	Global Water Partnership
HR	Human Resources
HRD	Human Resources Development
IFA	Intergovernmental Architecture
IFMIS	Integrated Financial Management Information System
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau (German)
KRC	Knowledge and Resources Centre
MACO	Ministry of Agriculture and Co-operatives
MBA	Master of Business Administration
MCDSS	Ministry of Community Development and Social Services
MDG	Millenium Development Goals
M&E	Monitoring and Evaluation
MEWD	Ministry of Energy and Water Development
MLGH	Ministry of Local Government and Housing
MoE	Ministry of Education
MoFNP	Ministry of Finance and National Planning
MoH	Ministry of Health
MSTVT	Ministry of Science, Technology and Vocational Training
MTENR	Ministry of Tourism, Environment and Natural Resources
NATech	National Accounting Technician
NGO	Non-Governmental Organisation
NIPA	National Institute of Public Administration
NISIR	National Institute of Scientific and Industrial Research
NRDC	Natural Resources Development College
NSTC	National Science Technical Council
NWASCO	National Water and Sanitation Council
PAWD	Partnership for Africa Water Development

PEMFA	Public Expenditure Management and Financial Accountability Reforms
PHAST	Participatory Hygiene and Sanitation Transformation
PLGO	Provincial Local Government Officer
PSD	Private Sector Development
PSM	Public Service Management (Project)
PSRP	Public Service Reform Programme
PST	Programme Support Team
RHC	Rural Health Centre
RWSS	Rural Water Supply and Sanitation
SAG	Sector Advisory Group
SOMAP	Sustainable Operation and Maintenance Project for Rural Water Supply
TA	Technical Assistance
TEVET	Technical Education, Vocational and Entrepreneurship Training
TEVETA	Technical Education, Vocational and Entrepreneurship Training Authority
TOR	Terms of Reference
TOT	Training-Of-Trainers
UK	United Kingdom
UNDP	United Nations Development Fund
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations International Children's Emergency Fund
UNZA	University of Zambia
USD	United States Dollars
UTH	University Teaching Hospital
WASAZA	Water and Sanitation Association of Zambia
WASHE	Water, Sanitation and Hygiene Education
WHO	World Health Organization
WRAP	Water Resources Action Programme
WRM	Water Resources Management
WRRU	Water Resources Research Unit (NISIR)
WSP	Water and Sanitation Programme (partly belonging to the World Bank)
WSPS	Water Sector Programme Support (Danida-support)
WSS	Water Supply and Sanitation
ZICA	Zambia Institute of Chartered Accountants
ZK	Zambian Kwacha
ZWP	Zambia Water Partnership

EXECUTIVE SUMMARY

This chapter provides an overview of the main capacity gaps identified in the water and sanitation sector, the constraints and competing factors facing the sector and a summary of the suggestions and recommendations for the way forward. Reference is made to the following chapters for an analysis of the existing capacity situation and for justifications of the rough estimates made for future capacity requirements.

Capacity Requirements and Gaps

The following table, which is also found in section 7.1, gives a rough estimate of the additional number of staff required within the three sub-sectors as well as two cross-cutting areas.

Annual Additional Staff Requirements (all converted to full-time positions)

Sub-sector/ areas	Public sector/ parastatal	District and Municipal Councils	Commercial Utilities	Private Sector
RWSS	MLGH/ DISS Central: 5 MLGH Acc. Central:2-3 MLGH/ DISS Regional: 8	District Councils: 108 Municipal Councils : 10		Consultants First 3 y.: 12-18 After 3 y.: 8-14 Auditors 0.5 Drilling 10-15 rigs w. staff Borehole siting 4-10 teams Drilling supervision 10-15 supervisors Test pump superv. Some technicians Local well-diggers and masons Significant number
Urban WSS	MLGH/ DISS Central: 1 DTF: 1		More staff with degrees/diplomas. If 25% of total staff = 136	Consultants: 18 Contractors Skilled and unskilled labour
WRM	1999/2003 scenario: 195-220 mainly provincial + district levels 2005 scenarios: No staff increase, but more WRM planners etc.			Consultants: 8 Contractors Skilled and unskilled labour
Water Quality Labs	Upgrading of lab. facilities and staffing		Upgrading of lab. facilities and staffing	Upgrading of lab. facilities and staffing
Research and Dev.	UNZA WRM Centre: 5 NISIR/ WRRU: 5 RWSS Centre: 5			

In addition to the above number of additional staff required, there will also be a need to replace some of the existing staff within the sector because of retirement, resignations and illness/ death.

The capacity gaps, both in terms of number of staff and their qualifications, are greatest at district level and in the Commercial Water and Sewerage Utilities. It is also here that it is most difficult to attract and retain well-qualified staff, both because of the remuneration packages offered and the relative remoteness of some of the areas.

In the RWSS Sub-Sector, it is considered essential that the RWSS staffing in DISS/ MLGH is strengthened with additional staff at both central and regional/ provincial level in the very near future. Otherwise, in the view of the Consultant it will be very difficult to implement the National RWSS Programme. The additional staff members at regional level are proposed to include 4 hydrogeologists to assist and advise the districts, as generally district employees lack this type of expertise.

It is expected to be difficult to attract sufficient, well-qualified candidates for the proposed regional hydrogeologist positions. The private sector is also expected to find it difficult to provide the required number of drilling supervisors with geological/ hydrogeological backgrounds because of the limited number of graduates and the competition from the mining sector.

The additional RWSS staff members are expected to include a number of social scientists at different levels. There should be sufficient social scientists at degree and diploma levels available in Zambia. However, there is a shortage of social scientists with water and sanitation experience.

In the Urban WSS sub-sector, it seems beneficial for several of the Commercial Utilities (CUs) to gradually change the composition of their staff so they have more staff with degrees or diplomas within engineering, community development/ social science, financial management etc. Although sufficient diploma holders may be available, many of the CUs are expected to face difficulties in attracting well-qualified staff because of their low remuneration packages.

Because of the better employment conditions in the private sector, it is expected the required number of consultants will be available. They may, however, not all have the desired years of experience from working in the water and sanitation sector. The general shortage of hydrogeologists is also foreseen to constitute a problem and there may be a shortage of water engineers with a degree and with sufficient experience in design, project management, construction supervision etc.

In the Water Resources Management (WRM) sub-sector, there is much uncertainty about the future staff requirements. However, in all scenarios the recruitment of additional WRM planners and hydrogeologists appears to be essential, for the latter particularly to be based at provincial/ catchment levels. Currently, there is a substantial shortage of both WRM specialists and hydrogeologists. The establishment of the planned WRM Centre at UNZA should assist in overcoming at least part of this bottleneck.

There appears to be a need to pay more attention to water quality issues in all three sub-sectors, including the upgrading of laboratory facilities and an increase in the current number of staff at various laboratories.

Researchers and other sector professionals are expected to be interested in future research and development positions, although it may depend on the employment conditions offered.

Capacity Constraints and Competing Factors

The following is a brief summary only of the main capacity constraints and competing factors mentioned in chapter 7:

- The remuneration in the public sector is very low compared to the private sector, which makes it difficult to attract and particularly to retain qualified staff. The private water sector also faces competition from other sectors and/ or neighbouring countries because of the better salaries and/ or conditions offered.
- There is severe competition from other sectors for some professionals. The mining sector attracts the far majority of the few hydrogeologists available, i.a. by offering students scholarships. Currently social scientists are more attracted to work in programmes for vulnerable children, poverty reduction and HIV/ AIDS prevention than in the water and sanitation sector.
- There is also competition from neighbouring countries for a number of sector professionals, including engineers, geologists/ hydrogeologists, ACCA and CIMA accountants, health staff as well as researchers and university lecturers.
- The high HIV/ AIDS prevalence rate in Zambia has repeatedly been mentioned as one of the main reasons for the high number of vacancies found in some institutions in the water and sanitation sector.

The following are other constraints that the sector faces and which may influence the capacity available to the sector:

- The delays in the decentralisation of responsibilities to the districts, including the delays in transferring most/ some district-based line ministry staff to the District Councils
- The delays in enacting the Water Resources Management Bill, which makes it difficult to plan for capacity development in the WRM sub-sector
- The slow pace of the salary reforms within the public sector
- The apparent lack of financial management and procurement capacity within the public sector, the District Councils and the Commercial Utilities

Suggestions and Recommendations

The following is a summary of the suggestions and recommendations included in chapter 8:

Overall Suggestions (of relevance to not only the water and sanitation sector)

- Priority should be given to the continuation of the public sector reform process, with inter alia decentralisation to Local Authorities and the pay reform for public servants.
- Additional funding should be identified for universities, colleges and other training institutions to enable them to upgrade the quality of their education and research activities.
- The GRZ bonding policy should be reinforced when offering scholarships and other training opportunities to its staff.
- It should be considered to investigate in further details what can be done to significantly improve the financial management and reporting from District Councils, the CUs and the main ministries involved in the water and sanitation sector.

Specific Suggestions and Recommendations

Longer-term:

- Institutions within the water sector should seriously consider offering scholarships to hydrogeology students against bonding for a number of years.
- Sector institutions are suggested to seriously consider interacting more with training institutions providing degree and diploma programmes on sociology, development studies, social work etc. with the aim of getting water and sanitation included in their curricula.
- The planned WRM Centre at UNZA should be established as soon as possible so the WRM training at diploma, bachelor and master levels can start.
- The universities, in cooperation with sector institutions, should consider what steps can be taken to facilitate that additional diploma engineers upgrade their qualifications through a degree programme.
- It should be considered to nominate a laboratory as the National Reference Laboratory to be responsible for national and international inter-calibrations and advice on analytical methods and quality control etc. Furthermore, many laboratory facilities should be upgraded and procedures improved.
- It is suggested, in connection with the further development of the research and development component of the National RWSS Programme, to consider the proposal put forward in 2006 for the establishment of a Knowledge and Resource Centre for the water and sanitation sector.

Short-term

- Priority should be given to the enactment of the Water Resources Management Bill. It is suggested that the consequences of the new Water Act and decentralisation process are taken into account before employment of additional DWA/ MEWD staff at especially provincial and district levels.
- Immediate steps should be taken to employ the additional RWSS staff foreseen in the proposed new DISS structure or alternatively as described in the Final Draft of the National RWSS Programme. The Consultant recommends that in addition to the staff in the proposal for the new DISS structure 4 regional hydrogeologists are also employed.
- Funds should be provided as soon as possible under the National RWSS Programme enabling each District Council to employ two additional RWSS specialists. It should be considered to hire the additional Programme Support Teams as soon as feasible to assist with capacity development at district level.
- The capacity of some of the CUs should be strengthened, i.a. by employing more staff with a degree or a diploma. To afford this, the retrenchment of surplus unskilled staff appears essential. GRZ should consider whether it is possible to speed up the release of funds to assist with this retrenchment.
- A mechanism should be found to co-ordinate the current water quality monitoring and analyses to maximise the limited support and also enhance effective exchange of information on the results.
- A mechanism should be established to coordinate the short training courses being arranged within the water and sanitation with support from different CPs, NGOs and Government institutions.
- In addition to targeting Public Sector, Local Government and NGO employees, short training courses should be targeted at private sector employees within the water and sanitation sector.

1 INTRODUCTION

1.1 Background and Objective of Study

The water sector in Zambia is preparing major investment programmes to improve service delivery and to achieve the Millennium Development Goals (MDGs) for the water and sanitation sector. Zambia has thus recently launched a Fifth National Development Plan (FNDP) for 2006 – 2010 which includes major investments in water and sanitation.

It is generally recognised that the capacity to plan and implement programmes and projects in the sector, as in other sectors, is weak and needs to be addressed. Capacity constraints are experienced both at central government level and at district level. The private sector is critical for the potential to improve water and sanitation systems within the next 10 years as expected. However, the sector faces competition for qualified staff from a growing mining industry and from other countries in the region. Other capacity constraints include the HIV/ AIDS epidemic in Zambia, which is widely recognised as having serious implications for the human resources situation in inter alia the water sector.

On the above background, the Ministry of Local Government and Housing (MLGH) and the Danish Ministry of Foreign Affairs commissioned a capacity study within the water and sanitation sector. Grontmij | Carl Bro A/S, in cooperation with Zulu Burrow Ltd., was engaged to carry out the study.

The objective of the consultancy is to:

Establish sector capacity in such a manner that the Government of Zambia (GRZ), together with Cooperating Partners (CPs), can focus on building the correct needed capacity amongst various institutions and individuals. The consultant shall provide an overview by mapping sector capacity and make recommendations on specific interventions to be done by GRZ and CPs. This mapping needs to take into consideration the overall discussion on capacity development currently going on in Zambia. Key reform programmes in this regard to consider are the Public Service Reform Programme, the Public Expenditure Management and Financial Accountability Reforms (PEMFA) Programme as well as the Decentralisation Implementation Programme"

The Terms of Reference (TOR) for the assignment is included as Annex 1. The sector capacity study was carried out from end June – end August 2007.

1.2 Main Study Activities

The main activities during the study were collection and analysis of staff data and views from key stakeholders within the water and sanitation sector, including a number of ministries, other Government institutions, training institutions, CPs, NGOs, consultants and advisers. A small questionnaire and a staff form were designed and used to collect data in connection with meetings and in some instances distributed to institutions for them to fill and return to the consultancy team.

Meetings were held with the three components under the Public Service Reform Programme, namely the Decentralisation Secretariat, the Public Expenditure Management and Financial Accountability Reforms (PEMFA) Project and the Public Sector Management (PSM) Project. A visit was also paid to Chibombo district.

The list of key persons met is included as Annex 2.

Furthermore, a number of documents were collected and reviewed. The list of the key documents consulted is included as Annex 3.

1.3 Limitations of the Study

Because of the limited time available for the study, it was agreed that the emphasis should be on mapping of the present sector capacity and identification of gaps and that a strategy for capacity development would be dealt with at a later stage. The suggestions and recommendations contained in this report should therefore only be seen as inputs for consideration when developing a more comprehensive capacity development strategy for the sector or for each sub-sector.

At the start of the study, it was agreed that all, or most, data collection would be done from Lusaka. This means that there are several gaps in - and uncertainties about - the data included in this report for provincial and district level institutions.

The study includes the sub-sectors of rural water supply and sanitation (RWSS), urban water supply and sanitation (UWSS) as well as water resources management (WRM). The capacity in both the public and private sector to deal with on-site sanitation in rural areas is included in the study. The capacity to design, construct and manage urban sewerage systems, including wastewater treatment plants, has however not been considered in detail because of the lack of information and due to the limited time available. Furthermore, it has been indicated that major works that may be required in the future, such as construction of large wastewater treatment plants with full treatment, would most likely be tendered under international design and build contracts with procurement assistance from international consultants. Such works would therefore only partly draw on the Zambian human resource base.

The report includes the data it was possible to collect from various institutions, often after several meetings. An attempt was made to collect the same type of detailed staff data from all key institutions involved in the sector. However, the staff data available in the individual institutions differed, which is the reason for the variance and the gaps in the staff data included in this report.

Attempts were made to collect detailed staff data from Zambian consultancy companies identified as having significant experience in rural water supply and sanitation and in urban water supply. Data were, however, only received from three of them. The names of private consultancy companies with experience from the water and sanitation sector have therefore not been included in this report. Similarly, detailed data were not obtained from individual contractors, drillers and artisans. Consequently, no company names have been included.

Priority was given to collect data and views from the main public sector and parastatal institutions in the sector and from the private sector. This meant that unfortunately there was not sufficient time for the study team to have meetings with, and obtain detailed staff data from, all CPs and all NGOs active in the sector.

Some information is included in this report on short-term training courses being offered by different training institutions and programmes. It is, however, outside the scope of the study to provide a full overview of all the capacity development activities taking place in individual water and sanitation programmes and in other relevant programmes and initiatives. Furthermore, the list of training institutions and their relevant long-term training programmes may not be exhaustive.

Rough estimates of future capacity requirements have been made for each of the three sub-sectors of rural water supply and sanitation, urban and peri-urban water supply and sanitation and water resources management. It should, however, be emphasized that some of the estimates on the number and qualifications of future staff required are very preliminary.

Finally, it should be mentioned that the two chapters on sector context and sector framework, respectively, are based on information and documents available to us. Some relevant information may therefore not have been included in the two chapters. Furthermore, these sections were on purpose kept relatively brief so as not to make the report even longer.

1.4 Expression of Gratitude

The study team would like to express its sincere gratitude to all the stakeholders met, including government, private sector and training institutions, NGOs, CPs and individuals, for their helpful, valuable and committed assistance to the team.

We are also grateful for the comments received during the presentation of the draft report at a meeting in September 2007, where representatives from MoFNP, MLGH, MEWD and a number of CPs were present, and for the subsequent written comments received. The comments were used to update and finalise the report. One of the main updates is that the final report includes a separate section on the limitations of the study.

2 SECTOR CONTEXT

2.1 Water Sector and Capacity Development Investments

The NDP 2006 – 2010 states that the proportion of the GRZ budget for water and sanitation will be raised to at least 0.6% by 2010 from a low of 0.2% in 2006. Most of the priority water and sanitation interventions during the FNDP period will be in rural areas (FNDP, p. 25). The total budget from GRZ and CPs for 2006 – 2010 for water resources development is ZK 250.42 billion (approx. USD 62.6 million) and for water supply and sanitation ZK 1,227.8 billion (approx. USD 307 million). Approximately 92% of the budget for water and sanitation investments is planned to come from CPs, while the figure is 34% for the water resources management budget.

The high priority given to education in the FNDP is another important context for this capacity study. The FNDP thus lists as one of its expenditure priorities to "significantly shift towards interventions aimed at increasing the quality of education and enhancing skill development, which is in critical short supply". It is planned to increase the spending for education (basic, high school and tertiary) to about 22% of the GRZ budget by 2010 from about 16% in 2006. Approximately 83% of the total 2006 – 2010 budget for basic, high school and tertiary education comes from GRZ. The FNDP does not have a break-down of the proportion allocated to tertiary education, but according to several informants the increased spending will be on basic education in order to reach the MDGs.

It is, however, the intention to increase the spending for the Technical Education, Vocational and Entrepreneurship Training (TEVET) sub-sector, so that it reaches at least 0.6% of the GRZ budget by 2010 compared with 0.3% in 2006 (FNDP, p. 24-25). 42% of the total TEVET budget for 2006 – 2010 comes from GRZ, while the rest is financed by CPs.

2.2 Private Sector Development

The FNDP structural policies include private sector development (PSD). To enhance PSD a special programme is being implemented. This includes:

- Improvement to the policy environment and institutions that serve the private sector;
- Improved regulations and laws to foster PSD;
- Infrastructure development, i.a. by encouraging Private Public Investments
- Business facilitation and economic diversification by e.g. removing administrative barriers;
- Trade expansion by creating greater opportunities for access to regional and international markets;
- Citizens' economic empowerment by unlocking the growth potential of the medium, small and micro enterprises sector through business development support and empowerment initiatives.

The PSD programme seeks for example to cut by two-thirds the number of steps and the amount of time needed to open a business in Zambia. The key milestone here is the establishment of a "one stop shop", the Zambian Development Agency. The agency was approved in 2005 and has been operational since July 2007.

It is also planned to establish Patents and Companies Registration Offices at provincial level to remove administrative barriers to business and investment entry and operation outside Lusaka. The Copperbelt, Southern and Eastern provinces will be pilot provinces.

2.3 Public Service Reform Programme

The FNDP structural policies include enhancement of the efficiency of the public service delivery system through the Public Service Reform Programme (PSRP). The overall goal of the PSRP is to improve the quality, efficiency, cost-effectiveness and delivery of public services to the people of Zambia. The PSRP focuses on three main areas as described below.

Public Expenditure Management and Financial Accountability Reforms (PEMFA)

The primary objective of the PEMFA programme is to improve public expenditure management and strengthen overall financial accountability in the public sector.

The key activities are:

- Implementation of the Commitment Control System and Financial Management System to all ministries, provinces and other spending agencies;
- Overhauling of the legal and regulatory framework;
- Implementation of the new financial management system (Integrated Financial Management Information System, IFMIS);
- Reform of the public procurement systems; and
- Strengthening of oversight processes, including that of Parliament

PEMFA was established in 2005, but actual implementation only started after the first work plan was approved in mid 2006. PEMFA is based in the Ministry of Finance and National Planning (MoFNP) and is expected to run until at least the end of 2008.

In 2006, PEMFA conducted a training needs assessment for accountants in the public sector. It found that most accountants in charge of accounting departments had National Accounting Technician (NATech) qualifications, which are assessed to be sufficient for them to carry out their duties. However, in its original form NATech training included very little on public accounting, so PEMFA has assisted in revising the syllabus so it now includes a component on public accounting.

PEMFA is sponsoring the following training activities at central and provincial level (PEMFA does not directly support activities at district level):

- Several public sector accountants to study NATech and the ACCA
- A few public sector staff to study for M.Sc. related to IFMIS
- A few public sector staff to study for Masters of Business Administration (MBAs)
- Training of public sector staff in the IFMIS; the IFMIS is being piloted in 2007 before being rolled out to all public sector institutions
- Training on computer appreciation before/ in connection with the training on IFMIS
- Training for central, provincial and district staff on tendering procedures in connection with the ongoing reforms where the National Tender Board is being changed into a regulatory board. In the future, individual ministries, districts and other institutions will thus be responsible for all procurement.

PEMFA has also supported the development of accounting and auditing manuals for the Public Sector.

PEMFA is intending to reinforce the Government bonding policy for those that receive training under PEMFA. This is to counter the problem of retaining trained personnel, who are often/ sometimes offered more attractive working conditions in the private sector. According to PEMFA staff, this is a problem even in relation to accountants with NATech qualifications.

Public Service Management (PSM) Project

The main objective of the PSM Project seeks to change the way public services are delivered by building on the rightsizing, pay and performance management reforms that the Government launched in 1993. The PSM is a five-year project and is now in its second year. It consists of the following four sub-components:

- Rightsizing: this includes reviews of ministries and other public sector institutions; PSM is in this connection assisting with the development of future organisational structures for the City, Municipal and District Councils as part of the decentralisation process
- Pay Reform: this includes a review of the whole pay structure in the Public Service and preparing of a proposal for an improved salary structure and levels as well as other incentives
- Service Delivery Improvement in all parts of the Public Service: this includes i.a. a fund for innovative projects based on proposals from within the Public Service
- Payroll Management and Establishment Control: this includes computerisation of payroll systems at different levels and regular monitoring to address the issue of ghost workers

There have not been many activities within the Pay Reform Sub-component as yet. A contract is being finalised with a consultant who will assist with the review of the existing pay structure and with the preparation of a proposal for the future pay policy. It is hoped that this proposal will be ready by the end of 2007. The pay policy is to be a guide for all Public Service institutions, most likely including District Councils. It is still to be decided whether grant aided institutions like e.g. University of Zambia (UNZA) will also be guided by the new policy (currently UNZA decides on its own service conditions). Adoption of the revised pay policy is expected during 2008. For budget reasons, the implementation may only start in 2009.

Decentralisation

The Government's vision for decentralisation is "to achieve a fully decentralised and democratically elected system of governance characterised by open, predictable and transparent policy making and implementation processes, effective community participation in decision-making, development and administration of their local affairs while maintaining sufficient linkages between the centre and the periphery".

The key components of the Decentralisation Implementation Plan (DIP) for 2006 – 2010 are:

- Sensitisation and Civic Education
- Legal and Regulatory Framework
- Institutional and Human Resources Capacity Building
- Local Development Planning and Budgeting
- Financial Management and Accounting
- Fiscal Decentralisation and Revenue Mobilisation
- Sector Devolution
- Infrastructure Development and Services Provision

- Monitoring and Evaluation
- Programme Management and Coordination

The DIP has been under discussion for some time and is now being considered by the full Cabinet for approval. The Decentralisation Secretariat expects the DIP to be approved in the very near future. The new decentralised organisational structures for the city, municipal and district councils were being discussed at the time of writing this report. The Decentralisation Secretariat expects that all new district structures are in place by the end of 2007, so the movement of staff from sector ministry structures to Local Governments can start. The Ministry of Education (MoE) was reported to have developed its sector devolution plan, while the Ministry of Agriculture and Cooperatives (MACO) and perhaps Ministry of Health (MoH) may be the next ministries to devolve functions and move staff. In total 13 sector ministries are to devolve functions to Local Governments.

JICA is through the Capacity Development Programme for Provision of Decentralised Services (CDPPDS) supporting several components of the DIP. This includes training of District Councils on inter alia investment planning, M&E, auditing and finance management (the latter in cooperation with GTZ). Other CPs may provide basket funding for the DIP, depending on the outcome of a joint Government-CP appraisal.

The Fiscal Decentralisation Component is based on the Intergovernmental Fiscal Architecture (IFA), where the following grants will be provided to Local Governments:

- Restructuring grant - this is assistance to pay off debts, improve facilities, housing etc.
- Recurrent grant – this is assistance to pay salaries and other operational costs
- Capital grant – this is for priority investments defined in the district development plans

The release of grants is likely to be conditional on the performance of the individual Local Governments in relation to a number of indicators. The FNDP thus states that “in spite of the urgency to devolve power and authority to lower levels, it is the Government’s view that it is not appropriate to transfer all functions and finance matters to those local authorities that still suffer from severe human resource capacity shortfalls. It is in this vein that the issue of capacity building prior to, and during the implementation of, a decentralised system shall receive particular attention during the FNDP implementation.” (FNDP p. 243). As part of the capacity development efforts, it is the intention to provide special capacity development grants to Local Governments based on an assessment of needs.

As part of the DIP, support will be provided to form Area Development Committees (ADCs) in all wards. ADCs have been formed and trained in some wards, in other wards they are reported to have been formed but not be very active. The Decentralisation Secretariat has prepared manual(s) to assist in forming and training ADCs.

2.4 HIV/ AIDS Prevalence

The HIV/ AIDS prevalence rate is estimated at about 16% among the 15 to 49 years age group and about 1 million Zambians to be infected with HIV. About 8% of boys and 17 of girls aged 15 to 24 are living with HIV and 40% of infants born to HIV infected parents are HIV infected.

Although there according to the FNDP is an overall stabilisation of the national HIV prevalence to 1994 levels after years of a consistently increasing trend, HIV/ AIDS is still one of the major causes of illness and death among the young and middle aged Zambians. In addition to being a human tragedy, it also has a very detrimental effect on the country's human resource base and on the efforts to improve the living conditions in the country.

It is estimated there are between 750,000 to1.2 million orphans whose parents died from AIDS. Access to formal education is a key issue for these children.

HIV/ AIDS is to be mainstreamed into the all developmental activities, which i.a. include the improvement of the capacity of district, provincial and national planning mechanisms in multi-sectoral HIV and AIDS planning and mainstreaming (FNDP, p. 300).

2.5 Ongoing Discussions on Capacity Development in the FNDP Context

In early 2007, Germany, UNDP and the World Bank prepared a discussion note on the challenge of capacity development in the context of the FNDP. The note is intended to stimulate discussion leading to a consensus on a capacity development agenda for Zambia over the period of the FNDP and beyond. It is expected that an overall strategy for capacity development will be developed based on the note, further studies and discussions.

The present capacity study for the water and sanitation sector can be considered an input to the overall discussion on capacity development.

The following are some key points from the discussion note:

- The ongoing Public Service Reform Programme (see also section 3.3) is a necessary condition for improving capacities in the public sector.
- CPs are concerned that, with the move towards direct budget support as the Government's preferred modality of aid flow to Zambia, these resources are effectively managed and support activities that lead to better service delivery for the poor and meeting the MDGs.
- The high HIV/ AIDS prevalence rate in Zambia represents an unprecedented challenge that threatens to wreck the country's development prospects. It is therefore essential HIV/ AIDS is mainstreamed into the implementation of the FNDP to avoid that efforts to develop national capacities are severely undermined.
- International migration of skilled and highly skilled Zambians increased rapidly during the last ten years. The health sector is the most immediately affected but institutions of higher education also experienced important skills losses during economic downturns and as a result of retrenchment in the public sector. In the view of CPs, the Government needs to strengthen policies already put in place to retain qualified staff and needs to expand this approach to other sectors as well.
- Capacity development involves support at three levels – individuals, organizational and enabling environment – which are interdependent and it goes well beyond technical cooperation and training approaches. It involves short-, medium- and long-term interventions, technical input as well as support for reform processes and change management.

3 SECTOR FRAMEWORK

3.1 National Water Policy

The National Water Policy from 1994 is guided by seven key principles, namely:

1. Separation of water resources management from water supply and sanitation;
2. Separation of regulatory and executive functions;
3. Devolution of authority (from central government) to local authorities and private enterprises;
4. Achievement of full cost recovery for the water supply and sanitation services through user charges in the long run;
5. Human resources development leading to more effective institutions;
6. The use of technologies more appropriate to local conditions;
7. Increased Government priority and budget spending to the sector.

These principles have guided the sector reforms that have taken place since 1994 within the key water sub-sectors: rural water supply and sanitation, urban water supply and sanitation and water resources management.

The National Water Policy is under revision, but the above key principles are expected to be maintained.

3.2 Legal Framework for the Sector[1]

The Local Government Act No. 22 of 1991 gives local authorities the prime responsibility for the provision of WSS services to all areas within their boundaries. The local authorities are empowered to make by-laws, set standards and guidelines for provision of services.

The Water Supply and Sanitation Act No. 28 of 1997 specifies that local authorities may provide urban WSS services and establishes NWASCO as the regulator for the WSS sector. Local authorities may provide services by themselves or through commercial utilities licensed and regulated by NWASCO.

The present Water Act from 1948 is concerned with the development and management of surface water resources, but does not deal with groundwater. A revision of the Water Act is scheduled to be presented to Parliament in 2007. The proposed new act will inter alia have provisions for regulating groundwater (further details on the new Water Act are included in section 4.5).

The Environmental Protection and Pollution Control Act of 1990 deals with protection of the environment and control of pollution.

The Public Health Act of 1995 has provisions for the management of sanitation and prevention of pollution to water supplies by the local authorities.

[1] This section is based on the Final Draft National Rural Water Supply and Sanitation Programme, 2006-2015

3.3 Rural Water Supply and Sanitation Sub-Sector

GRZ is finalizing a National RWSS Programme for 2006 – 2010. The overall objective of the programme is to "*provide sustainable and equitable access to safe water supply and proper sanitation to meet basic needs for improved health and poverty alleviation for Zambia's rural population and contribute to achievement of Millennium Development Goal for water".* The programme is expected to have seven components: 1) Water Supply, 2) Sanitation, 3) Policy Development, 4) Capacity Development, 5) Information Management, 6) Operation and Maintenance of Water Points, and 7) Research and Development.

The National RWSS Programme is scheduled to be launched in the second half of 2007. Ongoing and future support from CPs is to follow/ be part of the national programme.

MLGH is the programme executing agency through DISS. The RWSS Unit in DISS is responsible for the day-to-day programme execution. In accordance with the Local Government Act, RWSS service provision is the responsibility of District Councils. In the interim, it is proposed that the D-WASHE committees, consisting of district council and key sector ministry staff, should continue assisting the Council.

It is estimated that 37% of the rural population in 2005 had access to safe water supply and 13% to proper sanitation facilities. There is, however, much uncertainty about these coverage figures. The target is to increase the water supply coverage to 60% by 2010 and to 75% by 2015, while the target for sanitation coverage is 35% by 2010 and 60% by 2015 (National RWSS Programme, Final Draft).

3.4 Urban Water Supply and Sanitation Sub-Sector

A concept paper for a National Urban Water Supply and Sanitation Programme was developed in the first half of 2007. According to this, the National Urban WSS Programme is to cover formal residential areas, peri-urban areas, commercial and industrial areas and urban zones occupied by Government institutions. The National Urban WSS Programme is expected to cover 15-20 years. A programme preparatory team is being established, headed by MLGH.

MLGH has the overall responsibility for urban WSS and will also be the executing agency for the National Urban WSS Programme.

According to NWASCO's Urban and Peri-Urban WSS Sector Report 2005/2006, the national urban water supply coverage was 67% in 2005/2006. There were 9 Commercial Utilities (CU) which were responsible for 86% of the provision of urban water supply, while 22 Local Authorities were responsible for 13% and 6 Private Schemes for 1%. The average sanitation coverage by sewer network among the CUs was 32% in 2005/2006. The number of CUs has now increased to 10.

The Baseline Study from 2005 indicates that about 65% and 72% of the residents of peri-urban and low-cost areas, respectively, did not have access to sustainable water supply and acceptable sanitation. The Devolution Trust Fund (DTF) has since 2001 been financing projects for CUs to extend their services to peri-urban areas.

The aim is that 80% of the urban and peri-urban population by 2010 have access to safe and adequate water supply and 70% have access to proper sanitation systems (FNDP, p. 190).

3.5 Water Resources Management Sub-Sector[2]

A Water Resources Management Bill has been prepared to update the present Water Act from 1948. The Bill proposes, among others, the following institutional framework for water resources management:

- An autonomous National Water Resources Management Authority (NWRMA), replacing the existing Water Board. The NWRMA will be responsible for surface and groundwater management issues;
- Catchment Councils (where feasible) substituting the present Provincial set-up for water management;
- Sub-Catchment Councils (where feasible) complementary to the District set-up;
- Water User Associations, which should be formed on a demand driven basis;
- A Water Resources Development Fund to make investments benefiting the poor;
- A Department of Water Resources to substitute the present DWA and be responsible for policy formulation and guidance as well as international rivers.

A draft Water Action Plan has been developed to guide the implementation of the Water Resources Management (WRM) Bill once it is enacted. The issues addressed in the Water Action Plan fall into the following broad areas

- Enabling Environment – policies, laws, financing arrangements
- Institutional Framework/ Roles and Capacity Building
- Management Instruments/ Tools/ Systems
- Infrastructure for Water Resources Management and Development

[2] This section is based on the Description of Component 3, Support to Integrated Water Resources Management, Water Sector Programme Support, November 2005, GRZ/ Government of Denmark

4 EXISTING SECTOR CAPACITY

4.1 Capacity in Public Sector - Central Government

4.1.1 Ministry of Local Government and Housing

MLGH through DISS has the overall responsibility for planning, implementation, coordination and monitoring of the rural and urban WSS sub-sectors. Table 1 below gives an overview of the existing DISS staff involved in rural and urban WSS and also the MLGH accountants allocated to do accounting for WSS programmes and activities.

In 2005 when the last assessment of human resources in the sector was made, there were six professional staff members in the RWSS Unit. The number of staff is now down to four, after one Senior Engineer recently left the RWSS Unit for a position with UNICEF. This makes the RWSS Unit severely understaffed. The RWSS Unit is not institutionalised within MLGH, which means the unit staff members are not public service employees; their employment conditions are, however, in most aspects similar to those of public service employees.

According to the 2005 human resources assessment report there were two MLGH staff members working with urban and peri-urban WSS. The number of staff has now increased to four; however, one of them is only working part-time with urban/ peri-urban water supply and sanitation, as she is based in MLGH's Human Resources Management Department. All staff members working with urban and peri-urban WSS are public service employees.

As concluded in the HR report from the Danida-supported RWSS Component, June 2007, all RWSS staff members have relevant educational backgrounds. However, they are all keen to acquire further skills and knowledge in both a short-term (programme related) and in a long-term perspective. The same applies to the peri-urban staff member, who was included in the above-mentioned HR assessment. The other 3 staff members working with urban and peri-urban WSS also appear to have relevant educational backgrounds.

No recent assessment has been made of the background and training needs of the accountants doing WSS accounts. However, a Financial and Procurement Management Capacity Assessment was conducted in 2006 before the start of the Danida-supported WSS programme. This placed MLGH in the medium-risk category where the financial management was assessed as neither good nor bad and where assistance was recommended to improve the performance. Timely financial reporting and budget monitoring as well as procurement management were among the areas assessed as weak. Assistance for performance improvements is being provided by the Danida TA team.

At the time of writing this report, the lack of financial reporting is a major problem that leads to significant delays in many WSS activities. Other delaying factors are the time-consuming procedures for approval of payments and for procurement of goods and services. The accountants doing WSS accounts all appear to have relevant educational backgrounds. However, only one accountant works nearly full-time with WSS accounts and she is also responsible for getting approvals for payments, going to the bank etc. When she is on leave or sick, work seems to be left until she is back. Reasons for delays in producing financial statements may be linked to the fact that all accountants are employed by MoFNP, which means that the MLGH management is not always able to set the priorities of the accountants. Other reasons may be time-consuming approval procedures for payments and perhaps reduced motivation, as payment of special allowances in connection with ministry project management units, including for accountants, has recently been discontinued.

Table 1: MLGH WSS Staff, including Management and Accountants

Section/ Unit	No. of Staff			Position	Education			Years of WSS/ accounting Experience			Age		
	M	F	Total		MSc/MA	BSc/BA	Diploma	< 5 y.	5-10 y.	> 10 y.	< 35 y.	35-45 y.	> 45 y.
Senior Management	2	-	2	Director, DISS Ass. Director, DISS	2					2		1	1
RWSS Unit	3	1	4	Head of Unit Sociologist Senior Engineer M&E Officer	1	1	2		2	2		4	
Urban and Peri-Urban Staff	3	1	4	Principal Engineer Senior Engineers (2) Senior HRD Officer	2	1	1		2	2		4	
Accountants doing WSS accounts	1	2	3	Senior Accountant Accountant Ag. Accountant			- CIMA: 1 - ACCA2 student: 1 - NaTech: 1		1	2	1	2	
Total	**9**	**4**	**13**		**5**	**2**	**3 + 3**		**5**	**8**	**1**	**11**	**1**

Note1: The RWSS Unit was established with six positions. Currently, there are thus two vacant positions in the RWSS Unit
Note 2: All accountants are to be registered with the Zambia Institute of Chartered Accountants (ZICA) according to their levels of qualification. To be recognised as ACCA and CIMA accountants, higher level qualifications and relevant accountancy practice are needed, while it is less demanding to get a NATech diploma.

4.1.2 Ministry of Health

The Environmental Health Section of MoH is the section most relevant to water supply, sanitation and hygiene promotion. It has three positions, an Assistant Director and two Chief Environmental Health Officers. Currently all three positions are filled. However, one is abroad on study leave and one is newly appointed after his predecessor retired. For this reason it was not possible to get more detailed staff data from MoH.

4.1.3 Ministry of Education

MoE is responsible for construction of water points and latrines in schools, colleges and universities. At primary and secondary school levels, water and sanitation are incorporated in the curriculum in the subject of environmental science and home economics.

Currently, the Infrastructure Section of the Ministry has 10 staff after recent recruitment of 5 new staff. The current staff members include 4 civil engineers, 3 architects, 1 electrical engineer and 2 surveyors. MoE would like to employ additional staff, including a water and sanitation engineer and some water supply and sanitation technicians.

4.1.4 Ministry of Community Development and Social Services

MCDSS through its Department of Community Development is involved in water supply and sanitation activities, particularly through its staff at district level. At central level, the department has 1 Director, 2 Chief Community Development Officers and 3 Senior Community Development Officers. However, at present their involvement in the water sector is quite limited.

Minimum qualifications required for all three categories of positions are a degree in Development Studies or any other Social Sciences.

4.1.5 Ministry of Energy and Water Development

MEWD through its Department of Planning and Information and Department of Water Affairs has the responsibility for water resources management and development, including having sufficient and reliable data on water resources availability and demand in the country. Until 1998 MEWD was also responsible for rural and urban water supply and sanitation and its provincial and district staff are still providing some assistance to Local Authorities in relation to especially RWSS.

Different lists of currently employed staff were received from MEWD's HRD Department and are not fully consistent. To the extent possible, the data included in this report for DPI and DWA staff members have been verified with DPI/ DWA staff. As far as accountants are concerned, there is some uncertainty whether the current number is 14 or 8. For this study the most detailed list, which includes data for 14 accountants/ internal auditors, has been used.

The Department of Planning and Information (DPI) is a relatively new department that was established following the 1999/2003 Report on the Restructuring of the Ministry of Energy and Water Development. Currently it consists of three sections for Water, Energy and Informatics & Database. Reportedly, a Policy and Coordination Unit is being established within DPI. Some staff from the other sections would be moved to this new unit. Data on the present professional staff in the Water Section of DPI is included in table 2 below. Compared with the 1999/2003 Restructuring Report two vacancies exist among planners in the DPI Water Section.

DWA consists of the following three sections: Ground Water Resources, Surface Water Resources and Water Resources & Management Sections. Table 2 also includes data on the present professional staff in DWA.

The Water Development Board's overall function is to control the use and abstraction of all surface water resources in Zambia by considering and granting water rights (currently, the use of groundwater is not controlled). In the 1999/2003 Restructuring Report it was recommended that the Water Development Board should be delinked from DWA and strengthened in terms of size and scope. According to a staffing list received from MEWD's Department of Human Resources and Administration, the current four staff members are an accountant, a registry clear and two typists, while the Secretary position is vacant. However, apparently a MEWD staff member has been seconded to the position as Secretary to the Board. He is included in the table below. The 1999/2003 Restructuring Report recommended that the Water Board should have seven staff, leaving 2-3 vacancies.

A comparison with the 2005 Sector Capacity Assessment Report shows that all 15 DWA staff members listed in the 2005 report are still working in DWA. Some of the additional 10 DWA staff listed in this present report may also have been DWA staff in 2005, but may have been considered support staff. The MEWD Human Resources Department has reported 6 vacancies among DWA professional staff, with 2 vacancies in the Surface Water Resources Section, 4 in the Water Resources & Management Section (Informatics Unit and 2 and Water Quality Management Unit 2). Compared with the 1999/2003 restructuring report there is, however, a total of 8 unfilled positions in DWA, 3 in the Groundwater Resources Section, 2 in the Surface Water Resources Section and 3 in the Water Resources & Management Section.

According to the MEWD Training Plan 2004-2007 a number of DPI and DWA staff require training within their respective professional disciplines, some at degree/ diploma levels and others in the form of short courses. It is unknown which elements of the training plan have been completed and/ or are ongoing.

MEWD does not appear to have any accountants dedicated to do accounts for DWA. The table below therefore includes information on all accountants in MEWD. As in other ministries, the accountants are employed by MoFNP. Reportedly, there are 14 accountants/ internal auditors in MEWD, which is two more than foreseen in the 1999/2003 Restructuring Report.

The WSPS/ Danida Financial and Procurement Management Capacity Assessment from May-June 2006 puts MEWD in the high-risk category, indicating that there are serious financial and procurement management problems and a very high probability that funds may be misused or misappropriated due to weak internal/ external control structures and/ or capacity. It was recommended that measures, including capacity building, should urgently be discussed and agreed before disbursement of any funds. Danida has received no financial reports from MEWD since its support started in mid 2006.

Table 2: MEWD WSS Staff, including Management and Accountants

Department/ Section	No. of Staff			Position	Education				Years of WSS/ accounting Experience			Age		
	M	F	Total		MSc/MA	BSc/BA	Diploma	Other	< 5 y.	5-10 y.	>10 y.	< 35 y.	35-45 y.	>45 y.
Dept. of Planning and Information														
Senior Management	1		1	Director, DPI				1 Unknown	1 Unknown			1 Unknown		
Water Section	2	1	3	Acting Chief Planner Senior Planner Planner		2		1 Unknown	3 Unknown			3 Unknown		
Dept. of Water Aff.														
Senior Management	1		1	Director, DWA		1					1			1
Groundwater Resources Sections	11		11	Assistant Director Prin. Hydrogeologist (2) Sr Hydrogeologist (2) Chief Drilling Superintendent Senior Driller Transport Officer Sr. Mechanical Superinten. Mechanic (2)	2	1	4	4 Tech2: 1 Craft cer:2 Form5: 1	4		7	2	5	4
Surface Water Resources Sections	3		3	Assistant Director Principal Hydrologist Principal Water Eng.(Acting)	2		1				3		1	2
Water Resources & Management Section	7	3	10	Assistant Director Principal WR Eng. Senior WR Eng. Tracer Principal WQ Officer Senior WQ Officer WQ Officer Principal Hydro Info. Officer Senior Hydro Info.	4	2	3	1 Gr. 12: 1	3	1	6	1	7	2

Department/ Section	No. of Staff			Position	Education				Years of WSS/ accounting Experience			Age		
	M	F	Total		MSc/MA	BSc/BA	Diploma	Other	< 5 y.	5-10 y.	>10 y.	< 35 y.	35-45 y.	>45 y.
				Officer Hydro Informatics Officer										
Water Dev. Board	1		1	Secretary to the Board	1						1		1	
Accountants and auditors in MEWD (not only for WSS)	?	?	14	Principal Accountant Senior Accountant Accountant (2) Assistant Accountant (8) Internal Auditor Assistant Internal Auditor			ACCA2:1 AccTech. Dipl: 10	Acc.cer.: 2 Unkn.: 1		6	8	4	9	1
Total	**26**	**4**	**44**		**9**	**6**	**8 + 11**	**7+3 unkn.**	**7+4 unk.**	**7**	**26**	**7+4 unk.**	**23**	**10**

4.1.6 Ministry of Agriculture and Cooperatives

The Ministry of Agriculture and Cooperatives (MACO) is responsible for agriculture policy, cooperative legislation and services such as livestock, fisheries and agricultural extension and research, phyto and non–phytosanitary services. A recent important milestone in the development of the irrigated agricultural sector has been the adoption of the Irrigation Policy and Strategy that forms part of the Government's National Agricultural Policy. Capacity building and training are important components of the Strategy.

At central level, MACO has only one staff member involved in irrigation, namely a Chief Irrigation Engineer. MACO has more irrigation staff based at provincial and district levels as described below.

4.1.7 Ministry of Tourism, Environment and Natural Resources

The MTENR is the focal point for all Environmental policies and is responsible for their implementation in Zambia. Recently a draft National Policy on Environment has been developed and now awaits Government approval. The Ministry is supported inter alia by the Environmental Council of Zambia (ECZ), which sets the water quality and pollution controls standards.

The Forestry Department of MTENR has staffing at district level, whilst other employees are all based at the Headquarters in Lusaka. Therefore, MTENR's involvement in water supply and sanitation is mainly by catchment management activities through its Forestry Department and water quality monitoring via ECZ.

For the past five years, until June 2007, MTENR collaborated with MLGH on the just ended Central Province Rural Water Supply and Sanitation Project. In addition to being key project Steering Committee member, MTENR, through the Forestry Department, empowered the people with skills on managing the catchment properly with the view to ensure sustainability of water resources. Following the closure of the project there has been strong demands for the MTENR to continue with the Provincial Forestry Catchment Protection activities but financial limitation has hindered this.

MTENR chairs one of the four sub-committees of the Water Sector Advisory (SAG) Committee, namely the Water Resources Management Sub-committee.

METNR and ECZ do not have staff dedicated to only work in the water and sanitation sector. No staff data have therefore been collected from these institutions.

4.1.8 Auditor General

The Auditor General (AG) has the legal obligation to audit any institution where there is government interest. The AG thus audits all ministries, NWASCO and DTF every year and is also expected to conduct annual audits of all Water CUs. However, due to lack of personnel within the AG's office only two CUs are audited each year. The remaining CUs are audited by private auditing companies. The AG is involved in the appointment of the private auditors and is privy to their audit reports.

The auditing of Local Authorities is the responsibility of the Provincial Local Government Office under MLGH. The Auditor General may be involved when there are special circumstances.

4.2 Capacity in Parastatal Institutions – Central Level

4.2.1 National Water and Sanitation Council

NWASCO is a statutory body with the primary mandate of regulating the provision of water supply and sanitation services. This includes the issue of licenses to providers of urban and peri-urban water supply and sanitation services and the development of a number of guidelines.

NWASCO has 15 permanent staff, with nine professional and six support staff. The following table gives an overview of NWASCO's professional staff.

Table 3: NWASCO's Professional Staff

Section/ Unit	Number of Staff			Position	Education	Years w. NWASCO			Age	
	M	F	Total			1-2	3-5	>5	<35 y.	>35 y.
Management	1		1	Director	MSc: 1			1		1
Other staff	6	2	8	Secretary to Council Chief Inspector Technical Inspector Financial Inspector Technical Officer Commercial Officer Public Relations Officer Accountant	BSc/BA: 5 Diploma: 1 Chartered Accountant: 2	6	1	1	2	6
Total	**7**	**2**	**9**			**6**	**1**	**2**	**2**	**7**

NWASCO assesses itself as having sufficient and adequately qualified staff. Some of the professional staff members are, however, pursuing further studies for Masters of Business Administration.

As mentioned in its 2005/2006 report, NWASCO has a Performance Monitoring and Rewarding System where targets are set, good performance is rewarded and innovation is encouraged. According to NWASCO staff, the remuneration packages for professional staff are competitive for attracting and retaining qualified staff.

In addition to its permanent staff, NWASCO employs a number of accredited part-time inspectors to undertake inspections and spot checks of most of the urban WSS providers in the country. For the period 2005/2006, ten part-time inspectors were employed.

The WSPS/ Danida Financial and Procurement Management Capacity Assessment from May-June 2006 places NWASCO in the low-risk category, with good financial and procurement management in place. According to the Auditor General's Office, which conducts annual audits of NWASCO, the audit reports are always good as NWASCO has well qualified staff.

4.2.2 Devolution Trust Fund

DTF was established to foster water and sanitation service delivery in peri-urban areas services by the CUs. It has been financing WSS projects in peri-urban areas since 2001.

DTF has four professional staff and one secretary. It is housed in the same building as NWASCO and receives some assistance from NWASCO's support staff. The following table gives an overview of DTF's professional staff.

Table 4: DTF's Professional Staff

Section/ Unit	Number of Staff			Position	Education	Years w. DTF			Age	
	M	F	Total			1-2	3-5	>5	<35 y.	>35 y.
Management	1	-	1	Manager	MSc: 1		1			1
Other staff	3		3	Sociologist Engineer Accountant	BA: 1 Diploma: 1 CIMA Finalist: 1	1	2		1	2
Total	**4**	**0**	**4**			**1**	**3**		**1**	**3**

According to the DTF Manager, DTF has sufficient and adequately qualified staff to carry out its tasks, although there may be a need for employing another engineer as the scope of work increases.

DTF has 15 part-time consultants who advise and supervise/ monitor the CUs' use of DTF funds. Consultants include engineers, socio-economists/ community development specialists etc. Most/ all consultants have full-time work in other organisations/ companies. With more DTF funds being released in the future, there will be a need for more input from consultants. Some of the present consultants may be able to take on more work, but DTF believes it will also be possible to find additional consultants, both engineers and community development specialists. Some of the consultants have lacked experience, so DTF had to train them before they started. It may be worth examining whether the inexperience of some consultants has affected their ability to advise and supervise/ monitor the CUs' use of DTF funds.

The WSPS/ Danida Financial and Procurement Management Capacity Assessment from May-June 2006 places DTF in the low-risk category, with good financial and procurement management in place. According to the Auditor General's Office, which conducts annual audits of DTF, the audit reports are always good as DTF has well-qualified staff.

Under the Danida-supported programme, a limited 2007 capacity building programme has been identified for DFT. This consists of a combination of in-country and international conferences/ workshops and one online course.

4.3 Capacity in Public Sector – Provincial Level

4.3.1 Ministry of Local Government and Housing

DISS does not have any staff at provincial or district levels. However, MLGH's Department of Physical Planning and Housing (DPPH) as well as its Department of Local Government Administration (DLGA) have provincial level representation. Several district planning officers have mentioned that they seek assistance from the provincial DPPH when preparing their district plans, which include RWSS. The Provincial DLGA is responsible for monitoring and auditing of the District and Municipal Councils.

Staff data from 2005 show that DPPH had between 5 and 8 staff in each province; they included 2-5 planners, some planning assistants and support staff. The number of vacancies in each provincial DPPH varied from 4 to 9.

The DLGA is to have 4-6 professional staff and around 3 support staff in each of its 9 Provincial Local Government Officers' (PLGO's) offices. The professional staff members include the PLGO, local government officers, auditors and assistants. There are several vacancies in each provincial DLGA.

4.3.2 Ministry of Health

There are three established environmental health positions in each province as follows: a Chief Environmental Health Officer (EHO), a Principal EHO and a Principal Environmental Health Technician (EHT).

Unfortunately, it was only possible to get detailed data from Eastern Province, where there are two staff members, a Health Inspector (corresponding to a Chief EHO) and an EHT.

Reportedly, there are also vacancies in many other provinces.

4.3.3 Ministry of Education

Each province has a senior buildings officer, whose role it is to co-ordinate school infrastructure works in the province. They supervise the construction of schools and their water points and offer technical support to the districts. They are also to ensure that surrounding communities have access to school water points. The senior buildings officers have a diploma or certificate as technologists, technicians or craftsmen.

4.3.4 Ministry of Community Development and Social Services

At present the Department of Community Development of MCDSS has between one and three staff members in each province. The following table shows the number of filled positions by province.

Table 5: Professional staff in Department of Community Development, Provincial Level

Province	No. of Provincial CDOs	No. of Senior CDOs	Total Staff
Southern Province	1	1	2
Western Province	1	2	3
Lusaka Province	1	2	3
Luapula Province	1	0	1
Central Province	1	0	1
Copperbelt Province	1	2	3
Eastern Province	1	1	2
Northern Province	1	1	2
North Western Province	1	1	2
Total	**9**	**10**	**19**

CDO = Community Development Officer

As can be seen from the table, the Department of Community Development only has one staff member in Luapula and Central Provinces, whereas the number of established positions in each province appears to be three. At present the Department of Community Development has in total 19 staff at provincial level, which means that it has 8 provincial vacancies.

Minimum qualifications required for the two categories of positions are a degree in Development Studies or any other Social Sciences.

4.3.5 Ministry of Energy and Water Development

Table 6 shows underneath shows the civil servants that the Department of Water Affairs (DWA) had at provincial level by the end of the 2006.

As can be seen there are several provincial positions that are not filled compared to the positions recommended in the 1999/2003 Restructuring Report. Several new positions were recommended to be established at provincial, whereas others were to be discontinued. The main reasons for the many vacancies seem to be that Cabinet Office has not always approved employment of new staff and that it has been difficult to find new staff with the stipulated qualifications.

At the end of 2006, only six out of nine provinces thus employed a hydrogeologist, whereas it was planned to have 2 hydrogeologists in each province. Since then, the hydrogeologists in North-Western and the Copperbelt have resigned, leaving only four provincial hydrogeologists.

At the end of 2006, only Southern Province had a water quality officer and only Copperbelt and North-Western Province had a laboratory technician. Two out of nine provinces had an informatics officer.

At the end of 2006, Northern and Southern Provinces had the highest number of vacancies compared with the number of positions recommended in the 1999/2003 Restructuring Report, followed by Western and Eastern Provinces.

Reportedly, each provincial DWA has a borehole siting team and these teams are capable of siting a total of around 1000 boreholes per year. According to DWA staff in Lusaka, borehole siting is in most cases carried out by technicians, with limited involvement of the provincial engineers. There has therefore been raised concern that geological information is not always utilised as much as it could be, because of lack of involvement of hydrogeologists. Furthermore, the siting teams are only equipped for resistivity profiling and sounding, whereas some private companies have other types of geophysical equipment as well (further described below), and there seems in general to be basis for improving the siting methods, in particular in areas with low groundwater potential. It should, however, be noted that the drilling success rate of boreholes sited by DWA in general is reported to be good – although the teams abandon certain areas due to lack of success.

Table 6: Civil Servants in the Provincial Departments of Water Affairs

Position	Central Prov.	Copperbelt Prov.	Eastern Prov.	Luapula Prov.	Lusaka Prov.	Northern Prov.	N-Western Prov.	Southern Prov.	Western Prov.	Total Existing	Total Restr. Report
Prov. Water Officer	1	1	1	1	1	On suspension	1	1	1	8	9
Sr. Hydrogeologist	1	-	1		Resigned		1	1	1	5	9
Sr. Hydrologist	1	1	1 On study leave		Absent	1	1			5	9
Sr. Water Eng.	-	1	1	1	1	1 Acting PWO				5	9
Hydrogeologist	-	1			Not reported			Not reported since 2005		1	9
Hydrologist	1	-	1		1				1	4	9
Water Eng.	1	1	1	1	1		1			6	9
Water Res. Eng.	1	-	1	1	1				1	5	9
Water Qual. Officer	-	-	-					1		1	8
Informatics Officer	-	-	1		1					2	9
Senior Driller	2	1	2 Incl. 1 on study leave	1	2	1	1	1		11	18
Lab. Technician	Did not report	1			-		1			2	8
Eng. Assistant	1	1	2 In charge In 2 districts	1	1	1	1	1	1	10	9
Draughtsman	Did not report	-			-					-	9
Driller	3	3	2 Incl. 1 on study leave	2	5	1	3	1	1	21	27
Mechanical Superint.	1	1	1	1	1	Snr.: 1	2	1	1	10	9
Electrical Technician	1	1	1		1	1	1			6	9
Tracer	1	-	-	1	1	1 (WDO)	1	1	1	7	9
Executive Officer	1	1	Retired	1	1	1	1	1	Transferred to Lusaka	7	9
Typist	2	1	1	1	Did not	2	1		1	9	9

Position	Central Prov.	Copperbelt Prov.	Eastern Prov.	Luapula Prov.	Lusaka Prov.	Northern Prov.	N-Western Prov.	Southern Prov.	Western Prov.	Total Existing	Total Restr. Report
					report						
Accounts Assistant	-	-	1		-		1			2	9
Registry Clerk	-	1	1		-		1	1		4	9
Mechanic	1	1	1		1		1	1	1	7	9
Others				Learner Technician: 2 Clerical Off.: 1	WDO: 2 Ass. WDO: 1		Learner Technician: 1	Learner Technician: 1	Learner Technician: 1 WDO: 1 Ass. WDO: 1	11	-
Total	**19**	**17**	**20 Incl. 3 on study leave**	**15**	**22**	**11**	**20**	**12**	**13**	**149**	**232***
Proposed in 1999/2003 Restr. Report	**26**	**27**	**26**	**26**	**21**	**26**	**26**	**27**	**26**	**231***	

PWDO = Provincial Water Development Officer; WDO = Water Development Officer

Sources: Cabinet Office: Report on the Restructuring of the Ministry of Energy and Water Development, April 1999 (updated 2003)
2006 Annual Reports from 9 Provincial Departments of Water Affairs

* The small difference is as found in the Restructuring Report from 1999/2003

DWA has around 10 drilling rigs stationed in the provinces. These rigs are totally drilling around 100 boreholes per year. Additionally, around 200 boreholes are rehabilitated. Some of the boreholes are used for irrigation, not domestic water supply. The production, compared to the number of rigs, is relatively low. This may partly be due to the fact that DWA often undertakes drilling in the most remote areas, and some of the more complicated assignments, such as drilling in the Kalahari Sand in Western Province. DWA has percussion rigs and rotary rigs equipped with mud pumps that may be used in this environment. Some information has however been collected that suggests that borehole drilling, construction and development methods are not always optimal. DWA is also undertaking installation of hand pumps in some districts. Furthermore, some Provincial DWA staff members are rehabilitating and in some cases also constructing dams.

To complete the overview of drilling capacity in the public sector, it should be mentioned that the National Service under the Ministry of Defence has around 10 rigs stationed in the provinces. These rigs are generally not working directly under projects funded by CPs, but may do such work as sub-contractors.

4.3.6 Ministry of Agriculture and Cooperatives

The following table shows the current MACO irrigation staff based at provincial and district levels.

Table 7: MACO Irrigation Staff at Provincial and District Levels

Province	No. Staff	Position	Education			
			M.Sc./MA	B.Sc./BA	Diploma	Other
Central	7	Irrigation Eng. Techn. Officer (3) Jr. Techn. Officer (2) Unknown (1)	1	1	3	2 unknown
Copperbelt	4	Techn. Officer (3) Unknown (1)		1	3	
Eastern	4	Irrigation Eng. Sr. Techn. Officer Techn. Officer (2)		2	1	
Luapula	2	Irrigation Eng. PTO(?)		1	1	
Lusaka	12	Sr Irrigation Eng. Irrigation Eng. (3) Sr. Techn. Officer(2) Techn. Officer Jr. Techn. Officer (4) Unknown (1)	4 Incl. 1 PhD	2	3	3 unknown
Northern	5	Techn. Officer Jr. Techn. Officer(2) Unknown (2)		1	2	2 unknown
North-Western	3	Agricultural Spec. Techn. Officer (2)		1	2	
Southern	12	Techn. Officer Jr. Techn. Officer (4) Unknown (7)	2	4	2	5 unknown
Western	5	Sr. Irrigation Eng. CTO(?) Techn. Officer (2) Unknown (1)	1	1	3	
Total	**54**		**8**	**14**	**20**	**12**

Reportedly, MACO is currently running at 50% of its proposed human resource capacity and there is little hope that this situation will change within the foreseeable future. Thus only two out of nine Senior Irrigation Engineers at provincial/ district level are currently in place.

The above table shows a considerable variance in the number of irrigation in each province. There are thus 12 irrigation staff members in Lusaka and also in Southern Province, whereas there are only 2 in Luapula and 3 in North-Western Province.

According to senior MACO staff, qualified staff members leave the Ministry if other opportunities such as project or private sector vacancies arise. On the other hand, they believe there is a shortage of qualified young graduates and professionals entering the labour market.

4.4 Capacity in Public Sector – District Level

4.4.1 District Councils

Rural Water Supply and Sanitation

District Councils are responsible for RWSS service provision. Normally, Councils do not have a RWSS department or unit, but some have a RWSS focal point person nominated among Council staff. In some districts, the focal point person works full-time with RWSS, but this seems to be rare. Reportedly, the focal point is often the Director/ Deputy Director of the Works Department or the Director/ Deputy Director of Planning. Data on RWSS staff within the District Council will be collected in connection with the RWSS Information Management and M&E System which is planned to be rolled out to all rural districts in 2007-2008.

Out of the six pilot districts for the RWSS Information Management and M&E System, four have RWSS focal point staff nominated among Council staff, while the two remaining districts have RWSS focal point persons based in line departments. None of the six districts have a separate RWSS department or unit within the District Council. The same is the situation in the additional 8 Danida-supported districts.

In the Joint Evaluation Report on the JICA-supported Sustainable Operation and Maintenance Project for Rural Water Supply (SOMAP) the lack of a full-time district RWSS Coordinator is seen as a key problem, which has led to considerable delays in activities in the two districts included in Phase 1 of SOMAP.

The following table shows the staff of a typical District Council and its estimated staff commitment to RWSS:

Table 8: Staff of a Typical District Council

Minimal requirements for a district administration set by government		Estimated commitment to RWSS
	No. of Staff	**Proportion of time (%)**
Council Secretary	1	
Deputy Council Secretary	1	
Administrative Officer	1	
Committee Clerk	2	
Secretary (Office Manager)	2	
Council Treasurer	1	
Deputy Council Treasurer	1	20%
Accounts Clerk	2	25%
District Planning Officer	1	20%
Assistant Planning Officer	1	50%
Director of Works	1	30%
Deputy Director of Works	1	50%
Foreman	1	50%
Driver	2	
Labourers	4	
Total	**22**	**14%**

Source: National RWSS Programme, Final Draft, April 2007

The above table is taken directly from the Final Draft National RWSS Programme document. The estimated current staff and time commitment to RWSS is thus the estimate of the team developing the National RWSS Programme and/ or its sources.

The estimated staff commitment to RWSS as outlined in the Final Draft National RWSS Programme is equivalent to in total 2.7 full-time staff, with 1.3 full-time staff in the Works Department, 0.7 full-time staff in the Planning Department and 0.7 full-time staff in the Accounts Department.

According to the MLGH Department of Local Government Administration (DLGA), there are however several vacant positions in especially small District Councils and/ or some of the staff members do not have the right qualifications. Furthermore, a number of districts have insufficient office equipment like computers, insufficient vehicles and insufficient funds to cover day-to-day running costs. Salary arrears are a common problem in many District Councils. At present, DLGA does not have lists of staff in the different districts, but is planning to compile this at a later stage. District Councils have to obtain MLGH's approval before they employ new staff. According to DLGA, this is in order to check that the tasks for which the districts want to employ staff cannot be outsourced to the private sector. Furthermore, DLGA tries to control that District Council employment is not used as a "training ground" for long-term education/ training, meaning that staff should have the essential qualifications before employment.

The following are staff data from 11 of the 12 Danida-supported districts, including 6 districts in Western Province, 2 districts in Lusaka and 3 districts in Southern Province (too little staff data are available for the last district). The data are from the Rapid Review and Capacity Assessment Reports for the 12 districts covered by the RWSS Component. The list shows the key staff that the districts themselves identified as being involved in RWSS; the data were collected in September 2006, i.e. before the National RWSS Programme's estimate of which district staff members are/ should be involved in RWSS.

Table 9: Key District Council Staff Involved in RWSS in 11 Danida-supported Districts

Position	No. of Positions		Education	Remarks
	Filled	Vacant/ No pos.		
Council Secretary	11	0	BA/BSc: 4 Diploma: 1	
Deputy Council Secretary	3	8	Diploma: 1	Several districts may not have this position
Planning Officer	9	2	BSc/BA: 5 Diploma/certificate: 2	Several districts have a large staff turn-over for this position
Council Treasurer	11		Dip. accounting: 5	
Director of Works	10	1	BSc: 1 Diploma: 2 Certificate: 4	Some districts have several vacancies in the Works Department
District Health Officer	10	1	Medical Doctor: 1 EHT: 2 Nurse: 2 PhD: 1	This is most likely a line ministry position in most of the 11 districts
District Educ. Officer	7	4	BA: 1 Diploma: 1	This is most likely a line ministry position in most of the 11 districts
Community Dev. Officer	9	2	BA: 2 Diploma: 2 Certificate: 1	This is most likely a line ministry position in most of the 11 districts

Note 1: Educational background is unknown for some of the positions, as some districts did not provide this information

Note 2: The column "vacant/ no positions" indicates how many districts do not have a staff member in this position; in some cases the position is vacant, in other cases the position has not been created.

None of the 11 districts had established a special RWSS department as recommended in the National RWSS Programme. The district reports do not mention whether RWSS focal point staff had been appointed among the council staff. However, according to MLGH staff all 12 districts have now appointed a RWSS focal point person, in nearly all cases within the District Council.

Out of 12 districts, 7 districts had salary areas. Most of them had salary arrears of 1-2 years for many of their staff. The staff turnover was low in most of the districts with large salary arrears (people may not want to leave without their outstanding salary payments), while the staff turn-over was reported to be high in four of the districts, especially for the position of District Planner. Further information on the 12 Danida-supported districts is included in Annex 4.

According to several sector professionals, the district capacity to implement RWSS activities varies significantly. However, generally the district capacity is assessed to be low, especially within the District Councils. Often the implementation is very dependent on dedicated individuals either inside the Council and/ or among line ministry staff.

According to DLGA, financial management is a problem in many District Councils. Several District Councils are thus behind with their auditing and even some of the large District Councils are not able to do their final accounts or not able to do them on time.

The WSPS/ Danida Financial and Procurement Management Capacity Assessment from 2006 placed six of the 12 districts in the high-risk category, meaning serious financial and procurement management problems were identified. This indicates there is a very high probability that funds may be misused or misappropriated due to weak internal/ external control structures and/ or capacity. Four districts were categorised as medium-risk where the financial management is assessed as neither good nor bad and where assistance is recommended to improve the performance. Only two districts were categorised as low-risk with good financial and procurement management in place, although there may still be a need for improvements in some areas.

The experience from the six pilot districts for the Information Management and M&E System is that generally their planning and budgeting skills are inadequate and that timely retirement of funds/ financial reporting is a major problem. UNICEF has experienced similar problems with financial reporting from the districts it supports.

The MLGH/ COWI report on HR issues under the RWSSP Component 1: Capacity Building, June 2007, identifies the following areas where training is needed for medium-level “white collar” staff in the district administrations, including treasurers, district engineers, directors of public works, health inspectors etc.:

- Community mobilisation, including participation and communication
- Management, financial management and procurement; stock keeping and management
- Tendering and contract management
- Supervision, monitoring and evaluation
- RWSS project management

Urban Water Supply and Sanitation

According to NWASCO’s 2005/2006 Report, 22 Local Authorities were responsible for urban water supply and sanitation. The figure is believed to reflect the situation by 1 April 2006. Some of the Local Authorities may since then have handed over this responsibility to a CU in their province. Reportedly, most of the Local Authorities responsible for urban water supply and sanitation have a Department of Water Supply and Sanitation, often including 1-2 WSS engineers.

Some Local Authorities are reported to be managing their urban water supply fairly well, given their very limited financial and human resources. There are, however, several examples of District Councils having insufficient capacity to operate and maintain existing urban water supply systems. In many cases, District Councils reportedly rely on staff from line ministries (particularly DWA) to assist with urban water supply. Existing and new CUs are gradually taking over the responsibility for water supply and sanitation in all urban areas. The capacity of the CUs is described below.

4.4.2 D-WASHE Committees

D-WASHE Committees have been established in most districts, consisting of District Council staff, district-based line ministry staff, NGOs etc. As described in the WASHE manuals, the main roles of the D-WASHE Committees are to a) assess the existing water, sanitation and hygiene situation in the district, b) develop, implement and monitor D-WASHE plans, and c) train and facilitate meetings with sub-district staff and communities on WASHE basic needs. The D-WASHE Committee is to be chaired by the District Council Secretary.

Some D-WASHE Committees are reportedly very active and doing a lot of good work. However, several D-WASHE Committees seem not so active, or only a few of the members are active, one reason being that only limited funding is available for RWSS activities in their districts. The D-WASHE Committees seem often to have between 10 – 20 members; in most cases they are reportedly not gender-balanced, having only a small proportion of female members. More specific data on the number of active D-WASHE Committees, the number of male and female members, the training they have received etc. will be collected in connection with the roll-out of the RWSS Information Management and M&E System.

It is envisaged that, as part of the decentralisation process, line ministry staff in the D-WASHE committees will be moved to the District Councils.

4.4.3 Line Ministry Staff at District Level

The following tables show the data it has been possible to collect on relevant line ministry staff at district level.

<u>MoH</u>

Each District Health Office is to have the following 3 positions: a Principal EHO, a Senior EHO and a Senior EHT.

A small Rural Health Centre 1 (RHC) is to have one EHT, while a medium-size RHC 2 is to be staffed with a Senior EHT and 2 EHTs (perhaps in 2 branches). A large RHC 3 is to have a Principal Health Inspector (or Principal EHO) and will have RHC1 and RHC2 under it.

It was not possible to obtain information on the number of vacancies in the districts, but there are reportedly many vacancies. Several RHCs thus have no EHT and are therefore run by nurses or clinical officers. In three of the pilot districts for the Information Management and M&E System, only half or less than half of the RHCs have EHTs.

MCDSS

Table 10: Department of Community Development Staff at District Level

Province	No. of Districts	District CDOs	Assistant CDOs	CDAs	Total Staff	Staff/ District
Southern Province	11	9	16	69	94	**8.5**
Western Province	7	3	9	30	42	**6.0**
Lusaka Province	4	3	8	54	65	**16.3**
Luapula Province	7	4	4	24	32	**4.6**
Central Province	6	6	10	59	75	**12.5**
Copperbelt Province	10	10	19	57	86	**8.6**
Eastern Province	8	7	9	57	73	**9.1**
Northern Province	12	4	17	50	71	**5.9**
North Western Province	7	4	6	38	48	**6.9**
Total Filled Positions	**72**	**50**	**98**	**438**	**586**	
Total Established Positions		**72 Assumed 1/district**	**144 Assumed 2/district**	**544**	**760 Average 10.6/district**	
Total Vacancies		**22**	**46**	**106**	**174**	

CDO = Community Development Officer
CDA = Community Development Assistant

The minimum qualifications required for the three types of positions are:

- District CDO: A degree in Development Studies or any other Social Sciences.
- Assistant CDO: Diploma in any Social Science
- CDA: Certificate in Community Development

Judged by the number of community development staff per district, especially Luapula, Northern, Western and North Western Province seem to have many vacant community development positions.

MoE

There is a district buildings officer in each of the 72 districts. It is their role is to monitor, on behalf of the province, the school infrastructure development that is taking place. This includes e.g. the construction of boreholes, pump testing, installation of hand pumps etc. They are also to monitor the surrounding communities' access to the school water points.

The individual schools are responsible for their own O&M of buildings and other installations, including water points and latrines.

MoE at central level believes there is a need for additional training of staff employed at lower level, so they have sufficient knowledge of how to maintain and repair pumps and other parts of the water system installed in the schools.

MEWD

The 1999/2003 Restructuring Report recommends the following DWA positions at district level: 76 district water officers and 76 engineering assistants (water resources), in total 156. In addition there should be the following support staff: 76 typists, 76 classified employees and 300 gauge readers, in total 452.

According to the 2006 Annual Reports from 9 Provincial Departments of Water Affairs, around 5 districts have water development officers, one district has a water quality officer, and one a driller. Some districts have plant operators, pump operator and/ or plumbers and a few have gauge readers and typists.

According to DWA staff at central level, authority was given in August 2007 to start employing DWA staff at district level in accordance with the 1999/2003 Restructuring Report.

MACO

A few of the irrigation staff mentioned under provincial level are physically based at district level.

In addition, MACO has agricultural extension staff at district/ catchment level. They are often members of the D-WASHE committees and thereby involved in RWSS activities.

4.4.4 Area Development Committees

Some districts have established ADCs in all their wards. However, neither the Decentralisation Secretariat nor the Department of Government Administration in MLGH has an overview of how many have been established so far. It is, however, the impression from reports and discussions with various institutions, including district staff, that the number of trained and active ADCs is still low. An increase in RWSS activities may be an opportunity to activate dormant ADCs as was e.g. done in some of the six pilot districts for the RWSS Information Management and M&E System.

4.5 Capacity of Commercial Water and Sewerage Utilities

10 CUs for water and sewerage services have been established. The Lusaka and Chipata CUs have been in operation since 1989 and 1992 respectively. Six were established in 2000, one in 2003 and the latest CU, Lukanga WSC, in 2007. The following data are from 9 CUs, as currently no data are available for Lukanga WSC, as it is in the process of recruiting staff. Currently, it is operating with staff from the Local Authorities previously responsible for urban water supply and sewerage in Central Province.

Most CUs are responsible for piped water supply and sewerage services in all cities and towns in their province. The size of the CUs varies considerably, from 73,656 to 4,426 connections and they cover from 1 to 17 towns (2005/2006 figures).

The performance of the CUs is monitored by NWASCO according to nine key performance indicators and is described in NWASCO's annual sector reports. The latest report for 2005/2006 lists the following challenges for the CUs and the urban WSS sector:

- Low sanitation coverage which requires significant investments
- Improvement of water quality
- Decreasing the high unaccounted-for-water
- Human resources development needs to receive more attention
- Government investment to the sector has to be increased significantly
- The commercialisation of WSS services in Luapula, Eastern, and Lusaka provinces

The following table gives an overview of the staff employed in 9 of the 10 CUs:

Table 11: Staff in the Commercial Water and Sewerage Utilities

Commercial Utility	No. of connections in 2005/2006	No. of towns serviced in 2005/ 2006	Total positions in 2007		Qualifications of staff in 2007				
			Filled	Vacant*	Degree	Diploma	Trade cert.	School cert.	No cert
Nkana WSC	73,656	7	408	312	41	47	256	64	-
Lusaka WSC	46,152	1	546	100-150*	61	48	338	66	33
Kafubu WSC	36,250	3	301	99	14	29	157	101	-
Southern WSC	23,734	17	131	139	13	13	27	45	33
Mulonga WSC	20,341	3	162	17	9	7	146	-	-
Chambeshi WSC	8,292	10	64	Unknown	4	11	24	24	1
Western WSC	6,616	6	93	Unknown	2	6	39	46	-
Chipata WSC	5,266	1	69	2	3	4	22	18	22
N-Western WSC	4,426	7	63	33	6	6	33	18	-
Total Staff			**1,837**		**153**	**171**	**1042**	**382**	**89**

Sources: Number of connections and towns serviced are from NWASCO's 2005/2006 Sector Report, while the staff data were collected from/ through NWASCO and are from 2007. It is therefore not possible to calculate the number of staff per 1000 connections based on the figures included in the table.
* Vacant is compared with the number of "established" positions. It has not been possible to ascertain how the CUs have arrived at their established positions. The number of vacant positions in Lusaka WSC is based on information that its Board is expected to approve that the future established positions should be above 700. At the same time, LWSC may take over staff from three Local Governments.

Further details on the staffing in the CUs are included in annex 5.

One of NWASCO's key performance indicators is the number of staff per 1,000 connections. The benchmark set for each CU depends on its size. A direct comparison between the 10 CUs is therefore not possible. According to NWASCO's 2005/2006 report, Nkana, Lusaka and Chipata WSCs have too many staff compared to the number of connections. The other six WSCs had achieved at least an acceptable benchmark. The number of "established" positions seems high for many of the CUs when comparing with the number of connections.

Only 324 out of a total of 1,837 employees in the CUs (17.6%) have a degree or a diploma, while 1042 employees have a trade certificate (56.7%). There are, however, some variations among the CUs. Thus only 8.6% of the staff in Western WSC has a degree or diploma, while the corresponding figure for Nkana WSC is 21.6%.

According to NWASCO's 2005/2006 report, the CUs have made efforts to recruit qualified personnel, but due to their limited capacity to pay competitive salaries, many of the CUs' qualified, skilled personnel tend to be attracted to other private firms. According to NWASCO, this challenge is most pronounced in North-Western, Copperbelt and Lusaka provinces. In-house training is therefore identified as the key to successful human resource development in the CUs, with the training of trainers.

Several CUs have a surplus of unskilled staff, inherited from the Local Authorities when the CUs took over the responsibility for urban WSS. However, generally the CUs do not have sufficient funds to retrench the surplus staff so they are kept on their pay-rolls. This in turn means that they cannot afford to recruit new staff with the required qualifications and/ or pay more competitive salaries to their staff.

Recruitment of qualified staff to be based in smaller rural towns is a particular challenge for the CUs. The choice may here be between employing staff with inadequate qualifications or accepting frequent vacancies and a large staff turnover.

Several CUs have introduced performance rewarding systems to motivate enhanced performance among staff. There are plans to introduce regulation by incentives, which will include both monetary rewards to the CUs for operation and maintenance enhancing measures (procurement of office equipment, furniture, in some cases vehicles etc.), staff bonuses and non-monetary incentives like the “CEO of the year”.

DTF has provided funds to several CUs to improve their water supply to peri-urban areas. The funds have mainly been for extension of the existing water pipe network and establishment of water kiosks. The CUs have done the design and construction supervision with their own staff. Some CUs have also done the actual construction work with their own staff; in other cases they have hired casual labourers and/ or small local contractors to assist. According to DTF, most CUs have the capacity to do simple design, construction and construction supervision work, but DTF considers DTF monitoring essential. There have been some delays in construction activities because the primary responsibility of the CUs is operation and maintenance. Other sector professionals have questioned the suitability of CUs doing their own design and construction and/ or construction supervision, especially as DTF is starting to fund larger extensions and constructions.

According to DTF, most CUs are establishing peri-urban units with community development officers as key persons. It does not appear to be a problem for the CUs to recruit community development officers with a diploma or certificate in social work; some of them also have a relevant university degree. Community consultation is not an area where the CUs have much experience, so DTF checks that the CUs’ plans for establishment of water kiosks include sufficient time for community consultations.

Accounts and financial reporting appear to be one area where the CUs require further capacity building. Often DTF has to spend much time getting sufficient financial information from CUs that have received funds. The Auditor General’s Office has experienced similar challenges in relation to auditing of many of the CUs, with several of them having problems preparing financial statements which can be audited. The main problem is assumed to be lack of qualified accountants in the CUs, as often they cannot attract qualified staff and the staff turnover is high. According to one of the big chartered accountants firms in Zambia, all the CUs it audits have qualified accountants heading their finance and accounts departments. During its audits, the company does however discover a number of financial issues which need serious attention by the CUs. It could not be disclosed whether these issues may be due to lack of capacity among the accountants employed.

4.6 Water Quality Laboratories

4.6.1 Overall Assessment of Laboratory Capacity

Water quality analyses and water quality monitoring is carried out by various organisations, including National Food and Drugs Laboratory (MoH), laboratories at CUs, a lean national laboratory under DWA, staff in the health sector, laboratories at UNZA and the Copper Belt University, the National Institute for Scientific and Industrial Research (NISIR) as well as private laboratories. The Geological Survey Department used to analyse water samples at its Chemistry Laboratory. However, due to dramatic reduction in the demand from clients, this service reportedly discontinued.

It is generally accepted that the capacity for water quality analyses and water quality monitoring in the present situation is insufficient in Zambia, as expressed most recently at a capacity building workshop on water quality analyses in Lusaka in July 2007. The present capacity constraints include the following:

- Qualifications of staff and quality of equipment and quality control systems vary significantly from laboratory to laboratory.
- There is no systematic inter-calibration amongst laboratories in Zambia. Informal tests with multiple analyses of the same sample at several laboratories have shown large differences in results.
- Most laboratories are understaffed and/ or have insufficient resources for operation.
- In some provinces, well equipped and adequately staffed laboratories are not available.
- Some types of analyses cannot be carried out in Zambia, e.g. heavy metal analyses at ppb-levels, thus samples occasionally have to be sent to countries such as Botswana, South Africa, Switzerland and the UK for analyses.

4.6.2 Laboratory at National Institute for Scientific and Industrial Research

The National Institute for Scientific and Industrial Research (NISIR) was established in 1997 and includes i.a. a Water Resources Research Unit (WRRU).

The WRRU's research activities involve the monitoring and assessment of the Zambian environment with emphasis on major river basins in relation to heavily industrialised parts of the country. The Unit also conducts research on the development of low cost technologies for water treatment, clarification and purification. Major works undertaken by the WRRU include the production of water inventory reports for the Chambeshi River, Water Pollution data collection from mining areas on the Copperbelt, and assessing effects of industrial effluent on the Kafue River. The WRRU contributed to the drafting of the Environmental Protection and Pollution Act of 1990 as well as the National 1995 Water Resources Master Plan. Currently the main water quality parameters analysed by the WRRU laboratory include: physical-chemical parameters such as metals, pH, total suspended and dissolved solids, and microbiological parameters like total and faecal coliforms. Frequency of sampling is on average weekly.

Lack of operational support, such as transport, is a barrier for the researchers to adequately collect water quality samples as well as conduct hydrogeological studies throughout the country. At present the Unit has no vehicle specifically allocated for such works.

Currently, the WRRU has 4 staff members consisting of 1 chemist, 1 microbiologist, 1 hydrogeologist and 1 environmental scientist. There is, however, a proposal to reorganise the Unit, so it includes water, energy and environmental functions and to increase the number of staff to 14 (see also section 6.4 below).

4.6.3 UNZA Laboratories

The Environmental Laboratory in the School of Civil Engineering at UNZA provides for laboratory practice sessions for civil engineering students, laboratory facilities for research and consultancy services for the general public. It is able to analyze for a variety of parameters in water, wastewater and in soils within the following categories: physical, chemical, metals, microbiological and applied tests.

Currently, the laboratory spent over 90% of its time on provision of consultancy services to the general public. The main clients are hotels, mineral water bottling companies and government departments. Recently the laboratory was contracted by the National Scientific Technological Council to provide a one week training exercise for 2 personnel drawn from all water utility companies on the UNESCO supported Capacity Building Project.

Salaries at the institution are generally higher than in most government institutions. However, staff members are normally employed on a contractual basis, which means lack of job security. Two lecturers have thus migrated to South Africa for higher-paying jobs, another staff resigned for another job in Lusaka, which left one academic staff member. In addition, the laboratory has four technicians.

The Geo-Chemical Laboratory in the School of Mines at UNZA was essentially designed to serve academic research purposes for all elements and their compounds. It undertakes spectral analysis (all metals) in relation to water quality. Other parameters include pH, calcium, potassium, suspended and dissolved solids. The laboratory does not do bacteriological analyses nor does it do environmental quality checks programme as the one done by the Environmental Laboratory. Given its limited funding situation, the Geo-Chemical Laboratory now does more analyses for outside demands in order to mobilise additional resources for procurement of chemicals and provide some incentives to its staff.

The existing staff members include of 3 chemists and 4 laboratory assistants. A desired situation to cope with the increasing work demand may require recruitment of one more chemist. The four professionals would then be scheduled to work in shifts in pairs, since the small premises cannot accommodate all at the same time.

4.6.4 Food and Drug Laboratory

The Food and Drugs Laboratory, located at the University Teaching Hospital (UTH), is directly operated by the Ministry of Health. The institution was established under the Food and Drugs Act Cap 303 of 1972 to protect the public against health hazards and fraud in the sale and use of food, drugs, cosmetics and medical devices. It has a total of 22 professionals and 8 support staff. The laboratory is assisted by Authorised Officers from Customs Department, Zambia Revenue Authority (ZRA), Local Governments, Ministry of Health as well as the police (at sub-inspector level) who collect samples for analysis.

The laboratory conducts chemical and microbiological analyses for both potable and waste water. The drinking water parameters analysed are those set by WHO and Zambia Bureau of Standards guidelines. Much of the work done for outsiders involves verification of water quality tests, e.g. for Water Utilities, individuals or companies. The laboratory provides analytical services for the Zambia Bureau of Standards. The capacity to meet the increased demand is limited at Food and Drugs Laboratory. This is attributed to "brain-drain" effects, voluntary separation and the fact that, being a statutory body, the laboratory was not included in the overall restructuring programme of MoH. Following the recent dissolution of the Central Board of Health, it is envisaged that the Food and Drug Laboratory may have a new structure. Otherwise an ideal situation may entail an increased total staffing level of about 50 personnel.

4.6.5 Department of Water Affairs Laboratory

The Water Quality Management Unit under the Water Resources Management Section of DWA is responsible for setting up a continuous water quality-monitoring network in order to ascertain the quality of both ground and surface water at selected locations. Depending on the quality of the water, the Section is expected to recommend the best source of water for various uses. The Section has a small national laboratory, but also uses other better equipped laboratories for testing of e.g. drinking water quality.

The capacity of the Water Quality Unit within the Water Resources Management Section is inadequate to cover the whole country due to limited funding and human resources. At Headquarters the Unit is headed by a Principal Water Quality Officer, supported by a Senior Water Quality Officer, one Laboratory Technician and an Assistant Technician.

Out of the nine provinces only Southern Province has a Water Quality Officer, whilst Copperbelt Province has a Laboratory Technician, although there are no laboratories at the provincial level. Most of the major analyses are referred to the UNZA Environmental and/ or the Food and Drug Laboratories. However, since 2005, DWA has received assistance from the Atomic Energy Agency in groundwater water monitoring using the Isotopes method for the City of Lusaka. It has not been possible to establish whether human resources exist for carrying out this activity or whether there are similar collaboration arrangements with other institutions in the country, such as UNZA.

4.6.6 Laboratories in Water and Sewerage Utilities

Five CUs have fully established laboratories, i.e. the three CUs in the Copperbelt, the CU in Lusaka and one in Southern Province. In the other provinces samples are usually referred to central hospitals for analysis in their locality. For instance, in Western province samples are sent to Lewanika Hospital.

A typical laboratory capacity example from Southern province comprises: 1 bio-chemist, 1 chemist, 1 laboratory technician and 1 pump operator. However, this staffing level is inadequate to effectively collect and analyse water quality samples from the 17 sub-districts of the CU. Besides, one shared vehicle in the Maintenance Department presents limitation to timely submission of samples at the laboratory.

Lusaka Water and Sewerage Company (LWSC) undertakes routine water quality monitoring of its network. Random bacteriological contamination tests are carried out on a daily basis. NWASCO demands a minimum of 450 sample checks in the City per month. This figure is normally exceeded since practically LWSC has to cover water quality checks of all its own 81 boreholes and 7 reservoirs. LWSC focuses on chemical and physical quality analysis but heavy metal tests are occasionally referred to the Environmental Laboratory at UNZA. Samples are also sent to the UNZA lab to verify the results for nitrates, nitrites, ammonia, and phosphates. The water quality surveillance team consists of 1 chemist, 2 laboratory technicians and 1 assistant technician. A small laboratory comprising 1 chemist, 1 laboratory technician and 1 assistant technician is situated in Kafue town to monitor the quality of Kafue River with focus on turbidity.

The company also does waste water monitoring and pollution control with emphasis on Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and Total Suspended Solids (TSS). The staffing for this laboratory is similar to that of the fresh water quality team.

In 2004, a base line study by the National Science Technology Council (NSTC) identified a serious deterioration of water quality in urban parts of the country. The findings from the study led to the establishment of the UNESCO-supported Water Quality Capacity Building Project, which is implemented bi-annually. A manual for water quality analysis was developed during 2005-2006 and in July 2007 two technicians from each CU participated in a specialised one week water quality analysis training course. The course was conducted at the UNZA Environmental Engineering Laboratory. NSTC is now carrying out further assessment missions to all the CUs to evaluate the training effects as well as determine physical capacity requirements. The information will guide the planning of the next year's project activities.

4.6.7 Lusaka City Council

The Lusaka City Council, like other city, municipal and district councils, is mandated to execute yearly water quality monitory programme, through its Public Health Department. However, samples collected are reportedly very minimal, almost negligible. There is serious capacity limitation in terms of staff and operational tools. Since the government reduced financial grant for the exercise, several years ago, the Department cannot cope with the inadequate funding from the Council's coffers. As a result the department has resorted to specific reactive responses rather than routine. Currently out of 23 public health inspectors only 13 are effectively available on the ground. For an ideal situation, a total of 83 public health inspectors is said to be required to effectively implement the yearly monitoring plans, assuming consistent availability of sufficient financial resources and operational tools.

4.7 Capacity in Private Sector – Consultants

4.7.1 Community Development, Communication, Gender and Hygiene Promotion

There are very few private companies employing social scientist with experience from the water and sanitation sector. As far as it has been possible to establish, there are only around 4 such companies and the number of social scientists in these companies with experience from the water and sanitation sector is very low. Instead most companies involved in the sector have a small pool of free-lance social scientists they will draw on when required. However, most of these free-lance consultants have full-time employment elsewhere, e.g. in NGOs, and are not always available for short-term assignments. The companies that have social scientists with experience from the water and sanitation sector include a few (water) engineering companies and a couple of other companies specialising in natural resources and environmental management, rural development, community participation, institutional and capacity development, planning and management, and M&E.

Reportedly, the capacity is still low among social scientists as far as the water and sanitation sector is concerned. Most people still consider the sector as very technical, where consultants need an engineering background. There appears, however, to be sufficient, qualified social scientists in Zambia, but they are often attracted to other sectors, especially to work with programmes for vulnerable children, poverty reduction and HIV/ AIDS prevention.

4.7.2 Borehole Siting and Drilling Supervision

There are around 6 private consultancy companies offering scientific borehole siting, in addition to a large number of water diviners in different organisations. Of the companies offering scientific borehole siting, some, but not all, work in mineral exploration as well. Most companies have one geophysical siting team, and one company reportedly has two teams. One siting team will typically be able to undertake 200 – 250 sitings per year, with adequate allowance for transport, report writing, weather conditions and holidays. The present capacity of the private sector is thus to site in the order of 1,500 boreholes per year. This capacity more than covers the present demand, since many boreholes are sited by DWA and many are drilled without scientific siting. It should, however, be noted that many of the siting teams can as well work in mineral exploration and that their availability, therefore, will be strongly influenced by the prices offered for borehole siting.

In terms of quality of work, information collected by the Consultant indicate that some of the companies have well-qualified staff and are better equipped than DWA, since due to their involvement in mineral exploration they are in possession of geophysical equipment used for electromagnetic, magnetic and gravimetric measurements (in addition to equipment for resistivity profiling and sounding). In combination, this equipment can in most cases provide faster and/ or better borehole siting than the resistivity method can as a single method.

There is information of around 12 companies having experience in drilling supervision. However, much of the staff used for drilling supervision is either not permanent staff, or staff also used for borehole siting, or even mineral exploration. Furthermore, several of them may not have the desired qualifications in geology, hydrogeology and drilling/ bore construction. It is therefore not easy to quantify the number of staff available for drilling supervision at any given time but, as for borehole siting, it will to a large extent depend on the prices offered for the drilling supervision services.

4.7.3 Water and Sanitation Engineering Consultants

Water and sanitation engineering consulting companies in Zambia are involved in rural water supply and sanitation as well as urban water supply, undertaking planning, feasibility studies, detailed design, preparation of tender documents, construction supervision, monitoring and evaluation studies etc. Around 8 Zambian companies have been identified as having significant experience in all or most of these areas. Attempts were made to collect detailed staff data from 8 companies, but unfortunately data were only received from 3 of them. These data are not felt to be representative for all 8 companies and have therefore not been included in this report. For larger and/ or more complex assignments, it is often a requirement that the work is carried out in association or joint venture with international companies.

Most of the same companies also have some experience in feasibility studies, design and construction supervision for dams. However, very little work has been done in this area in the recent past.

For some activities, in particular feasibility studies, Zambian sociologists/ community development specialists, water resources specialists (hydrologists or hydrogeologists) and economists/ financial specialists are involved. Typically, they are recruited on a free-lance basis.

It is generally the perception that there are adequate resources in the area of water engineering consultancy, if the international resources are taken into account. An exception is the recruiting of Zambian hydrogeologists for feasibility studies as these are often involved in mineral exploration or mining and are not available for short assignments such as feasibility studies. The recruitment of social scientists with sufficient sector experience is also often a problem.

There appears to be a considerable turnover of staff in the water and sanitation engineering consultancy companies, due to the competition from other sectors, and the result of this is that sometimes young candidates are recruited and used for construction supervision. It is the Consultant's opinion that such supervisors occasionally are unable to handle the complex issues involved in construction supervision. These issues are further described below.

4.7.4 Water Resources Management Consultants

The concept of water resources management (WRM) is relatively new in Zambia and there are therefore only few consultants with experience within this field. The number of companies with WRM consultants may be limited to 3-4. In addition, there are a few free-lance consultants and also some lecturers at UNZA take on work as short-term consultants.

4.7.5 Auditors and Financial Consultants

There are five big public chartered accountant firms in Zambia, some of which are providing auditing services to the CUs and/ or carry out consultancies on financial and related issues in the water sector. There are also a number of small audit companies and free-lance financial specialists that can provide audit services and do financial consultancies. However, reportedly there are not many with a background in economics or finance management working in the water and sanitation sector.

In total, ZICA has registered over 90 audit companies in Zambia.

4.8 Capacity in Private Sector – Contractors, Drillers, Artisans etc

4.8.1 Capacity of Contractors

Information on the capacity of artisans/ contractors used for minor works, such as well and latrine construction and repair of pumps, is included below.

Contractors for larger and/ or more complicated works, such as urban water supply, are to a large extent based in Zambia, but mostly foreign owned. A list of civil works contractors registered with the National Council for Construction was obtained, showing the grading for the approx. 90 registered contractors. However, several of them may have no experience from the water sector. In the view of sector professionals, there are around 5-6 contractors that would be able to undertake major works, whereas there are quite a few small-scale contractors that can undertake small/ medium size works (up to USD 200,000). Unfortunately, there has not been sufficient time to collect more detailed data on contractors with water sector experience. There appears, however, to be sufficient contractor capacity for construction works in the water sector. It should be noted, though, that the most demanding works, such as major new water treatment plants, probably would be tendered as design and build contracts, with international bidding.

Many of the same contractors are assumed to have some experience in the construction of dams and perhaps irrigation systems if under close supervision. It should be noted, though, that only a few are likely to have recent experience, as very few dams have been constructed in recent years.

There are many examples of unsatisfactory performance of contractors of all sizes, and some contractors have reportedly been blacklisted by certain organisations due to their performance. The most important reasons for the occurrence of low quality work are considered to be the following:

- Capacity of contractors
- Insufficient supervision and/ or lack of experience of supervisors
- Client's interference in supervision of the contractor, undermining the role of the consultant. Sometimes the close ties between the contractor and the client reportedly date back to the time of the tendering, and it has been indicated that a non-transparent tendering and tender evaluation procedure may play a role in this.
- Frequent interruptions in the work on site, leading to the discontinued presence of the supervisor and thus some work is carried out without supervision.
- Pressure from the client to reduce the contract price

4.8.2 Capacity of Drilling Companies

There is presently an overcapacity in the drilling sector in Zambia. There are in the order of 50 privately owned drilling rigs which are working fully or partly in the water sector, most of them owned by foreign companies. Most of the rigs are based in Lusaka, followed by the Copperbelt, but companies are willing to work all over the country, provided that mobilisation costs are covered. This may be difficult in case only a few boreholes are to be drilled in certain areas far from Lusaka.

The production of a modern air rig, with reasonable provision for maintenance and down-time due to weather conditions, as well as mobilisation, is in the order of 100 – 150 boreholes per year. Some older rigs, including percussion rigs, have a lower capacity, but the needs for drilling of water wells in Zambia can easily be covered by the available rigs, and companies are presently drilling fewer boreholes than they actually could.

The Consultant has obtained information on many examples of substandard work in relation to private drilling companies. The most important reasons for such unsatisfactory performance are considered to be the following:

- Lack of qualified and independent supervision.
- Overcapacity in the sector, which leads to intense price competition and thus low prices. Low prices, in turn, force contractors to try reducing costs.
- Insufficient quality of tender and contract documents, and insufficient tender evaluation procedures.
- Non-availability of national standards for drilling, borehole construction and testing.

It is the Consultant's impression that the technical capability of the drilling companies varies, but that a sufficient number of companies will be able to perform satisfactorily if the reasons for sub-standard performance, as listed above, are eliminated. When (and if) the Water Act is revised as provided for in the Water Bill, drilling companies are to be registered and categorised, something that will make assessment of their capacity easier for clients.

There is reportedly no contractor offering hydrofracturing in Zambia. Hydrofracturing is a method used to increase the yield of a borehole in fractured rock. The method uses water under high pressure and can in particular be useful in areas with low drilling success rates. The method would probably be useful in some areas of Zambia.

4.8.3 Capacity of Artisans

District-level data on the number of trained and active area pump minders (APMs), local well diggers able to construct protected wells and brick layers who are able to construct latrines will be collected from all rural districts in connection with the roll-out of the Information Management and M&E System. Information from the six pilot districts and the other Danida-supported districts indicate that there is a sufficient number of local artisans, but that lack of tools and spare parts is a serious problem for especially APMs. Reportedly it is also a problem that in a number of cases local communities do not pay the APM a proper fee for his/ her services, but only provide lunch or similar. The APM may be willing to provide his/ her services without proper payment when repairing the pump used by his/ her own family, but may not want to travel to other villages to do repair work.

The Joint Evaluation Report on Phase 1 for JICA-supported Sustainable Operation and Maintenance Project for Rural Water Supply (SOMAP) mentions as constraints that most AMPs in the two districts have to cover long distances, the number of APMs is not adequate to meet the needs of the communities and that some APMs have left their catchments since training. The importance of providing hand pump care takers and APMs with sufficient tools and training is also emphasized. The lessons-learnt during phase 1 of SOMAP will be used when extending the approach to other districts through SOMAP 2 and other programmes.

The MLGH/ COWI report on HR issues under the RWSSP Component 1: Capacity Building, June 2007, identifies the following areas where short-term and very practical training is needed for “blue collar” workers (artisans):

- Installation, maintenance and repair of pumps, elementary plumbing, repair works;
- Digging of wells; lining and concrete works; earth works, mainly for dam building;
- Masonry and concrete works (for latrine building);
- Earth works (for dams and irrigation);
- Cross-cutting issues related to items 1-3 above: scaffolding, work safety and health precautions.

4.8.4 Capacity of Equipment Suppliers

There is generally an adequate supply of equipment of various kinds used in the water supply and sanitation sector in Zambia. Hand pumps and the most frequently used submersible pumps are readily available. More specialised equipment can be ordered through local branch offices of qualified international companies with a large network of suppliers. Some of the suppliers assist in ensuring that their equipment is installed according to design standards. They may not do the actual installation, but only monitor the process and advise where needed.

4.9 Capacity among NGOs and Other Cooperating Partners

A number of CPs are active in the sector, including ADB, Danida, GTZ, Irish Aid, JICA, KfW, the Netherlands (sleeping partner), UNICEF, WSP, and the World Bank. Also a number of NGOs are active in the sector, including inter alia Care International, Oxfam, Plan Zambia and Water Aid.

Detailed staff data were obtained from 3 of the major NGOs. It was attempted to obtain data from two additional NGOs, but this was not possible within the time available. UNICEF also provided detailed staff data. Because of time constraints, no attempts were made to obtain detailed staff data from all CPs.

Table 12: Water and Sanitation Staff in NGOs and other Cooperating Partners

NGO/ Other CP	No. of Existing Staff			Position/ Field of Specialisation	Education			Years of WSS/ accounting Experience			Age		
	M	F	Total		MSc/MA	BSc/BA	Diploma	< 5 y.	5-10 y.	> 10 y.	< 35 y.	35-45 y.	> 45 y.
Care Zambia*	2	-	2	WSS Engineering (2)			2		1	1		2	
Plan Zambia	5	1	6	WATSAN Advisor (1) Prog. Coordinator (3) Comm. Dev. Facilitator(2)	1		EHT: 3 Wat. Eng.: 2						
Water Aid**	7	1	8	Progr. Man. RWSS Progr. Man. UWSS Finance and Adm. Man. Research and Monitoring Officer Sen. Progr. Officers (3) Hyg. Promotion Officer	1	3	ACCA: 1 Env. Health:2 Civil Eng.: 1	3	3	2	2	6	
UNICEF***	3	1	4	Section Chief WSS Specialist WSS Officer Project Assistant	4 Incl. one w. PhD				3	1	1	3	
National WSS staff in other CPs**** - Danida - Irish Aid - WSP - ADB ??	 1 2	 1 - 1	 2 2 1										
Sub-total NGOs	**14**	**2**	**16**		**2**	**3**	**11**	**3**	**4**	**3**	**2**	**8**	
Other CPs	**6**	**3**	**9**		**4**				**3**	**1**	**1**	**3**	
Total	**20**	**5**	**25**		**6**	**3**	**11**	**3**	**7**	**4**	**3**	**11**	

* Care Zambia has one vacant position in Northern Province for a social scientist; a new staff member will be hired. Care plans to hire 4 additional staff for a planned peri-urban sanitation project in Lusaka.
** Water Aid plans to employ another three staff; one of them will be an Advocacy Manager
*** UNICEF plans to employ 3 new staff members for the WASHE section within the next year with backgrounds in water quality research, programme management, sanitation and hygiene promotion
**** Detailed staff information was not obtained from these CPs. WSP is in the process of recruiting an additional staff member, so it will have in total two staff members in Zambia.

4.10 Gender, Qualifications and Age in the Sector

As is apparent from previous sections of this report, it was only possible to obtain information on gender, educational levels, years of experience and age from a limited number of institutions within the sector. It is therefore not possible to draw conclusions on the mentioned parameters for the sector as a whole

Data available from the public sector and among parastatals at central level, i.e. MLGH, MEWD, NWASCO and DTF, are summarised in the table on the following page. From this a few conclusions can be drawn:

- There are very few women among WSS staff in the mentioned institutions
- There is an almost equal number of staff with master degrees, bachelor degrees and diplomas among WSS staff, but with some variations among institutions
- In MLGH and MEWD, the majority of the WSS staff have more than 10 years experience within the sector; for NWASCO and DTF only data on the years of employment in NWASCO/ DTF are available and they were both established less than 10 years ago
- Water sector staff in MEWD are generally older than those employed in the other institutions; thus nearly 25% of MEWD water sector and accountancy staff are above 45 years of age

For line ministry staff at provincial and district levels, it has only been possible to obtain data on educational background for the MACO irrigation staff. This shows that 15% of the 54 staff have an MSc/ MA, with half of these degree holders in Lusaka province, 26% have a BSc/ BA and 37% a diploma. The educational background of the remaining staff is unknown.

Educational background is available for some of the key District Council staff involved in RWSS in 11 Danida-supported districts. However, several districts did not provide detailed data for all their key staff and it is therefore not possible to draw any conclusions. What can be mentioned is that at least 4 out of 11 council secretaries have a BSc/ BA and at least 5 out of 9 planning officers have a BSc/ BA. According to the data available, only two district health officers (who may be in line ministry positions) have a degree above bachelor level, namely one medical doctor and one with a PhD.

Of the total staff in the Commercial Utilities, 8.3% have a degree and 9.3% a diploma, while 56.7% have a trade certificate. Of the remaining staff most have a school certificate, but there are also some without.

It was only possible to obtain detailed staff data from three private companies within the water sector and the following should therefore in no way be seen as conclusions on the situation prevailing in the private sector. In these three companies, approx. half of the staff involved in WSS had a BSc/ BA, 25% had an MSc/ MA (all in one company) and the remaining 25% a diploma. Only 18% of the staff members were women and they were all social scientists and in one company. The far majority had more than 5 years of WSS experience and almost half of them were above 45 years of age.

Insufficient data are available from NGOs and CPs to draw significant conclusions. However, in the organisations where data are available only approx. 20% of employees are women. More than half of the employees have an MSc/ MA, but most of these are found in UNICEF. Most of the employees in the three NGOs from which data are available have a diploma. Most of the NGO/ CP employees have more than 5 years of WSS experience and are between 35-45 years of age.

Table 13: Gender, Educational Level, Experience and Age within the Water and Sanitation Sector

Institution	No. of Existing Staff			Position/ Field of Specialisation	Education			Years of WSS/ accounting Experience			Age		
	M	F	Total		MSc/MA	BSc/BA	Diploma	< 5 y.	5-10 y.	> 10 y.	< 35 y.	35-45 y.	> 45 y.
MLGH – Central Level	9	4	13	Management Engineers Sociologist M&E Officer HRD Officer Accountants	5	2	WSS staff:3 Accounts: 3		5	8	1	11	1
MEWD* - Central Level	26+ ?	4+?	44	Management Planners Hydrogeologists Drillers Transport Officer Mechanical staff Hydrologist Water Engineers WR Engineers Water Quality Officers Info. Officers Tracer Secretary to Water Board Accountants	9	6	WSS staff:8 Accounts:11 --- Other: 7 Unknown: 3	7 --- Unkn.: 4	7	26	7 --- Unkn: 4	23	10
NWASCO	7	2	9	Management Secretary to Council Techn.+Finan. Inspectors Techn.+Commer. Officers Public Relations Officer Accountant	1	5	WSS staff:1 Accounts: 2	7 This is years w. NWASC	2 This is years w. NWASC		2	7 This is all staff >35	
DTF	4	0	4	Management Sociologist Engineer Accountant	1	1	WSS staff:1 Accounts: 1	4 This is years w. DTF			1	3 This is all staff >35	
Total	**46+ ?**	**10+ ?**	**70**		**16**	**14**	**WSstaff:13 Acc:17 Other: 7 Unkn.: 3**	**18 Unkn:4**	**14**	**34**	**11 Unkn:4**	**44**	**11**

* The 14 accountants in MEWD are included although they do not work exclusively with WSS. The gender of all accounts staff is not known.

4.11 Capacity of Relevant Training Institutions

People with different educational backgrounds are needed in the water and sanitation sector. The following is an attempt to list the most relevant educations with focus at degree and diploma levels and the number of graduates they have produced over the last five years. The list should, however, not be considered as complete.

4.11.1 Degree Level

University of Zambia (UNZA) and the Copperbelt University have a number of degree programmes relevant to the water and sanitation sector. Table 14 below gives a brief description of the course programme and to the extent possible lists the number of graduates over the last five years.

In addition, UNZA has plans to establish a Water Resources Management Centre at M.Sc. level with support from Cooperating Partner(s). Admission criteria will be a good first degree in any field of study. The duration of the M.Sc. programme, the number of students to admit as well as the date for the first student intake is still to be determined. However, plans have reached an advanced stage. In addition to its M.Sc. programme, the Centre is also planned to train students at diploma and PhD levels. Much emphasis will be given to communication with specialists within other fields such as resource economists, environmentalists, lawyers, health professionals, social scientists, engineers etc. Communication with community representatives will also be essential. Currently, the planning of the Centre is being managed by a Resident Associate, while a Country Coordinator will be recruited when the Centre is established.

Furthermore, a private university Cavendish University Zambia (CUZ) has recently been established in partnership with Cavendish College London. Currently, CUZ has campuses in Lusaka and Kitwe and plans to construct a new campus in Kafue district. Current programmes include an MBA programme as well as master and bachelor programmes in e.g. project management, public relations, entrepreneurship and economics. Post graduate diplomas, diplomas and certificates are also offered (Information from article and advert in the Post, 20 August 2007).

4.11.2 Diploma Level

The Copperbelt University, NRDC, Chainama College of Health Sciences, and Evelyne Hone College offer a number of diploma programmes of relevance for the water and sanitation sector. The table below gives a brief description of most of the course programmes and to the extent possible lists the number of graduates over the last five years.

It has not been possible to obtain detailed information on all social and development studies that are offered by the National College for Development Studies, UNZA, Evelyne Hone College and other private institutions affiliated to TEVET. Furthermore, the curricula for the following three training programmes have recently been approved under TEVET: Diploma in Rural Urban Management, Diploma in Social Work and Certificate in Community Development Studies. The course durations are 3 years, 2 years and 1 year respectively. It therefore seems sound to conclude that there are/ will be sufficient graduates within social and development studies to cater for the demand in the water and sanitation sector.

4.11.3 Certificate and Other Short Training Courses

Some of the relevant certificate and other short training courses are briefly described below. However, the list is not exhaustive.

At UNZA, the Department of Sociology offers a 1-year certificate programme and also a 3-week course in planning and M&E.

The Copperbelt University run courses on chemical engineering tailor-made to the needs of the Commercial Water and Sewerage Utilities. The courses last from two weeks to one month.

NRDC runs a tailor-made water engineering and surveying course lasting 2 weeks.

The Lusaka Business and Technology College offers a 2-year water supply and operations programme. Further details on this course are included in the table below.

The Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA) regulates, monitors and coordinates vocational and related training. It cooperates with the CUs to conduct relevant short trainings. Normally, the CUs identify the relevant training institutions and together they then apply to TEVETA for funding.

Particularly, Lusaka Business and Technology College gets funding from TEVETA to conduct short training courses for technical staff of the CUs. The courses last on average two weeks. The TEVET activities receive funding from several CPs.

Other training institutions, receiving TEVET funding for water and sanitation related training, are the In-Service Training and Education Centre and the Kafue Gore Regional Training Centre. The In-Service Training and Education Centre offers short courses on community management in water and sanitation and on project management. The duration of the courses is 2-3 weeks. The Kafue Gorge Regional Training Centre has short courses on rain water harvesting, siting of reservoirs, environmental impact assessment of hydro-plants, production planning and water management, basic hydraulics and management of engineers and hydrogeologists.

The Chainama College of Health Sciences conduct short courses on hygiene, including on the PHAST (Participatory Hygiene and Sanitation Transformation) method.

The National Institute of Public Administration (NIPA) offers a number of training programmes at diploma and certificate levels within management and administration. The training programmes last from 3 months to 2 years. The ones that appear most directly relevant to the water and sanitation sector are short courses in strategic planning and management, project management and social survey research. In addition, NIPA undertakes consultancies and development studies.

Furthermore, short training courses are conducted under various water supply and sanitation programmes, PEMFA, other programmes, by the networks described in section 4.12 etc.

4.11.4 Accountancy Training

All accountants are to be registered by the Zambia Institute of Chartered Accountants (ZICA), at one of the following levels: technician, licentiate, associate, and fellow. The professional qualification recognised and accepted by ZICA are the British qualifications, prominent among them are the Chartered Institute of Management Accountants (CIMA) and the Association of Chartered Certified Accountants (ACCA). It is very demanding and expensive to become an ACCA or CIMA accountant. It entails passing progressive levels of examinations and then showing relevant accountancy practice of not less than three years. Furthermore, members have to continue their professional development by attending workshops/ conferences and/ or doing recognised consultancy work in order to keep their registration.

The Zambian qualification available is the National Accounting Technician (NATech). Previously there used to be the Certificate in Accounting and Business Studies (CABS). This was a very low qualification which was only an introduction of business and accounting concepts. CABS is no longer offered. NATech is now the main qualification and acts as a foundational course to both ACCA and CIMA.

There are over 700 NATech graduates every year. Reportedly, most of them start studying for their ACCA or CIMA diploma immediately after completing NATech. In recent years there have been over 150 full ACCA graduates per year and the Consultant estimates that on average there have been around 80 CIMA graduates per year.

According to ACCA Zambia, most of the new ACCA graduates find jobs in South Africa and Botswana. The same seems to be the case for new CIMA graduates, who reportedly are in even higher demand in South Africa than ACCA accountants. Reasons for this (temporary) move include that the salaries offered to ACCA and CIMA accountants are higher in South Africa than in Zambia and that the costs of living are lower.

Short courses in accountancy may be offered by various institutions, including by ZICA, but such courses seem not to be widely advertised.

Table 14: Relevant Training Programmes and Graduates

Training Institution	Name of Programme	Degree Level and Duration	Short Description of WSS elements	Number of Graduates						Remarks
				2002	2003	2004	2005	2006	2007	
UNZA	Civil and Environmental Engineering	B.Sc. 5 years	Hydrology, water management, water resources planning, water supply, waste water	18	20	22	23	24		Planning to offer M.Sc. and PhD programmes Constraint is lack of training materials
	Chemistry	Bsc 5 years	Water quality analysis, water chemistry i.e. water ionisation, chemical analysis, bacteriological analysis etc.	7	7	6	5	3		
	Hydrogeology (specialisation within mineral science/ geology)	B.Sc. 2 years for students doing geology	Water quality, hydrogeology, management of groundwater etc.	?	11 in geology (no figures for hydrogeology)	11 in geology (no figures for hydrogeology)	?	?	20 in geology (no figures for hydrogeology)	Planning to introduce a programme at technician level in groundwater resources and management Constraints are lack of equipment, programme is too short, it comes too late in the study of geology (5th year), too few students are attracted to the hydrogeological course(s)
	Sociology	BA 4 years	Social issues and management, social change, social impact	100	98	110	105	100		Offers short-term course at Master Degree level and a 1-year certificate in planning and M&E Constraints are lack of

Training Institution	Name of Programme	Degree Level and Duration	Short Description of WSS elements	Number of Graduates						Remarks
				2002	2003	2004	2005	2006	2007	
			assessment, gender etc.							materials, lecturers and funding for increasing number of students
	Development Studies	B.Sc. 5 years	Environment and sustainable development, gender	?	?	?	?	?	?	Planning to develop a M.Sc. programme and a collaborative programme with other countries Constraints are low staff levels, lack of training materials and funding
	Natural Resources Management	B.Sc. 4 years	Wildlife conservation, forestry management, soils and population	30	29	31	28	30		Planning to expand with distance learning, has links with several universities in other countries Constraints are inadequate funding for i.a. practical sessions and study projects and lack of lecturers as 6 out of 15 are pursuing further studies
	Gender Studies	MA 2 years after any B.Sc./BA	Feminist theory, gender and reproductive health, research methods	2	2	2	4	2		Planning for Masters and Doctorate Programme in the long-term Constraints are inadequate staffing, inadequate training materials
Copperbelt University	Civil Engineering	B.Sc. 5 years	Civil engineering with specialization in either roads, drainage, dams and WSS				8	16	14	Introducing a sustainable programme in water and sanitation would require support infrastructure such as more classrooms incl.

Training Institution	Name of Programme	Degree Level and Duration	Short Description of WSS elements	Number of Graduates						Remarks
				2002	2003	2004	2005	2006	2007	
										chairs and teaching aids Present constraints are lack of lecturers, so lectures have to be outsourced
	Civil Engineering	Diploma 3 years	Same as above	10	10	10	17	6	10	Same as above
	Environmental Engineering	B.Sc. 5 years	Water and waste management						First intake is now in 5th year	
	Urban and Regional Planning	B.Sc. 5 years	Specialization in infrastructure planning incl. WSS, tourism and development planning		4	3	4	5	20	
National Resources Development College (NRDC)	Water Engineering	Diploma 3 years	Hydrology, public health engineering, surveying, irrigation, pumps, hydraulic structures, civil eng., soils and sciences, project management		8	13	14	16	18	The demand/ interest in this programme has increased in recent years, but the female ratio among students is very low. Distance learning was introduced in May 2007, with duration of 4 years to get a university diploma. Constraints are lack of class rooms, laboratories, equipment, e.g. water testing kits, lack of lecturers and funds for operation and research funding for final year students, HIV/AIDS
Chainama	Environmental	Diploma	Public health	60	70	68	68			Would like to offer

Training Institution	Name of Programme	Degree Level and Duration	Short Description of WSS elements	Number of Graduates						Remarks
				2002	2003	2004	2005	2006	2007	
College of Health Sciences	Health	3 years	adm., waste water disposal, water supply and quality control, prevention of diseases, WSS							programmes at Bachelor and Master degree levels Constraints are lack of lecturers; present lecturers do not have adequate training
Evelyne Hone College	Environmental Health	Diploma 2 years	Prevention of diseases, waste disposal, public health adm., water supply and quality control, hygiene promotion	26	23	25	24	32		Constraints are lack of staff, equipment, learning materials, library facilities, modern books on environmental health
Lusaka Business and Technology College	Water Supply & Operations	Certificate 2 years	Water resources, water quality, treatment, storage, distribution and planning, hygiene and sanitation, pumps and engines etc.	18	20	22	23	24		Plans to introduce technician programme and also distance learning Constraints are lack of lecturers, and training material, low motivation of professional staff because of low remuneration, lack of refresher training for professional staff

4.12 Capacity of Relevant Networks

4.12.1 Water and Sanitation Association of Zambia

The Water and Sanitation Association of Zambia, WASAZA, was established in 1999 and has approximately 20 institutions/ companies as corporate members, 10 associate members and 110 members. It has a small secretariat consisting of two staff members, who are responsible for disseminating relevant information to its members, organising workshops and disseminating information to various stakeholders.

In 2007 WASAZA has thus organised workshops and disseminated information on integrated water resources management to community leaders in some peri-urban areas and to traditional leaders in Chongwe and Luangwa districts. WASAZA is also providing information to its members on training opportunities, e.g. to improve the performance and skills of the CUs, training providers, consultants and researchers. In November 2007, WASAZA will be the co-organiser of a bi-annual conference together with the Water Institute of Southern Africa (WISA).

The WASAZA secretariat considers the following as constraints in the water and sanitation sector:

- Generally, its members have limited access to capacity building programmes
- Low level of collaboration among its members and generally among the players in the sector, e.g. not sharing information on various topics
- Limited access for its members to research funds

4.12.2 Zambia Water Partnership

Zambia Water Partnership (ZWP) was launched by MEWD in March 2000. ZWP is affiliated to the Global Water Partnership (GWP) through GWP-SA in Southern Africa. With the mandate to “promote the implementation of Integrated and sustainable Water Resources Management in Zambia,” ZWP consists of stakeholders in the water sector and interested organisations from ministries, city and municipal councils, educational and research institutions, CPs, NGOs, private companies, CUs etc. Aside from MEWD, other key ministries that are members of the ZWP Steering Committee are MLGH, MTENR and MoFNP. ZWP does not have its own secretariat, but relies on funds and staff from the Partnership for African Water Development (PAWD) project. An Executive Committee of 8 representatives from key stakeholders constitutes the management arm of the ZWP.

Recently, MEWD played a crucial role in guiding the country-wide consultations on the development of the Integrated Water Resources Management and Water Efficiency Plan (IWRM/ WE). The process was facilitated by ZWP under the Partnership for Africa Water Development (PAWD) project. The Director of DWA is the Chairman of the PAWD Core Team of partners to oversee the development of the IWRM/ WE plans in harmony with the Water Resources Action Programme (WRAP). From the recent Partners and Directors of Water Institutions’ Consultative Workshop it was resolved that the IWRM/ WE plans, when finalized, will provide guidance in the water sector to implement the FNDP.

Furthermore, ZWP as well as the Global Water Partnership-Southern Africa have conducted some training on integrated water resources management.

To ensure effective interaction and common understanding of issues in the MEWD/ ZWP initiatives, the Water Sector Advisory Group Forum, a collaborative and coordination mechanism, has been established. Membership to the Forum is open to all institutions and organisations that are involved in water resources management. The Chair is held by the Permanent Secretary-MEWD and Zambia Water Partnership is a member.

5 ROUGH ESTIMATE OF FUTURE CAPACITY REQUIREMENTS

The following rough estimates are based on existing documents and discussions with sector professionals. Reference is made in the text to the documents used. However, some assumptions have had to be made and they are also stated in the text. It should be emphasized that some of the estimates on the number and qualifications of future staff required are very preliminary.

5.1 Rural Water Supply and Sanitation

5.1.1 Public Sector

The RWSS Unit in MLGH is the executing agency for the National RWSS Programme. In addition to their professional responsibilities, the professional staff members of the RWSS Unit and the MLGH Planning Unit will have additional responsibilities as managers of the seven components under the programme and as managers/ focal points for at least six CP-assisted Area Based Programmes.

DISS is in the middle of a restructuring process as part of developing the future MLGH strategy. The latest DISS structure proposed by MLGH in consultation with the Cabinet Office includes an increase in the WSS staff compared to the present number. There appears to be agreement that in the future there will be a Water Supply, Sanitation & Waste Management Section headed by an Assisting Director. This is to include three units for 1) Rural Water Supply and Sanitation, 2) Urban Water Supply and Sanitation and 3) Solid Waste Management. There is proposed to be 6 staff in the RWSS Unit, 4 staff in the Urban WSS Unit and 3 staff in the Waste Management Unit. In addition, there is proposed to be an M&E Unit for the whole of DISS with 4 staff. Furthermore, 4 regional DISS offices are expected to be established with 5 professional staff in each, including one Senior Infrastructure Development Officer WSS. As part of the restructuring process, the RWSS Unit will be institutionalised in MLGH.

The following table includes a comparison between the RWSS staff in the proposed new DISS structure and in the final draft of the National RWSS Programme

Table 15: Proposed Future RWSS Staff

DISS Units	Proposed Staff in New DISS Structure	Final Draft NRWSSP	Existing Staff*	Additional staff acc. to proposed DISS Str.
RWSS Unit, central level	6	7	4, incl. a RWSS M&E Officer	3 additional RWSS staff would be needed if the RWSS M&E Officer is moved to DISS M&E Unit
DISS M&E Unit	4 (to cover all 3 sections of DISS)	-	-	2 additional staff would be needed if the RWSS M&E Officer is moved to here
Regional Offices, WSS staff	4 (to cover RWSS and Urban WSS)	4-6 DISS Managers of RWSS PSTs	-	4 additional staff would be needed
DISS Planning and Development Unit	-	1-2	-	

PST = Programme Support Teams (foreseen established in connection several CP-assisted Area-Based Programmes)
* The existing staff in the RWSS Unit indicates the number of staff actually employed; there are two vacant positions in the Unit.

The proposed new DISS Structure's number of RWSS staff at central level corresponds more or less to the number of staff proposed in the final draft of the National RWSS Programme. However, in the proposed new DISS structure the RWSS M&E function will be placed in a DISS M&E Unit, with its proposed two M&E Officers having to provide M&E functions for all three DISS sections. The DISS M&E Unit is also proposed to have an Information and Communication Officer, whose work would include RWSS.

In the view of the Consultant, the Regional WSS Officers could be the future RWSS PST Managers, especially as the Regional WSS Officers are not assumed to be much involved in urban WSS, which will continue to be the responsibility of the CUs.

The monitoring of borehole siting, drilling, testing and rehabilitation will require special attention, as these activities are far more complicated than other technical activities related to rural water supply. Monitoring is thus a demanding task, since there are risks of substandard performance by not only drillers, but also borehole siting teams and drilling supervisors. The Consultant therefore proposes to provide permanent support to the District Councils/ D-WASHEs, preferably by hydrogeologists placed under DISS at provincial/ regional level. This would imply recruiting 4 DISS hydrogeologists to be based in the proposed Regional DISS Offices. Considering the few hydrogeologists remaining in MEWD, it does not seem to be an option to transfer hydrogeologists from MEWD to MLGH.

3 additional staff for the RWSS Unit and 2 additional staff for the DISS M&E Unit would be required for central level, while 8 WSS staff, including the 4 proposed hydrogeologists, would be required for regional level. The required background (education and experience) of the most of the staff is still to be decided, but substantial experience with RWSS as well as management experience will be essential for all positions, perhaps with exception of the additional M&E Officer who may be more assigned to work with roads, housing, markets etc.

DISS believes it should be possible to attract qualified staff for the proposed new WSS positions, with exception of the proposed 4 regional hydrogeologists. There is, however, concern whether staff can be retained because of the present public sector employment conditions. Improvements through the ongoing public sector reforms are considered essential.

At a National RWSS Programme Steering Committee meeting in August 2007, it was agreed that MoFNP will allocate 2-3 additional accountants to MLGH, to work exclusively on DISS accounts.

5.1.2 District/ Municipal Councils

The National RWSS Programme expects that on average each District Council will need to employ an additional two professional staff members to be specifically assigned to RWSS activities. They are to be employed by the District Councils but funded under the programme (NRWSSP, p. 46).

With 54 rural districts, the District Councils will need to recruit an additional 108 RWSS staff, in addition to filling vacancies they may already have. Several of the remaining 14 municipalities also have rural areas and may also have to recruit 1-2 RWSS staff. Assuming that at least half of the municipalities have rural areas, there may be a need for around 10 municipal RWSS staff to be added to the figure above.

The National RWSS Programme mentions that the two additional positions should be for a water specialist and a sanitation specialist. Such specialists could have a variety of educational background, also depending on the staff qualifications already available in the district. Several sector professionals have, however, suggested that District Councils need to employ social scientists to work in the water and sanitation sector. The Consultant would therefore assume that one of the new specialists should have a background in community development/ communication and the other in WSS engineering/ hydrogeology.

Financial issues are foreseen to be covered by the existing Financial Departments of the District Councils and hygiene promotion to some extent by EHTs and other health staff. The District Planning Unit is expected to assist with the planning of activities, based on plans and applications from ADCs.

The above requirements are in addition to filling vacancies that exist in several District Councils and also among line ministry staff at district level.

5.1.3 Private Sector

The PSTs mentioned above are foreseen to be semi-permanent units, the main role of which will be to provide assistance to and facilitate capacity development of district authorities and the private sector to plan and implement RWSS activities. The teams, which are expected to be dissolved after the completion of the area-based programmes, are to have specialist skills in management, community development, training, hygiene education, water supply, sanitation, finance and administration. The two PSTs that have already been established consist of 4 members, a community development specialist, a water engineer, a hygiene promotion specialist and a financial specialist. The final draft of the National RWSS Programme foresees there will be 4-6 PSTs with 3 professionals on each team for the 10 years the programme lasts. In addition to the specialists already recruited to the two PSTs, there will therefore be a need to recruit 6-12 full-time specialists for the additional 2-4 PSTs with backgrounds in community development, water engineering, hygiene promotion, financial management, planning etc.

A number of national and international long-term and short-term consultants are also foreseen recruited in connection with other parts of the National RWSS Programme.

The following table gives a very rough estimate of the requirements from short-term national consultants to implement the National RWSS Programme.

Table 16 Rough Estimate of Short-Term National Consultants for RWSSP

Components	Description	No. of months	Remarks
Management	National TA	240	
	Consultants	18	Total budget USD 360,000; assuming half for national consultants and average 10,000 USD/mm (incl. reimbursables)
	Sector review	13	Total budget USD 500,000; assuming 1/4 for national consultants and average 10,000 USD/mm (incl. reimbursables)
Sanitation and Hygiene Education	Formulation of programme	5	The revised draft Sanitation Action foresees 100 days' input for a national consultant
	Sanitation implementation	10	The total budget is USD 7.25 mill.; part of this may be used for national consultants for e.g. training, e.g. 2 months per year
Policy Development	National Consultants	36	
Capacity Development	TNA, national level	2	Budget is USD 20,000; this could be for national consultant; assuming average 10,000 USD/mm (incl. reimbursables)
	PSTs		Reference is made to the text above this table
	TNA, district level	1	Budget is USD 10,000; this could be for national consultant; assuming average 10,000 USD/mm (incl. reimbursables)
	District capacity building	10	Budget is USD 2.52 million; some could be for national consultants for training;
Information Management	Lessons learnt studies	4	Budget is USD 75,000; some could be for national consultant;
	Advocacy and publicity, national consultants	5	
O&M System	Roll out O&M to districts	50	Budget is USD 1.5 million; for SOMAP 2, there will be a coordinator in Central province for 2-3 years; in addition there may be some short-term consultancies
	Monitoring and support	2	Budget is USD 50,000; some could be for national consultant
Research and development	Formulation consultancy	4	Budget is USD 100,000; assuming 1/4 for national consultants and average 7,000 USD/mm (incl. reimbursables)
Total number of months		**400 months**	
Estimated average number of short-term consultancy month/ year		**40 months/ year, equivalent to approx. 3.5 full-time consultants**	**More short-term input will be required at the start of the programme, see text below**

Source: Final Draft of National RWSS Programme, April 2007: Budget for National Scale TA (p. 108-109)

According to our very rough estimate in total around 400 months of short-term national consultancy input could be required. If spread evenly over the 10-year period of the programme, this would be equivalent to 40 months/ year. However, there is foreseen to be a need for more consultants in the first years of the programme especially in connection with management support to kick-start the programme, formulation of the sanitation programme, policy development, formulation of the research and development component etc. One scenario could be to have on average 75 months of short-term national consultants per year for the first three years and on average 25 months of short-term national inputs per year for the remaining seven years. This is equivalent to on average 6.25 full-time consultants per year for the first three years and on average just over 2 full-time consultants per year for the remaining years.

The estimate is thus that totally the equivalent of 12 - 18 full-time consultants per year for the first three years and 8 – 14 full-time consultants per year for the remaining would be needed.

The Final Draft of the National RWSS Programme states that the RWSS accounts kept by district councils will be subject to standard auditing practice for these councils, with oversight from the Auditor General. In addition these accounts will be audited by a private firm of auditors; all districts will have an audit within two years of first receiving RWSS funds and thereafter at least one audit every three year. Based on this, it is estimated that private audit firms should carry out external audits in 20-30 districts each year. Based on the experience from a just completed RWSS programme, each external audit is estimated to take on average 4 days per district. This means the estimate is that private audit firms would need to spend 80-120 days (4-6 months if one company) per year auditing district RWSS accounts. It is expected tht the PLGO's office will continue to act as internal auditors of district accounts.

In terms of drilling, the NRWSS Programme makes provision for delivering 970 new water points per year, of which 65 % are assumed to be boreholes with handpumps. Additionally 700 water points should be rehabilitated per year, and of these 35 % are assumed to be boreholes with handpumps. The rehabilitation will in some cases only include headworks and pumps, but in other cases there will be a need for rehabilitation of the borehole itself, something that may require deployment of a drilling rig. According to the NRWSS Programme (p. 50), the present area based programmes actually comprise commitments which exceed the NRWSS Programme and peaks at the delivery of 1400 water points in 2007 and 2008.

Using the target figures for drilling given in the NRWSS Programme (and NOT in the area based programmes, as indicated above), and assuming an estimated average drilling success rate of 70 %, there will be a need for drilling 900 boreholes per year. As these boreholes will be spread over the whole of Zambia, and some will be drilled under difficult conditions, there may be a need for 10 – 15 drilling rigs working full time (in the drilling season) on drilling these boreholes, assuming that most boreholes are drilled with air rotary/ DTH hammer by rigs in good conditions. This drilling capacity is available in Zambia, also when drilling of private boreholes, boreholes for irrigation and boreholes for the mining sector is taken into account.

Siting of the 900 boreholes can be done by between 4 and 10 siting teams, depending on complexity as well as type of equipment that the teams are in possession of, and whether the teams are from private companies (and therefore paid a reasonable compensation for overtime) or from DWA. It is noted that, in the opinion of the Consultant, siting should NOT be done by the drilling companies themselves, or under their contract. One reason for this is a specific problem that has been mentioned in relation to previous drilling contracts, where drillers are responsible for siting. It is reported that the drillers often give preference to sites with the best chances of getting water, thus occasionally disregarding the users' preferences concerning location of the borehole.

In order to reduce costs, it may be possible to have relatively simple/ fast borehole siting undertaken by DWA or private consultants (independent or companies), in cases where the groundwater potential is high. In cases where success rates in "wild cat" drilling (drilling without any scientific siting) are very high for boreholes with handpumps, siting could possibly be done by district-level staff, who has received adequate training on e.g. the risk of contamination of boreholes and community mobilisation aspects. In more difficult areas, more extensive siting will be required, and direct involvement of geologists/ hydrogeologists should be considered mandatory.

Drilling supervision will require full-time input from 10 – 15 drilling supervisors, who should be qualified in relation to geology, hydrogeology and drilling/ borehole construction, with minimum qualifications at diploma-level and preferably higher. Drilling supervisors with such qualifications are generally not available at district level, but must be provided by consultancy companies. Alternatively individual consultants could be assigned. DWA may have some staff with the specified qualifications, but it is questionable if their direct involvement in drilling supervision is desirable, considering the GRZ policy of separating responsibilities for regulation and implementation.

Along with supervision of drilling, there will be a requirement for supervision of test pumping of boreholes. This supervision can for rural water supply be done by technicians, under the management of the drilling supervisors. Technicians may also supervise borehole rehabilitation.

There will also be a requirement for a significant number of local well diggers and masons to construct protected dug wells and adequate latrines. In wards/ districts where there are insufficient well diggers and/ or masons, it is expected that short-term training of local craftsmen will be sufficient to create the necessary skills.

5.2 Urban and Peri-Urban Water Supply and Sanitation

5.2.1 Public Sector and Parastatals

A National Urban Water Supply and Sanitation Programme is under preparation. A Programme Preparatory Team is being established, with MLGH as the lead institution. However, currently there is no detailed overview over programme components that may be used for estimating staff requirements in DISS. However, in connection with the restructuring of DISS, it has been proposed to increase the number of staff involved in urban and peri-urban water supply and sanitation from 3 to 4. The proposed DISS regional offices are to include a WSS Officer as described above under the requirements for the RWSS sub-sector.

According to NWASCO, it does not foresee that an increase in its staffing is required, while DTF expects it will need to employ an additional engineer to assist with monitoring of an increased number of investments.

5.2.2 Commercial Utilities

A comparison of the established and currently filled positions in the CUs indicates that they have many vacancies. However, the number of "established" positions seems quite high for many of the CUs compared to the number of connections they have. Furthermore, it has not been possible to find out how the number of "established" positions has been determined.

The CUs may not need to increase their total number of staff in the near future, although they are expected to expand their service areas to cover several additional peri-urban areas. However, it does appear beneficial for several of them to gradually change the composition of their staff so they have more staff with degrees or diplomas. Currently, less than 18% of all CU employees have a degree or diploma. If this figure were to increase to say 25%, then they would have to employ an additional 136 staff with a degree or a diploma. Specific assessments would have to be made for each CU to determine in what fields new degree/ diploma staff may be needed. However, with the envisaged significant investment in peri-urban areas it is expected that many CUs would need to expand their peri-urban units with inter alia additional community development officers/ social scientists.

As mentioned in a previous section, the CUs have made efforts to recruit qualified personnel but have met difficulties because it is difficult for them to pay competitive salaries. The CUs may be able to somewhat increase their salaries when gradually, and with Government support, they have retrenched their surplus of unskilled staff.

5.2.3 Private Sector

NWASCO has explained that the extension of urban water supply services to new peri-urban areas in many cases may be done using water from existing water sources and treatment plants. The reason for this is that ongoing leakage control and installation of water meters result in significantly reduced water consumption in the areas that are already covered with water supply. Coverage in new areas may in such situations only require extension of the distribution network.

Currently, the CUs typically undertake such extensions of the distribution networks using their own staff and/ or directly hired local labour, so currently such activities require limited input from the private sector. However, reportedly some CUs take considerable time to do such extensions because of their limited in-house capacity and because their prime responsibility is operation and maintenance of the existing system. Furthermore, some sector professionals with long experience working with CUs have raised concerns that the quality of the work may suffer if the CUs were to do large extensions to their networks without private sector involvement. Because of these quality concerns and to avoid too many delays in improving the water and sanitation situation in peri-urban areas, we have in the following assumed that a substantial part of feasibility studies, design, construction and construction supervision work will be done by the private sector. It is difficult to estimate what the split will be, but we have in the following assumed that 30% will be done by the CUs' own staff and 70% by the private sector. Some of the consultants required could be from consultancy companies, while others could be free-lance consultants. As to private contractors, we assume that both relatively large contractors as well as small local contractors will be involved.

As the CUs' current business plans do not include details on the required inputs from the private sector, the FNDP budget for urban and peri-urban water supply and sanitation has been used to prepare the following very rough estimate. This has been done in cooperation with other sector professionals in Zambia.

According to the FNDP, there will be a total expenditure of approximately ZK 850 billion for urban and peri-urban water supply over the period 2006 – 2010. This is equivalent to approximately USD 212 million. It is then assumed that the CUs will use approx. 30% of this amount to make extensions and similar improvements using their own staff, equivalent to approx. USD 64 million. This leaves USD 148 million that will be used for improvements by contracting private sector consultants and contractors. This scenario has been used for making a rough estimate of private sector requirements for urban water supply and sanitation as shown in the table below.

Table 17: Rough Estimate of Private Sector Requirements for Urban WSS

Activity	% of Budget	Budget for 2006-2010	Annual Budget
Feasibility, design, construction supervision and other consultants	15% of USD 148 million	USD 22 million	**USD 4.4 million**
Construction	85% of USD 148 million	USD 126 million	USD 25.2 million
- Materials and equipment	60% of construction budget	USD 76 million	USD 15.2 million
- Contractor's manpower	40% of construction budget	USD 50 million	**USD 10 million**

The annual budget of USD 4.4 million for consultants includes purchase/ hire of vehicles and equipment, hire of office, housing and subsistence allowances, local operational costs including travel. It is estimated this would require around 30% of the budget, bringing the budget left for actual consultancy fees down to around USD 3.1 million. Some of the consultancy work is likely to continue being done by international consultants, especially where the projects are over a certain size and/ or complexity. If it is assumed that around USD 1.6 million were set aside for international consultants, then USD 1.5 million would remain for national consultants. As per April 2007, the Association of Consulting Engineers of Zambia recommends monthly fee rates of USD 2,973 for junior engineers, USD 5,558 for engineers and USD 9,048 for senior engineers. Consultants within other fields appear to have fairly similar fee rates. Therefore, if assuming an average monthly fee rate of USD 7,000 over the five-year year period, then a total of 214 months of national consultancy inputs, equivalent to approx. 18 full-time national consultants, would be required every year.

The consultants are assumed to include water supply and sanitation engineers, electrical/ mechanical engineers, hydrogeologists, sociologists, financial specialists, institutional and HRD specialists and health & hygiene specialists. As much of the budget is assumed to be used for physical water and sanitation improvements, much of the consultancy input required will be from water and sanitation engineers.

The contractors' manpower inputs are estimated to be roughly divided into around 40% for skilled labour and 60% for unskilled labour. There are expected to be sufficient contractors with sufficient both skilled and unskilled labour to carry out the envisaged construction work. Close supervision of the contractors will, however, be essential. Construction supervision consultants are included in the estimated requirements for consultancy inputs.

5.3 Water Resources Management

5.3.1 Public Sector and Parastatals

The 1999/2003 MEWD Restructuring Report is the latest official document on the public sector capacity required in relation to water resources management. The following is a comparison of the positions recommended in this report with the existing situation as described in sections 4.1.5, 4.3.5 and 4.4.3. Only civil servants are included.

Table 18: Public Sector Capacity Requirements for WRM, According to 1999/2003 Restructuring Report

Section/ Location	1999/2003 Restr. Report	Existing Situation	Vacancies
MEWD, DPI Director	1	1	-
MEWD, DPI Water Section	6	4	2
MEWD, DWA Director	1	1	-
MEWD, DWA Groundwater Section	14	11	3
MEWD, DWA Surface Water Section	5	3	2
MEWD, DWA WRM Section	13	10	3
Provincial DWAs (9)	232	149	83
District DWA professional staff	152	Very few, perhaps 25-50	100 -125
Total	**424**	**204-229**	**195-220**

Source: Restructuring Report for Ministry of Energy and Water Development, April 1999 (updated 2003)

As can be seen in the table, the additional staff requirements are particularly at district and provincial levels. Some of these district-level functions may be transferred to the Local Authorities in connection with the decentralisation process.

However, the Water Resources Management Bill may be enacted in the near future. This would involve the establishment of new institutions and transfer of responsibilities to these. The final draft of the 5-year Water Action Plan, which is to provide guidance for the implementation of the new WRM Law, describes three institutional options with the following manpower requirements:

Table 19: Public Sector Capacity Requirements for WRM, According to Final Draft of Water Action Plan, 2005

	Option 1	Option 2	Option 3
Description of options	**Only NWRM Head Office established**	**Head Office and Catchment Council, Sub-Catchment Council and Water User Associations in Kafue catchment**	**Head Office and Catchment Councils, Sub-Catchment Councils and Water User Associations in Kafue and Zambezi catchments**
Staffing at NWRM Head Office	15 during the first years increasing to 20-25 after five years	15 during the first years increasing to 19-24 after five years	15 during the first years increasing to 18-23 after five years
Staffing at catchment and sub-catchment level	0	1 at catchment level after two years, increasing to 6 after five years. 2 at sub-catchment level	2 at catchment level after two years, increasing to 12 after five years. 4 at sub-catchment level.
Total staff numbers after five years	20-25 (in average 15 in 4 years)	**27-32 (in average 20 in four years)**	34-39 (in average 25 in four years**)**

Source: Water Action Plan, Final Draft, May 2005

The Final Draft Water Action Plan assesses that there may not be human resources with sufficient capacity available to staff both the Head Office and two decentralised units at the same time (option 3) and the financial resources may not be available either. The Draft Water Action Plan therefore recommends developing the immediate and intermediate phases of the action plan on the basis of option 2, where the foreseen total staff requirement is 27-32 staff.

A third scenario is found in the 2005 Human Resources Assessment Report, namely that within the next five year 25 staff would be required in the National WRM body and DWA, while 100 staff would be needed for the proposed six catchment councils (and their sub-catchment councils). It has not been possible to establish the exact background for this scenario.

According to the Final Draft Water Action Plan, after the five-year transition period covered by the Water Action Plan it is expected that the institutional framework will have the capacity to continue the development of the institutional roles and management functions for integrated water resources management. It is estimated that it may take 10 to 15 years to fully establish a new institutional framework, depending on how the experience gained from the transitional phase will be applied and on the financial and human resources available for implementation and follow-up.

The Water Action Plan foresees that DWA/ MEWD will keep the responsibility for monitoring and the information system during the first years of transition where after the National WRM body will take over these responsibilities. It is assumed that some other functions would also remain in DWA/ MEWD, including transboundary water resources management and overall water policy development and adjustment. These functions are, however, not described in detail in the Water Action Plan.

Capacity building activities constitute an important component of the Water Action Plan, inter alia through the establishment of a Water Resources Management Centre at UNZA.

The Water Resources Management Bill has been under consideration for a substantial period of time and it is still uncertain when it will be enacted. In addition, there is uncertainty on the speed with which the institutional changes foreseen in the draft Water Action Plan will take place. Adjustments to the institutional arrangements and the staffing levels may also be made in this connection.

The following are some issues that may need further discussion/ clarification before the future staffing requirements can be estimated:

- DWA's future involvement in drilling boreholes for rural water supply and assisting/ advising on rural water supply like hand pump installation
- DWA's future involvement in dam rehabilitation and construction

It is thus difficult to give even a rough estimate of the additional number of staff required in the public sector/ parastatals in the immediate future. This is especially so, as the three staffing scenarios shown above are very different, in terms of staff required varying from 424 in the 1999/2003 scenario to 125 in the 2005 HR Assessment Report to 27-32 staff in the 2005 Water Action Plan scenario (the latter does not include DWA staff).

For the 1999/2003 scenario there would be a need to increase the number of staff with 195-220, with increased staffing levels especially at provincial and district levels.

For both the 2005 HR Assessment Report scenario and the 2005 Water Action Plan scenario there would be no need to increase the number of DWA/ NWRM staff, on the contrary the number should perhaps gradually be reduced and/ or staff transferred to MLGH or other institutions.

In all three scenarios the recruitment of additional WRM planners and hydrogeologists appears to be essential, for the latter particularly to be based at provincial/ catchment levels.

5.3.2 Private Sector

The Final Draft Water Action Plan gives the following rough estimate of the consultancy inputs required to assist with the implementation of the Water Action Plan over a five-year period.

Table 20: Consultancy Inputs for Water Action Plan

	Total Consultancy Input (months)
Enabling Environment:	
Theme 1 – Policies	5
Theme 2 – Legislative framework	83
Theme 3 - Financing and incentive structures	12
Institutional Roles	
Theme 4 - Organisational framework	104
Theme 5 - Building institutional capacity	56
Management instruments	
Theme 6 – Plans for IWRM	88
Theme 7 - Social change instruments	60
Theme 8 – Regulatory instruments	24
Theme 9 - Economic instruments	15
Priority water resources issues	
Theme 10 - Water quality hot-spots	45
Theme 11 - Emergency situations	48
Theme 12 - International waters	17
Theme 13 – Piloting approaches to IWRM and development for poverty reduction	100
Total	657

Source: Final Draft of Water Action Plan, May 2005

The Water Action Plan assumes that 75% of the consultancy inputs will be provided by national/ regional consultants and 25% by international consultants. This would mean that around 492 months of national/ regional consultancy inputs would be required over a five year period. This is equal to on average nearly 100 national/ regional consultancy months per year, corresponding to around 8 full-time national/ regional consultants. The Water Action Plan does not give any estimates as to how many of these consultancy months would go to national consultants.

In addition to consultants, there will also be a requirement for some private contractors to rehabilitate and construct dams and irrigation systems. The contractors and their required manpower of skilled and unskilled labour are expected to be available. Close supervision will, however, be required. Construction supervision consultants are assumed to be included in the estimated requirements for consultancy inputs under priority water resources issues, theme 13, which is foreseen to include inventory of water infrastructure and development of productive water schemes.

5.4 Water Quality Laboratories

As mentioned earlier, there is a requirement for increased capacity to carry out water quality analyses and water quality monitoring. According to some of the key institutions currently involved, this would require the employment of additional staff in their laboratories as follows:

NISIR/ WRRU
NISIR has proposed an expansion of their Water Resources Research Unit, which includes laboratory facilities. The proposed increase in staffing is listed below under research and development.

UNZA

The Geo-Chemical laboratory at UNZA may require one more chemist, while the Environmental Laboratory would need to at least fill its current three vacancies among academic laboratory staff.

Food and Drug Laboratory
The laboratory may need an additional 20 staff, but they would not all deal with water quality analyses and monitoring.

The CUs, health sector, private laboratories etc. may also need to employ more staff. We do, however, not have sufficient information about these laboratories and their current staff to estimate the additional number of staff that may be required. The number of staff required and their qualifications will also depend on the laboratory facilities, many of which appear to need upgrading so for example they are able to test for more parameters. Furthermore, there is a need to assess in more detail what laboratory facilities may be available at provincial level, i.e outside Lusaka.

5.5 Research and Development

The draft Water Policy from January 2007 states that "the sustainable management of water resources is largely dependent on maintaining and developing recognised capabilities in the field of water resources research. The Government will therefore maintain and develop research capabilities in water resource management …" According to the draft Water Policy, this is to include extension of the traditional fields of water research to include research in social and financial issues, integrated catchment management, policy analysis and development, decision support systems, capacity building, ecosystem structure and functional development practices. Research approaches that provide linkages between technology and communities will be encouraged. It may be possible to carry out some of this research under the Water Resources Management Centre that it is planned to establish at UNZA (see also section 4.11.1 of this report). Once established a Country Coordinator is to be recruited for the WRM Centre. The lecturers are foreseen to come from different departments at UNZA. However, some additional staff recruitments may be required.

The Final Draft of the Water Action Plan includes a component for capacity building at National Institute of Scientific Research (NISIR) for it to assume an important role in applied water sector research, benchmarking and provision of analytical services. In collaboration with Danish research institutions, NISIR is to identify and implement applied Integrated WRM research projects and undertake reviews in the water sector. The necessary analytical equipment for water quality analyses are to be purchased. Presently, the Water Resources Research Unit of NISIR has 4 staff members. There is, however, a proposal to reorganise the unit so it includes water, energy and environmental research and to increase the number of staff to 14. This would mean an additional 10 staff would be needed, most with degrees in hydrology, hydrogeology, geology, chemistry, mechanics or environment.

Also the Final Draft of the National RWSS Programme includes a component on research and development. The component is yet to be formulated, but is expected to include establishment of a knowledge sharing and facilitating centre or facility to be a repository of WSS sector information as well as the focal point for R&D in the sector. The facility could be instrumental in carrying out applied research in RWSS technologies, financing options, socio-cultural issues pertaining to RWSS etc. The location of the centre and its staffing requirement is still to be determined.

The study conducted in 2006 on the establishment of a Knowledge and Resource Centre (KRC) for the water and sanitation sector could be relevant in this connection. The study concluded that actors in the sector were interested in establishing a medium-size KRC which can pool resources and knowledge and disseminate this to partners and the public. In the long-term the KRC could develop into a larger and more complex centre which would spearhead knowledge development, consolidation and dissemination. Three options for the location of the KRC were discussed, namely to establish it under 1) MLGH, but managed by another entity such as WASAZA, 2) UNZA or under 3) NWASCO. A decision on the possible establishment of the KRC has not yet been taken.

The total number of staff required for future water and sanitation research activities and for management of possible future research/ knowledge and resource centre(s) are still to be determined. However, a very rough estimate may be around 15 (based on approx. 5 for each institution/ centre).

6 CAPACITY CONSTRAINTS AND COMPETING FACTORS

6.1 Salary Structures

One of the main inhibiting factors to attracting and retaining qualified staff in the public service, the Local Authorities and the CUs is clearly the low remuneration packages offered. The tables on the following pages show the levels of salaries and allowances for employees in the public service, the CUs and private consulting companies. Some information on the salary levels in the mining sector and for senior private accountants and auditors are also provided.

The comparatively low salary levels in the public sector can be illustrated through the following examples. A Head of Section in the public sector is normally in the GSS04 salary scale, receiving a monthly salary of less than ZK 3.9 million and a monthly housing allowance of ZK 0.5 million. This could be compared to a senior engineer/ associate in a private consulting company earning a basic monthly salary of above ZK 13 million. The senior engineer in the private company thus earns three times as much as his/ her counterpart in the public sector.

Another example is a senior engineer or analyst in the public sector who is normally in the GSS06 salary scale, receiving a monthly salary of less than ZK 2.9 million and a monthly housing allowance of ZK 350,000. He/ she could be compared to an engineer in a private consulting company earning a basic monthly salary of above ZK 8 million. The engineer in the private company earns 2½ times as much as her/ his counterpart in the public sector.

The remuneration package for senior management in the Commercial Water and Sewerage Utilities appear to be better than the remuneration paid to directors and assistant directors in the Public Service. However, for other staff categories the salary levels appear to be fairly similar to or lower than those offered in the Public Service. One exception is Nkana CU where the salary levels appear to be generally higher than in the other CUs. The same may be the case for Lusaka CU.

The job security is, however, much higher both in the Public Service and the CUs than in the private sector. Furthermore, there are often good opportunities for further education and training in the Public Service, which is attractive to many job seekers.

The private water sector is facing competition from the mining sector for qualified staff like geologists/ hydrogeologists and chemical engineers. According to our source, the remuneration packages in the mining sector are fairly similar to those offered by private consulting companies in the water and sanitation sector. It is, however, uncertain whether mining company hydrogeologists/ engineers normally receive benefits like free use of cars and free housing. According to UNZA, mining companies are sponsoring several university students on the condition that they work with the mining company for a number of years after their graduation.

Reportedly, salaries in the private engineering sector of neighbouring countries are similar to those in Zambia. However, the living conditions/ quality of life are better in neighbouring countries with lower prices for consumer goods, better infrastructure, and easier access to bank loans than in Zambia. For some Zambian consultants who move to neighbouring countries there are also special project allowances for e.g. housing.

Reportedly, Zambian accountants with ACCA and CIMA qualifications are in high demand in South Africa and to some extent in Botswana. They are offered higher salaries in South Africa than in Zambia, which together with the lower costs of living make many ACCA and CIMA graduates move (temporarily) to South Africa.

Table 21: Salaries for Public Service Employees, GSS01 – GSS08 (in ZK)

Salary Scale	Categories of Staff (not exhaustive)	Annual/ monthly salary effective 1/4/2007	Allowances Monthly housing + Daily subsistence	Leave Travel Benefits every 2 years	Retirement Benefits	Other Benefits
GSS01	Director	A: 80,362,152 - 73,438,728 M: 6,696,846 - 6,119,894	Housing: 800,000 Subsistence: 295,000	3,000,000	Payment for 3.5 days/month employed Repatriation: 6 million	Funeral grants for employee, spouse and children Pension for all employees; highest interest after 20 years' employment
GSS02	Assistant Director	A: 66,968,484 - 61,198,932 M: 5,580,707 – 5,099,911	Housing: 700,000 Subsistence: 295,000			
GSS03	Acting Director Assistant Director	A: 55,807,068 - 50,999,124 M: 4,650,589 – 4,249,927	Housing: 600,000 Subsistence: 295,000			
GSS04	Principal Engineer, Principal Planner, Principal Accountant	A: 46,505,928 - 42,499,248 M: 3,875,494 – 3,541,604	Housing: 500,000 Subsistence: 295,000			
GSS05	Chief Purchasing & Supply	A: 38,754,936 - 35,416,056 M: 3,229,578 - 2,951,338	Housing: 400,000 Subsistence: 295,000			
GSS06	Senior Engineer, Senior Accountant, Senior Analyst	A: 33,940,404 - 29,513,364 M: 2,828,367 – 2,459,447	Housing: 350,000 Subsistence: 295,000			
GSS07	Administrative Officer	A: 25,094,868 - 22,865,424 M: 2,091,239 – 1,905,452	Housing: 300,000 Subsistence: 295,000			
GSS08	Accountant Procurement Officer	A: 22,207,812 - 20,234,904 M: 1,850,651 – 1,686,242	Housing: 250,000 Subsistence: 285,000	2,500,000	Payment for 3.0 days/ month employed Repatriation: 5 million	

Sources: Public Service Management Division Circular No. B.4 and B.5 of 2007, April 11 2007
Information provided by the Human Resources Management Section of MLGH

A = Annual
M = Monthly

Salaries for City and District Council Staff

The following is based on the Report on the Development and Adaptation of Appropriate Organisation Structures to Facilitate Service Delivery by City Councils in Response to the Decentralisation Policy, prepared by Paul Chikuba, Consultant, in collaboration with MDD (Management Development Department of the Cabinet Office), June 2007
Actual salaries of council employees are lower than those prevailing in the Civil Service. However, actual emoluments of some council employees are topped up with a lot of allowances thereby doubling the basic salaries of those receiving allowances. The consultant of the mentioned report recommends that some of the allowances should be incorporated into basic salaries to attract and retain competent and qualified personnel in the Councils. The document includes a proposed salary grading structure for councils.

Table 22: Salaries in Commercial Water and Sewerage Utilities, including basic salaries, bonuses, fringe and other benefits (in ZK)

	Less than K400,000	K400,000 to K600,000	K600,000 to K800,000	K800,000 to K1,200,000	K1,200,000 to K1,600,000	K1,600,000 to K2,000,000	K2,000,000 to K4,000,000	K4,000,000 to K8,000,000	More than K8,000,000	Total Staff
Chipata	0	3	2	8	38	9	3	4	1	68
Chambeshi	No data									-
Kafubu	0	0	37	56	92	72	23	11	3	294
Lukanga	97	34	20	6	3	0	4	0	1	165
Lusaka	No data									-
Mulonga	32	15	91	5	12	0	11	8	3	177
Nkana	0	0	0	222	173	74	36	85	30	620
N/Western	3	1	0	0	36	7	16	4	1	68
Southern	81	94	26	13	11	5	15	7	3	255
Western	0	3	30	47	7	0	5	1	0	93
Total staff	**213**	**150**	**206**	**357**	**372**	**167**	**113**	**120**	**42**	**1740**

Source: NWASCO Information System (NIS). NWASCO does not have the figures for the Chambeshi and Lusaka CUs

Table 23: Details on Salaries and Allowances in in Western Commercial Water and Sewerage Utility (in ZK)

Salary Scale	Categories of Staff (not exhaustive)	Monthly salary effective by 1/8/2006	Monthly Allowances	Retirement Benefits	Other Benefits
TG1	Managing Director	5,000,000			
TG2	Technical Director Commercial Director	4,000,000			
MG1	Operations Engineer Accountant HR & Adm. Manager	3,000,000	Entertainment: 200,000 Commuted Overtime: 400,000		
MG2	Project Manager Internal Auditor District Man., Mongu Customer Services Man.	1,375,000	Entertainment: 180,000 Commuted Overtime: 300,000 (MG2 staff may not actually receive these two allowances)		
MG3	District Manager, Other Districts	1,375,000	Entertainment: 150,000 Commuted Overtime: 250,000 (MG3 staff may not actually receive these two allowances)		
G5-G8		825,000 – 450,000	All Unionised employees: Medical allowance: 20,000 Selected staff categories: Standby: 10 % of basic salary Risk: 2% of basic salary Commuted overtime: 10% of basic salary Shift : 5% of basic salary x no. of shifts Tools: 2% of basic salary Bicycle: 2% of basic salary	5-9 years: 1 month's pay for each year served 10 years and above: 2 months' pay for each year + long service bonus of 5 months' basic salary Repatriation costs to the point of recruitment	Performance bonus of up to 20% of basic salary for meeting Company's set targets or for outstanding performance Settling in allowances (on appointment + transfers): 800,000 - 200,000 Subsistence allowances per night: 140,000 - 130,000 Meal allowance when outside district: 50,000 Funeral benefits for employee and close family

Sources: Western Water and Sewerage Company Ltd.: Revised Salaries for Non-Unionised Company Officers and for Unionised Company Employees, August 2006
Collective Agreement between Western Water and Sewerage Company and Zambia Water and Sanitation Engineering and Allied Workers' Union, 2006
Information provided by Human Resources Consultant to Western Water and Sewerage Company

Table 24: Private Sector, Zambia - Consultants

Position	Years of Experience	Basic Monthly Salary	Social Charges	Retirement and other Benefits
Principal/ Partner/ Director	-	USD 4,500 ~ ZK 17,100,000	45% of basic salary, covering - medical insurance/ expenses - accident insurance - funeral grants - pension scheme	Most staff are on contract and would normally get a gratuity at the end of the contract, usually 20-25% of a 2-3 year contract
Senior Engineer/ Associate	10 and above	USD 3,500~ ZK 13,300,000		
Engineer	5 – 10	USD 2,150 ~ ZK 8,170,000		
Junior Engineer	2 – 5	USD 1,150 ~ ZK 4,370,000		
Graduate Engineer	0 – 2	USD 550 ~ ZK 2,090,000		
Technologist (Diploma)	5 and above	USD 1,150 ~ ZK 4,370,000		
Graduate Technologist	0 – 5	USD 500 ~ ZK 1,900,000		
Senior Technician	10 and above	USD 1,150 ~ ZK 4,370,000		
Technician II	5 – 10	USD 550 ~ ZK 2,090,000		
Technician	0 – 5	USD 350 ~ ZK 1,330,000		
Social Scientist (B.Sc./M.Sc.)	20 and above	USD 2,500 ~ ZK 9,500,000	Approx. 30% of basic salary, covering - medical insurance/ expenses - accident insurance - funeral grants - pension scheme (accident insurance is less than for engineers and technicians because of type of work)	
Social Scientist (B.Sc./M.Sc.)	10 – 15	USD 1,500 ~ ZK 5,700,000		
Social Scientist/ Social Worker (B.Sc./M.SC./diploma)	5 - 10	USD 800 – 1,000 ~ ZK 3,040,000 - 3,800,000		
Social Scientist/ Social Worker (B.Sc./M.SC./diploma)	0 – 5	USD 650 ~ ZK 2,470,000		

Sources: Association of Consulting Engineers of Zambia (ACEZ), Council Meeting April 2007, Recommended Salaries and Chargeable Fee Rates
Information from previous Chairman of ACEZ
Note: Exchange rate used 1USD = 3,800 ZK
Note 2: According to the previous ACEZ Chairman, the recommended basic monthly salaries are much in line with the actual salaries paid in private companies

Private Sector, Zambia – Mining Sector
According to a source in the mining sector, the following are the normal salary levels in the mining sector:
Junior Geologists/ Hydrogeologists and Chemists/ Chemical Engineers: a monthly salary of approx. ZK4-6 million when joining the mining company.
Geologists/ Hydrogeologists and Engineers with more than 5 years experience: a monthly salary of approx. ZK8 million.
Senior Geologists/ Hydrogeologists (often after 3-4 years employment in the mining company): a monthly salary of approx. ZK12 million.
Staff working for mining companies used to get benefits like free use of cars and housing. However, there is uncertainty whether they still get these types of benefits.

Private Sector, Zambia – Accountants/Auditors etc.
According to financial specialists, the following are the normal monthly salary levels paid for accountants/auditors:
Banks: Finance Manager/ Senior Accountant/ Chief Internal Auditor: approx. ZK25 million; in addition they may receive gratuity (if they are on contracts)
Auditing Companies: Fully qualified auditors with experience: ZK15-20 million; in addition they may get an annual extra month's pay (13th cheque) and bonus payment according to performance (number of audits performed)

6.2 Competition from Other Sectors and Neighbouring Countries

As mentioned in the previous section, the water sector clearly faces competition for well-qualified staff from other sectors and from neighbouring countries. The professions most affected in this connection seem to be the following:

Geologists/ hydrogeologists and engineers

There is much competition from the mining sector for the few geologists/ hydrogeologists that graduate as well as for geologists/ hydrogeologists with some experience. The reasons why they are attracted to the mining sector may be somewhat higher salary/ benefit levels than in the private water sector, although according to our source in the mining sector there is not much difference in basic salaries. A main factor seems to be the mining companies' sponsoring of geology/ hydrogeology students with a number of years' bonding afterwards. There is no similar sponsoring of disciplines related to water supply service delivery, such as borehole siting and drilling supervision. This may be one of the main reasons why the hydrogeology course (starting in the 5th year of the geology study programme) attracts few students.

Some Zambian geologists/ hydrogeologists are finding employment in neighbouring countries. A senior sector professional estimates that currently around 45% of Zambian engineers/ geologists work in neighbouring countries, around 30% in South Africa, 10% in Botswana and 5% in Namibia. A few engineers/ geologists have also moved to the UK and other countries. Some are receiving better remuneration packages with for example housing allowances, but reportedly the basic salary levels are similar to those in Zambia. The main attractions may therefore be the better and lower-cost living conditions, perhaps mixed with a desire to gain the experience of living and working in another country for a period of time.

According to sector professionals, there are sufficient diploma engineers/ technicians in Zambia, whereas there is a shortage of degree engineers in the water and sanitation sector. As the far majority of the engineers that find employment abroad have a university degree, this contributes significantly to the shortage of degree engineers within the water sector. There appears definitely to be a shortage of hydrogeologists in the country.

Accountants

With the salary levels offered, it is difficult for the Public Service to attract and/ or retain accountants with ACCA or CIMA qualifications. According to the PEMFA programme, it is also a problem for the public sector to retain accountants with NATech qualifications. The remuneration packages offered in private auditing companies, insurance companies, banks and other private companies are much higher than those in the public sector. To counter this, the PEMFA programme intends to reinforce the Government's bonding policy when sponsoring training activities for public servants at central and provincial levels.

Reportedly, Zambian accountants with ACCA and CIMA qualifications are in high demand in South Africa and to some extent in Botswana. Higher salaries and the better and lower-cost living conditions seem to be some of the motivating factors for people to decide to (temporarily) migrate.

Social Scientists

Currently, very few social scientists work in the water and sanitation sector, either in the public or the private sector. There appears, however, to be sufficient, qualified social scientists in Zambia, but they are often more attracted to other sectors, especially to programmes for vulnerable children, poverty reduction and HIV/ AIDS prevention. Furthermore, the water and sanitation sector is generally considered as very technical and mainly for engineers and technicians.

Within the water and sanitation sector, an increasing emphasis is being placed on community participation, communication and promotion activities and socio-economic surveys and there appears therefore to be a need to change the public image of the sector. This should probably include more sensitization of, and interaction with, the training institutions providing degree and diploma programmes on sociology, development studies, social work etc.

Health Staff

Many health staff have migrated to neighbouring countries, including South Africa, Botswana, Namibia, Mozambique and previously also to Zimbabwe. Furthermore, nurses and possibly other health staff have found work in the UK and other European countries. Good remuneration packages are reportedly one of the main reasons for health staff to move to neighbouring and other countries.

Reportedly, the health sector also looses some of its staff, including some environmental health staff, to planning and management positions in other sectors.

Furthermore, the public health sector faces competition from NGOs and CP-supported programmes where salaries often are significantly higher than in the public sector. The same is the case for a number of other specialists within the water and sanitation sector.

Researchers/ University Lecturers

According to the 2005 Human Resources Assessment Report, 30% of those studying for a Masters or PhD degree (believed to be in civil engineering or geology) have migrated during their study leave, while around 50% of UNZA lecturers/ researchers with a Masters or PhD degree (believed to be in civil engineering or geology) have left while in employment.

Also the present UNZA Chancellor has bemoaned the UNZA brain drain that has occurred during the last 15 years (Article in the Post on 14 July 2007). Furthermore, migration and better/ more secure job opportunities elsewhere has affected research institutions like NISIR.

Brain drain and inadequate funding have repeatedly been mentioned as key reasons why the quality of education have deteriorated in many universities, colleges and other training institutions over the last 15-20 years.

6.3 High HIV/ AIDS Prevalence

As mentioned in the FNDP and the CP discussion note on the challenge of capacity development in the context of the FNDP, the high HIV/ AIDS prevalence in Zambia has a very detrimental effect on the country's human resource base. During discussions with sector professionals, HIV/ AIDS has been mentioned repeatedly as one of the main reasons for the high number of vacancies found in some institutions involved in the water and sanitation sector.

As described in the FNDP, it is the Government's policy to mainstream HIV/ AIDS prevention and sensitization efforts into all developmental activities, which is much needed. It has not been part of the TOR for this consultancy assignment to assess whether currently this is being sufficiently done within the water and sanitation sector. However, in the view of the Consultant there could be a need to review whether sufficient attention is paid to the private sector, where construction workers, drillers and other mobile staff are often a high-risk group for HIV/ AIDS infection.

6.4 Other Constraints

There are a number of other constraints that the sector faces and which may influence the capacity available to the sector. Some of these are listed below, without going into much detail:

- The delays in the decentralisation of responsibilities to the districts, including delays in transferring most/ some district-based line ministry staff to the District Councils. This is a barrier for increasing the capacity in the District Councils, both in terms of number of staff and in terms of funding. It is also a barrier to improving the coordination within the sector.

- The delays in enacting the Water Resources Management Bill mean it is difficult to plan for capacity development in the WRM sub-sector. This has implications both for the recruitment of new staff and for the planning of training activities.

- The slow pace of the salary reforms within the public sector. Although there were significant increases in public sector salaries from April 2007, they are still 2½ - 3 times lower than for similar positions in the private sector.

- The apparent lack of financial management and procurement capacity within the public sector, the District Councils and the CUs. This may not only be a question of allocation of sufficient, well-qualified staff, but also a question of approval procedures. In the public sector, it may be a contributing factor that the accountants are employed by MoFNP which means that the managements of the line ministries are not always able to set the priorities of their accountants.

7 FUTURE CAPACITY REQUIREMENTS AND GAPS

7.1 Summary of Future Additional Capacity Requirements

The following is an attempt to summarise the additional staff requirements within the three water and sanitation sub-sectors as well as the cross-cutting areas of water quality analyses and research and development. The qualifications required are not indicated in the table, but are included in the subsequent identification of main capacity gaps.

Table 25: Annual Additional Staff Requirements (all converted to full-time positions)

Sub-sector/ areas	Public sector/ parastatal	District and Municipal Councils	Commercial Utilities	Private Sector
RWSS	MLGH/DISS Central: 5 MLGH Acc. Central:2-3 MLGH/DISS Regional: 8	District Councils: 108 Municipal Councils : 10		Consultants First 3 y.: 12-18 After 3 y.: 8-14 Auditors 0.5 Drilling 10-15 rigs w. staff Borehole siting 4-10 teams Drilling supervision 10-15 supervisors Test pump superv. Some technicians Local well-diggers and masons Significant number
Urban WSS	MLGH/DISS Central: 1 DTF: 1		More staff with degrees/diplomas. If 25% of total staff = 136	Consultants: 18 Contractors Skilled and unskilled labour
WRM	1999/2003 scenario: 195-220 mainly provincial + district levels 2005 scenarios: No staff increase, but more WRM planners etc.			Consultants: 8 Contractors Skilled and unskilled labour
Water Quality Labs	Upgrading of lab. facilities and staffing		Upgrading of lab. facilities and staffing	Upgrading of lab. facilities and staffing
Research and Dev.	UNZA WRM Centre: 5 NISIR/WRRU: 5 RWSS Centre: 5			

In addition to the above number of additional staff required, there will also be a need to replace some of the existing staff within the sector because of retirement, resignations and illness/ death.

7.2 Main Sector Capacity Gaps

The following is an attempt to identify the main capacity gaps in the sector both in terms of numbers and qualifications. It should be emphasized that the far majority of people with good qualifications, both in terms of educational background and sector experience, are concentrated in Lusaka and perhaps in the Copperbelt. The same is the case for facilities like laboratories that can do water quality analyses and equipment like drilling rigs. The capacity gaps are thus in several respects greater in relatively remote areas and are foreseen to be more difficult to bridge than in Lusaka. Further reference is made to this in relevant sections below.

7.2.1 Rural Water Supply and Sanitation Sub-Sector

The required educational background of the additional 5 MLGH/ DISS RWSS staff for central level is still to be decided. However, substantial experience with RWSS as well as management experience will be essential. DISS is expecting to be able to attract well-qualified staff, but could have difficulties in retaining them with the current public service employment conditions.

Some of the additional employees are expected to be social scientists which may pose a challenge, as the number of social scientists with experience in the water and sanitation sector appears to be very limited.

The additional 8 MLGH/ DISS staff members at regional level are proposed to include 4 hydrogeologists and 4 staff with a background in either social science or engineering. Because of the shortage of geologists/ hydrogeologists in Zambia and the competition from the mining sector, it is likely to be a challenge to attract sufficient applicants for the proposed 4 regional hydrogeologist positions. It may also be difficult to attract social scientists with water and sanitation experience to some of the other regional positions.

The District/ Municipal Councils are foreseen to employ a total of 118 additional RWSS staff. It is assumed that half of the new specialists should have a background in community development/ communication and the other in WSS engineering/ hydrogeology. There is not expected to be a shortage of social scientists with at least a diploma for the 59 community development/ communication positions. Potential applicants are, however, unlikely to have much knowledge about the water and sanitation sector. Likewise, there is expected to be sufficient diploma engineers for the 59 WSS engineering positions. They are, however, not likely to have much knowledge on hydrogeology. Although there may be sufficient, qualified staff to fill the 118 new RWSS positions, many councils are likely to face difficulties in attracting sufficient applicants because of the present employment and work conditions within the councils. Remote districts are expected to continue facing additional difficulties in attracting and retaining well-qualified staff because of the long distance to good schooling, hospitals, good shopping facilities etc.

The required long-term and short-term consultants are expected to have expertise within community development, water engineering, hygiene promotion, financial management, planning etc. Because of the better employment conditions in the private sector it is expected to be possible to identify the required number of consultants. They may, however, not all have the desired extent of experience from working in the water and sanitation sector. This may particularly be the case for consultants within community development and financial management. There could be difficulties in identifying long-term consultants who are willing to live in remote areas.

There seems to be sufficient, qualified private auditors to carry out regular external audits of the District Council's RWSS accounts.

There seems to be sufficient borehole siting and drilling capacity around for the required work. It may, however, be difficult to find 10-15 full-time drilling supervisors with sufficient knowledge of hydrogeology. Technicians should be available for test pump supervision, but are likely to need some on-the-job training from the drilling supervisors.

Local artisans are expected to be available for rehabilitation and construction of dug wells and latrines, but some of them may need some short-term training.

7.2.2 Urban Water Supply and Sanitation

According to the new proposed structure for MLGH/ DISS, the additional urban WSS staff member is expected to have a background in community development or hygiene promotion. As mentioned above, it may be difficult to identify a social scientist with sufficient experience from the water and sanitation sector.

DTF offers better employment conditions than the public sector, so it is not expected to have difficulties in identifying a qualified engineer for the foreseen additional position. DTF should, however, consider examining whether the inexperience of some of its part-time consultants has affected their ability to advise and supervise/ monitor the CUs' use of DTF funds and possibly to consider in the future only employing experienced consultants for these type of positions.

It may be beneficial for several of the CUs to gradually change the composition of their staff so they have more staff with degrees or diplomas. An increase to say 25% would mean that they would have to employ an additional 136 staff with a degree or a diploma. These new staff members are expected to have degrees/ diplomas within engineering, community development/ social science, financial management etc. Although sufficient diploma holders may be available within the mentioned fields, many of the CUs may find it difficult to attract well-qualified staff because of the low remuneration packages they are able to offer.

The required long-term and short-term national consultants are assumed to include water supply and sanitation engineers, electrical/ mechanical engineers, hydrogeologists, sociologists, financial specialists, institutional and HRD specialists and health & hygiene specialists. The majority of input is expected to be from water and sanitation engineers. Because of the better employment conditions in the private sector it is expected to be possible to identify the required number of consultants. They may, however, not all have the desired years of experience from working in the water and sanitation sector. This may particularly be the case for sociologists, financial as well as institutional and HRD specialists. Hydrogeologists constitute a special problem because of the severe shortage in numbers and the competition from the mining sector. There may also be a shortage of water engineers with a degree and with sufficient experience in design, project management, construction supervision etc.

There are expected to be sufficient contractors with sufficient, skilled and unskilled labour to carry out the envisaged construction work.

7.2.3 Water Resources Management

It is difficult to give even a rough estimate of the additional number of staff required in the public sector/ parastatals in the immediate future. Based on available documents, there appears however to be three main scenarios.

For the 1999/2003 scenario, which is based on the MEWD Restructuring Report, there would be a need to increase the number of staff with 195-220, with increased staffing levels especially at provincial and district levels.

For the two 2005 scenarios, which are based on the HR Assessment Report and the final draft Water Action Plan developed to implement the new WRM Act respectively, there would be no need to increase the number of staff. On the contrary the number should perhaps gradually be reduced and/ or staff transferred to MLGH or other institutions.

In all three scenarios the recruitment of additional WRM planners and hydrogeologists appears to be essential, for the latter particularly to be based at provincial/ catchment levels. Currently, there is a substantial shortage of both WRM specialists and hydrogeologists. The establishment of the planned WRM Centre at UNZA should assist in overcoming at least part of this bottleneck.

WRM specialists will also be required for the short-term and long-term national/ regional consultancy input. WRM is a new area in Zambia, so there are reportedly very few national consultants available with the required qualifications and experience. Initially, it may therefore be necessary to draw on regional consultants until a sufficient number of WRM specialists have graduated from the WRM Centre.

There is expected to be sufficient contractors with sufficient, skilled and unskilled staff to rehabilitate and construct dams and irrigation systems.

7.2.4 Water Quality Laboratories

There appears to be a need to pay more attention to water quality issues in all three sub-sectors, including the upgrading of laboratory facilities, improved procedures and an increase in the current number of staff at various laboratories.

7.2.5 Research and Development

Researchers and other sector professionals are expected to be interested in future research and development positions, although this will depend on the remuneration package and other employment conditions offered, including job security.

8 SUGGESTIONS AND RECOMMENDATIONS

The following are main suggestions and recommendations of how best to address the existing situation, i.e. how to bridge the main capacity gaps identified and how to attempt to limit the constraints which influence the sector capacity. For ease of reference, the suggestions and recommendations have been divided into overall suggestions that may also be relevant to other sectors and more specific suggestions and recommendations for the water and sanitation sector.

8.1 Overall Suggestions

The following suggestions are not in any order of priority and should be seen as an input to the further discussions on overall capacity development strategies:

- Priority should be given to the continuation of the public sector reform process, with inter alia decentralisation to Local Authorities and the pay reform for public servants. It is understood that the pay reform will also cover or guide the remuneration of District Council staff and perhaps also grant aided institutions like universities. To attract and retain staff, it is essential that public servants, District Council staff, university lecturers etc. receive more attractive and competitive remuneration packages.
- Additional funding should be identified for universities, colleges and other training institutions to enable them to upgrade the quality of their education and research activities, which has deteriorated significantly over the last 15-20 years.
- The GRZ bonding policy should be reinforced when offering scholarships and other training opportunities to its staff as one way of countering the current brain-drain.
- It should be considered to investigate in further details what can be done to significantly improve the financial management and reporting from District Councils, the CUs and the main ministries involved in the water and sanitation sector; this may involve more than employment/ allocation of well-qualified accountants and/ or additional training of current accountants.

8.2 Specific Sector Suggestions and Recommendations

The following suggestions and recommendations are specifically related to the water and sanitation sector. They have been divided into 1) longer-term suggestions that will take some time before they have direct effect on the sector capacity and 2) short-term suggestions that can improve the current sector capacity and also improve the ability to plan for further capacity development efforts. The suggestions and recommendations are not in any order of priority.

<u>Longer-term:</u>

- The shortage of hydrogeologists is a serious constraint for the sector and should be addressed as a matter of priority. Currently, the mining sector is offering scholarships to geology students against bonding for a number of years. Institutions within the water sector should seriously consider doing something similar for hydrogeology students. Furthermore, UNZA may consider whether the hydrogeology course/ programme should be moved to start earlier in the geology study (earlier than the 5th year).

- Although Zambia appears to have sufficient social scientists with either a degree or a diploma, there is a shortage of social scientists with experience from the water and sanitation sector. There seems in this connection to be a need to change the public image of the water and sanitation sector, so it is not considered as a very technical sector. As one of the steps, sector institutions are suggested to seriously consider interacting more with training institutions providing degree and diploma programmes on sociology, development studies, social work etc. It should thus be promoted that water and sanitation is included in their curricula.
- Integrated WRM is a new field in Zambia and there is a serious lack of WRM specialists for employment in the public sector, WRM bodies at different levels and in the private sector. The planned WRM Centre at UNZA should therefore be established as soon as possible so the training at diploma, bachelor and master levels can start. The same Centre is also envisaged to be able to provide shorter WRM training courses for e.g. staff in MEWD.
- There are reportedly sufficient diploma engineers in Zambia to cater for the requirements in the water and sanitation sector. However, there appears to be a lack of water and sanitation engineers with a BSc. or MSc. The universities, in cooperation with sector institutions, should consider what steps can be taken to facilitate that additional diploma engineers upgrade their qualifications through a degree programme. Furthermore, technical colleges under TEVET should consider introducing programmes in water and sanitation engineering both at technician and technologist levels in order to meet the rising demand in the sector.
- It should be considered to nominate a laboratory as the National Reference Laboratory. This laboratory should be responsible for national and international inter-calibrations and should advise on analytical methods and quality control etc. Furthermore, almost all laboratories need upgrading of their premises and/ or equipment, improved procedures and increased staff levels. It should be considered to arrange for (additional) sensitization of especially senior sector management staff on the importance of regular water quality monitoring and analyses.
- The Final Draft National RWSS Programme includes a research and development component where it is envisaged to establish a knowledge sharing and facilitating centre or facility. It is suggested here to consider the proposal put forward in 2006 for the establishment of a Knowledge and Resource Centre for the water and sanitation sector. At that time three options for the location of the Centre were discussed, namely under 1) MLGH, but managed by another entity such as WASAZA, 2) UNZA or 3) NWASCO.

<u>Short-term</u>

- The delays in enacting the Water Resources Management Bill make it difficult to plan for capacity development in the WRM sub-sector. For this and other reasons, priority should be given to enacting the Bill. It is suggested that the consequences of the new Water Act and the decentralisation process are taken into account before employment of additional DWA/ MEWD staff at especially provincial and district levels. However, capacity development should not necessarily await the enactment of the Bill. For example up-scaling the NSTC-UNESCO Water Quality Capacity Project to a programme would be one of the actions that would contribute to the effort. Other lessons learnt, could also add value to the water quantity capacity building initiatives in the country.
- The RWSS Unit in DISS/ MLGH is seriously understaffed. Immediate steps should therefore be taken to employ the additional RWSS staff foreseen in the proposed new DISS structure or alternatively as described in the Final Draft of the National RWSS Programme. In addition to the staff included in the proposal for the new DISS structure, the Consultant recommends that 4 regional hydrogeologists are also employed to provide assistance and advice to the districts.

- It is generally recognised that in most districts the capacity to plan and implement RWSS is weak. Funds should therefore be provided as soon as possible under the National RWSS Programme enabling each District Council to employ two additional RWSS specialists as envisaged. As it may not be possible to attract sufficient staff with RWSS experience, on-the-job training and assistance appear to be essential. Consequently, it should be considered to hire the additional Programme Support Teams as soon as feasible. It is suggested they are linked to the proposed new regional DISS offices. As a supplement, relevant short training courses should be arranged for district staff involved in RWSS.
- Considering the significant investment that is planned for the urban WSS sub-sector, including peri-urban areas, it appears essential that the capacity of some of the CUs is strengthened, i.a. by employing more staff with degrees and/ or diplomas. In order for the CUs to afford employing more degree and/ or diploma holders, many of them will need to retrench surplus unskilled staff they have taken over from Local Authorities. GRZ should consider whether it is possible to speed up the release of funds to assist this retrenchment.
- Currently there is limited support to water quality monitoring and analyses. A mechanism should be found to co-ordinate the current water quality monitoring and analyses to maximise the limited support and also enhance effective exchange of information on the results. Activities, for instance on the Atomic Energy Agency's supported Isotope groundwater quality assessment project for Lusaka Province in DWA should link with related efforts at the two UNZA water quality laboratories, NISIR and LWSC.
- There are several training institutions offering short training courses of relevance for the sector. Some training courses are already being arranged based on detailed training needs assessments. Additional short training courses will be needed in various topics. Different CPs, NGOs and Government institutions provide support to arrange short courses. This makes it is essential that training courses are coordinated with other relevant institutions and a mechanism should be found to ensure this.
- Most short training courses currently arranged are for Public Sector, Local Government and NGO employees, but rarely extended to include private sector staff. It is suggested to consider also targeting private sector employees in connection with short training courses. It appears for example to be beneficial for social scientists, both those employed by private companies and those working as free-lancers, to receive training on various WSS issues. Similarly, it may be beneficial for water and sanitation engineers to update their knowledge so they can act as drilling supervisors in less complex areas.

Annex 1

Terms of Reference
Sector capacity study- Water & Sanitation

Background

The water sector in Zambia is preparing major investment programmes to improve service delivery and to achieve the MDGs for the sector. Zambia has recently launched a Fifth National Development Plan which include major investments in water and sanitation.

The GRZ and cooperating partners work closely in an increasingly harmonised scenario. The JASZ was signed in April 2007.

It is recognised that capacity to plan and implement programmes and projects in the sector, as in other sectors, is weak and needs to be addressed. Capacity constraints are experienced both at central government level as well as district level. There are programmes to reform the public sector and to decentralise government functions, however the programmes do not address all aspects of the capacity issues.

The water sector is a service delivery and infrastructure-based sector, and is experiencing competition in the private sector from a growing mining industry and other countries in the region. The private sector is critical for the potential of Zambia to actually improve water and sanitation systems within the next 10 years as expected. The capacity constraints are like other sectors influenced by the high prevalence of HIV/ AIDS currently estimated at 16% of the population. Lifetime expectancy for men and women has fallen below 40 years of age.

There is an urgent need to carry out a realistic assessment of the sector capacity both in government and the private sector. Therefore a study is needed to map the existing capacity in the sector by skills (e.g. economics, accounting, management and financial management, administration, engineering, hydrology and hydrogeology) and regional distribution. At the same time, there is need to produce a rough estimate of the capacity needed to implement the various national sub-sector programmes. On the basis of a comparison between the existing capacity and the capacity requirement it should be possible to (i) identify the major capacity gaps and (ii) to make recommendations to the sector stakeholders on what to expect as a result of the increasing competition in Zambia and the region for the existing capacity. Finally, the study will come up with suggestions on how best to address the situation in the short, medium and long term. The study will inform the sector stakeholders as well as Danida's review for the water & sanitation in August 2007.

Danida's ongoing sector programme has prepared an assessment of 12 districts in terms of capacity to manage and implement WSS projects. Further a report was prepared in 2005 providing an overview on number of people in various institutions and education levels compared to university outputs.

Objectives

The objective of the consultancy is to establish sector capacity in such a manner that the government of Zambia together with CPs, can focus on building the correct needed capacity amongst various institutions and individuals. The consultant shall provide an overview by mapping sector capacity and make recommendations on specific interventions to be done by GRZ and CPs. This mapping needs to take into consideration the overall discussion on capacity development currently going on in Zambia. Key reform programmes in this regard to consider are the Public Service Reform Programme, the PEMFA Programme as well as the Decentralisation Implementation Programme.

Activities:

Activities shall include but not necessarily be limited to:

1. Assess capacity in terms of number of professionals at various levels in Central Government
2. Assess capacity in terms of number of professionals at various levels in Districts and Provinces
3. Assess capacity in terms number of professionals at various levels in Private Sector, e.g. consultants, contractors, drilling companies
4. For assessments 1 – 3 record also the age distribution of the professionals in order to identify the development of foreseeable short, medium, and long term gaps.
5. Assess capacity of relevant training institutes and networks (UNZA, WASAZA…..)
6. Compare salary structures in the Zambian private sector with those in neighbouring countries and current GRZ remuneration as well as salary structures in parastatals.
7. delete, see 4 above
8. Discuss with Staff and Consultants from the ongoing Danida Programme, other relevant Partners, in particular Ministries of Finance, Local Government, Energy and Water Development, Health, Education, Agriculture, Community Development, Science & technology, NAWASCO, DTF, University of Zambia, German Development Cooperation, Worldbank, JICA, Irish Aid, UNICEF, Care International, Water Aid et al - concerning constraints.

The Consultant

The consultant shall provide a team consisting of adequately experienced professionals within the following areas:

- Water Engineering (local)
- Hydrology and hydrogeology (local)
- Economics, accounting, management and financial management
- Institutional capacity building
- Human resource development and training

Timing.

Estimated input for the assignment is

1.5 mm international
2 mm local

The consultants must provide a team covering the necessary qualifications and experience to evaluate the situation as described.

The consultancy will commence in June 2007 and be concluded by August 2007

Upon departure from Zambia, the consultants will hold a briefing session with at least the MLGH, MoFNP, Cabinet Office and the lead donors in the sector.

Literature

- Human Capacity assessment (Prof. Nyambe)
- District capacity assessment (George)
- District capacity analysis (MLGH/ COWI)
- Capacity issues paper (UNDP/ Germany)
- OECD/ DAC, Worldbank and UNDP literature on Capacity Development (see respective webpages)

Annex 2

Key Persons Met

MEWD
Ms. Jayne Kangwa, Director HRD
Mr. Adam Hussen, Director, DWA
Mr. Peter Chola, Assistant Director (Surface Water), DWA
Mr. Christopher Chileshe, Assistant Director (WRM), DWA
Mr. Simon Kang'omba, Principal Hydrogeologist, DWA
Mr. Howard Mpamba, Principal Hydrogeologist, DWA
Mr. Oscar Silembo, Senior Water Quality Officer, DWA
Mr. Kenneth Nyundu, Principal Quality Officer, DWA
Mr. Andrew Mondoka, Secretary of Water Board
Mr. Happy Sikawe, Senior Water Resources Engineer, Water Board
Ms. Florence Sikamundenga, Senior Hydro informatics Officer, Water Section, DPI
Mr. Mumubuwa Mununmi, A/ Chief Planner, Water Section, DPI.
Mr. Mwindilila Maimbo, Senior Planner, Policy and Co-ordination Section, DPI
Ms. Lynette W. Sakala, Assistant Human Resources Management Officer, DWA Administration

MLGH
Mr. Peter Lubambo, Director, DISS
Mr. Davies C. Zulu, Assistant Director, DISS
Mr. Rees Mwasambili, Head of RWSSU, DISS
Mr. Davy Ng'oma, Monitoring & Evaluation Officer, RWSSU, DISS
Ms. Etambuyu Siwale, Sociologist, RWSSU, DISS
Mr. Lytone Kanowa, Senior Engineer Water and Sanitation, RWSSU, DISS
Mr. Fredy Sichilongo, Principal Engineer Urban Water Supply and Sanitation, DISS
Mr. Douglas Sing'anga, Senior Engineer, Other Services, DISS
Ms. Zeles Zulu, Director, DLGA
Ms. Margaret Ng'oma, Senior HRD Officer, HRD Department
Mr. R. Kalawo, Human Resources Management Department
Mr. Alex Bwalya, Acting Provincial Local Government Officer, Eastern Province

Mr. Alfred S. Sakwiya, Director, Decentralisation Secretariat

Various Government Institutions
Mr. Mwila, Acting Director, Department of Technical Services, PSM Project, Cabinet Office
Ms. Georgina N. Zulu, M&E Specialist, PSM Project, Cabinet Office
Mr John Mafuta, Director of Audits, Public Debt and Investment, Auditor General's Office
Ms. Roselyn L. Really, Capacity Development Expert, PEMFA, MoFNP
Mr. Boniface Nalishiwa, Director HRD, MACO
Mr.Henry Sichembe, Deputy Director (Technical Services Branch), MACO
Mr. Felix M. Pumulo, Senior Executive Officer, HRD, MACO
Mr. Albert Nguluwe, Chief Policy Environmental Health, MoH (recently retired)
Ms. Sinkala, Director HRD, METNR
Mr. Duncan Mumba Musama, Natural Resources Management Officer, Department of Environment and Natural Resources, METNR
Mr. W.L Sangulube, Chief Extension Officer, Forestry Department, METNR
Ms. Chiseche M. Mutale, Chief Planner, DPI, METNR
Mr. Christopher A. Katundu, Chief Planning Officer, MoE
Mr. Joseph F. Nthele, Head School Infrastructure Section, MoE

Dr. Paul Zambezi, Permanent Secretary, MSTVT
Mr. Davison Menda, Director of Planning, MSTVT
Mr. Joseph Mukuni, Director of Vocational Education and Training, MSTVT
Mr. M.R. Kunkuta, Director Human Resources and Administration, MSTVT
Ms. Judith Chimutingiza, Community Development Officer, Chongwe District, MCDSS
Mr. Jonathan Changano Ngoi, Chief Com. Development Officer Training & Research, MCDSS
Ms. Nasiba Nyambe Zulu, Chief Com. Development Officer Projects & Programmes, MCDSS
Mr. Samuel Gong'a, Manager, Devolution Trust Fund
Mr. Osward M. Chanda, Director, NWASCO
Ms. Chola Mbilima, Commercial Officer, NWASCO
Mr. Peter Mutale, Technical Inspector, NWASCO
Mr. Herbert M. Chinokoro, Acting Director of Engineering, Lusaka WSC
Mr. Henry Manzi, Project Coordinator, Lusaka WSC
Mr. Davis Mukuka, Documentation & Information Officer, Zambia Bureau of Standards
Mr. Elias Kansembe, Inspections Officer, Zambia Bureau of Standards
Ms. Sara Shawa, Inspections Officer (Water Quality), Zambia Bureau of Standards
Ms. Mulenga Josephine, Senior Health Inspector, Lusaka City Council
Mr. Barnard Phiri, Science and Technology Officer (Regulation),
National Science and Technology Council (NSTC)
Dr. Lewis Mbumwae, Former Director of DWA
Mr. Chance Kaonga, Inspector of Buildings, National Council for Construction

Training Institutions and Networks
Prof. Imasiku A. Nyambe, School of Mines/ Geology Department, UNZA
Dr. Mudala, Senior Lecturer, Hydrogeology, UNZA
Mr. Mumba Moonga Hangoma, Lecturer, Development Studies, UNZA
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Mr. Mark C. Mulenga, Head of Department, Department of Geography, UNZA
Mr. Roy Kalinda, Head of Department, Department of Gender Studies, UNZA
Dr. Malungo, Head of Department, Department of Sociology, UNZA
Mr. Chozi Lungu, Lecturer & Head, Geo-chemical Laboratory, School of Mines, UNZA
Mr. Tembo James Madaliso, Lecturer & Co-ordinator, Environmental Eng. Laboratory UNZA

Mr Francis Muwowo, Urban and Regional Planner, Copperbelt University
Mr. Kahira, Head of Department, Evelyne Hone College
Mr. Sikazwe, Head of Department, Chainama College of Health Sciences
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Mr Jonathan Phiri, Administrative Officer, WASAZA
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Mr. John P. Simukoko, Scientific Officer, NISIR

Chibombo District
Mr. John S Manga`anda, Deputy Council Secretary
Mr. Mapopa Nyirenda, District Planning Officer, District Council
Mr. Charles Mukuka, Director of Works, District Council
Mr. Martin Mpundu, District Forestry Officer, Forestry Department, MTENR
Mr. Nelson Kaumba, District Registrar, District Council
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Mr. Sylvester Mubanga, Community Development Officer, MCDSS
Mr Gift Ndhlovu, District Works Supervisor, District Council

Selita T Njovu, Acting Council Treasurer, District Council
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Cooperating Partners and NGOs

Mr. Peter Sievers, Counsellor, Royal Danish Embassy
Mr. Cecil Dulu Nundwe, Advisor – Water & Sanitation, Irish Aid
Mr. Peter Harvey, Chief Water and Sanitation, UNICEF
Ms. Christine Ziba, Executive Assistant, UNICEF
Mr. Yuki Shibuya, Assistant Resident Representative, JICA
Mr. Mahesh Mishra, Country Representative, WaterAid
Mr. Byman Hamududu, Water and Sanitation Advisor, Plan International Zambia
Mr. Chikondi Phiri, Operations Director, World Vision
Ms. Mwanamwambwa, Programme Director Governance, Care International
Mr. Lemani Kampango, Development Coordinator WSS, Care International
Mr. Joseph Pupe, Project Manager WSS, Care International
Ms. Monica Mbewe, Senior Programmes Officer, Human and Social Sciences, Zambia Commission for UNESCO

Consultants and Advisers

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Mr. Lars Skov Andersen, IWRM Adviser, COWI/ MEWD
Mr. Itsuro Takahashi, Project Coordinator, SOMAP, JICA
Ms. Hiroko Yashiki, Local Government Advisor, JICA
Mr. Shoichi Yokogi, Deputy Manager, Technical Group, Japan Techno Co. Ltd. (JAT)
Mr. Jonathan Mainga, Managing Director, Davis and Shirtliff Ltd
Mr. Eric Siwale, Managing Geologist, Del Grosol Enterprises Ltd
Mr. Joseph Mutambo, Sales Manager, Shaka Drilling Company
Ms. Esther Mbawo, Sociologist, Zulu Burrow Ltd.
Mr. Levi Zulu, Managing Director, Zulu Burrow Ltd., Chairman of WASAZA
Mr Victor Mweene, Senior Manager at Grant Thornton Chartered Accountants
Mr. George Sitali, Partner, BCHOD

Annex 3

Key Documents Consulted

AMCOW/ TAC: African Minister's Council on Water/ Technical Advisory Committee Working Group on Water and Sanitation, African-European Union Water Initiative - Zambia Country Dialogue Process Draft Final Report, June 2004

ASAL Consultants/ Danida: Final Report, Zambia Water Sector Programme Support, Financial and Procurement Management Capacity Assessment, May-June 2006

BGR – Federal Institute for Geosciences and Natural Resources (Germany), Cap-Net, WA-Net, WaterNet: Report on Groundwater Management in Africa, no date

BGr, WaterNet: Groundwater Capacity Building Initiative: Data Gathering through Questionnaire, no date

Business Logic, GTZ: Organisational Study of the Department of Infrastructure and Support Services – Ministry of Local Government and Housing (With particular emphasis on water and sanitation), November 2001

Cabinet Office, Management Development Division: Report on the Restructuring of the Ministry of Energy and Water Development, April 1999 (updated 2003)

Chikuba, Paul in collaboration with Management Development Division, Cabinet Office: Report on the Development and Adaptation of Appropriate Organisation Structures to Facilitate Service Delivery by City Councils in Response to the Decentralisation Policy, June 2007

DAC Network on Governance: The Challenge of Capacity Development: Working Towards Good Practice, February 2006

Germany, UNDP and World Bank: The challenge of capacity development in the context of the FNDP, Discussion Note, February 2007

GKW Group, Baseline Study on Water Supply and Sanitation for Peri-Urban and Low-Cost Residential Areas in Zambia, Final Report, February 2006

Government of Zambia: Operational Manual for Restructuring, Recurrent and Capital Grants for Local Authorities, Draft, March 2007

Government of Zambia and Government of Denmark: Water Sector Programme Support Zambia, Component Description Final, Component 1, Support to Rural Water Supply and Sanitation, November 2005

Government of Zambia and Government of Denmark: Water Sector Programme Support Zambia, Component Description Final, Component 2, Support to Peri-urban and Low-cost Housing Areas Water Supply and Sanitation, November 2005

Government of Zambia and Government of Denmark: Water Sector Programme Support Zambia, Component Description Final, Component 3, Support to Integrated Water Resources Management, November 2005

JICA: Plan of Operation and Progress Overviews for Capacity Development Programme for Provision of Decentralized Services, 2006 - 2009

MACO: National Irrigation Plan, July 2005

MEWD: The Study on the National Water Resources Master Plan in the Republic of Zambia Final Report, October, 1995

MEWD: Draft National Water Policy, January 2007

MEWD: 2006 Annual Reports from 9 Provincial DWAs (for some reports only extracts on staffing)

MEWD: Staff Returns - Manpower Inventory as at June 2007

MEWD: Ministerial Training Plan 2006-2009, December 2006

MEWD/ DHI: Final Draft Water Action Plan, Developing an IWRM framework and addressing priority water resources issues, May 2005

MEWD: Water Resources Action Plan (WRAP), Institutional and Human Resources Development draft paper, March 2004

MEWD: Water Resources Action Plan (WRAP), Historical and Current Status of Water Resources Management in Zambia draft paper (2004)

MoFNP: Fifth National Development Plan, December 2006

MLGH in collaboration with Management Development Division, Cabinet Office: Proposed Structure for the Department of Housing and Infrastructure Development, July 2007

MLGH: Concept Note on the National Urban Water Supply and Sanitation Programme, 2007

MLGH: Presentation on Urban and Peri-Urban Water Supply and Sanitation, Presentation to Water and Sanitation Sub-Committee of the Water Sector Advisory Group, June 2007

MLGH/ Danida: Water Sector Programme Support – Component 1: Support to Rural Water Supply and Sanitation, Inception Report (Draft), Appendix 6: District Assessment Reports (September 2006)

MLGH and JICA: Progress Report for Capacity Development for the Provision of Decentralised Services, 2007

MLGH: Decentralization Secretariat, Decentralization Implementation Plan 2006-2010

MLGH: Final Draft National Rural Water Supply and Sanitation Programme 2006-2015, Zambia, April 2007

MLGH/ COWI: HR issues under the RWSSP Component 1: Capacity Building, Discussion Draft, June 2007

MLGH/ COWI: RWSS Programme, Water Sector Program Support, Programme Support Team District Report for Chongwe, Kafue, Itezhi-Tezhi, Namwala, Kalomo Districts, May 2007

MLGH/ COWI: Western Water Supply and Sewerage Company, Human Resources Inventory, 2007

MLGH/ DTF/ COWI: Various notes on DTF capacity building, 2007

MLGH and JICA: National Guidelines for Sustainable Operation and Maintenance of Rural Water Supply Facilities, Second Draft, May 2007

MLGH and JICA: Joint Evaluation Report on the Japanese Technical Cooperation for Sustainable Operation and Maintenance Project for Rural Water Supply (SOMAP), June 2007

MLGH, DISS/ RWSS Unit: Rural Water Supply and Sanitation Information Management and Monitoring and Evaluation System, Draft District and ADC Manuals, January 2007

MLGH/ Carl Bro (later Grontmij | Carl Bro): Development of Information Management and Monitoring and Evaluation Systems, Inception Report and Progress Reports, 2006 - 2007

MLGH/ Carl Bro, Consultancy Studies on Improvement to the Information Management and Monitoring and Evaluation System and Establishment of a Water Sector Knowledge and Resource Centre, February 2006

MLGH/ Ministry of Foreign Affairs, Royal Danish Embassy Lusaka: Water SPS District Based Water Supply and Sanitation Component, Identification and Preparation Study, Nov. 2004

NISIR: National Institute for Scientific and Industrial Research Services, Products and Technology Information Brochure, February 2003

NSTC: National Science and Technology Council - Water Quality Analysis Manual, 2005

NSTC: Water Quality and Water Treatment Notes, 2005

Nyambe, I.A.: Water Sector Identification and Preparation Study Part 5: Options for collaboration between Zambian and Danish institutions on water sector research – Assessment of human resources in the sector, April 2005

NWASCO: Urban and Peri-Urban Water Supply and Sanitation Sector Reports for 2005/2006

NWASCO: Regulatory Tools and Regulation, 2004 Edition

Office of the President, Republic of Zambia: The National Decentralisation Policy, “Towards Empowering the People”, November 2002

Summary of Trade Test Syllabus for Plumbers and Plant Operators

WaterNet: Groundwater Capacity Building Initiative Africa Report - Capacity Building for Groundwater Management in West and Southern Africa, July 2007

ZABS: Zambia Bureau of Standards - 2007 Catalogue of Zambian Standards

Annex 4

Table 26: Staff Data from 12 Danida-Supported Districts, September 2006

POSITION	KAFUE	CHONGWE	ITEZHI TEZHI	NAMWALA	KALOMO
Council Secretary	Post filled, details unavailable	BA, UNZA	BA Public Administration, 14 years	BA Education, 29 years	Acting, details unavailable
Deputy Council Secretary	Vacant	Associate of Local Govt. Admin.	Information Unavailable	Information Unavailable	Acting, EHT, Cert. LGA, 5 years
Planning Officer	BSc urban & regional planning	BA Dev. Studies, 1.5 yrs with council	BA Development Studies, 1 year with council	BA Education, 6 years	BA Social Work, 4 years with council
Council Treasurer	Dip. in Accountancy, 18 years	Dip. in Accounts, Cert. in Finance, 1.5 yrs with council	Diploma, Child Protection, 13 years	ZDA, Postgraduate Public Finance Mgt, 3 years with council	NATECH, 11 years
Director of Works	BSc Eng., 20 years	Dip. Construction Tech., 5 yrs with council	Certificate, Municipal Eng., 28 years	Craft Certificate Building, 6 years	Dip. Architecture, Cert. Project Mgt., 10 yrs with council
District Works Supervisor	N/A	N/A	N/A	N/A	Cert. Building Construction, 12 years
Dist. Health Officer	None, but has EHT (MoH) certificate in public health, 27 years	Medical Doctor	Nursing Officer. Dip. Nursing, 11 years	Public Health Nursing, over 28 years	EHT, Cert. LGA, 15 years with council
Dist. Edu. Officer	None, but has District Education Board Secretary (Line Ministry)	BA Ed. 26 years	N/A	N/A	N/A
District Agricultural Coordinator	N/A	N/A	N/A	MSc Agronomy, 18 years	MSc Agric. Ext., Project Mgt., over 30 years
Internal Auditor	N/A	N/A	N/A	N/A	NATECH, Local Govt. Finance Cert., BK & A/C Cert., 9 years in council
Director WSS	Dip. post graduate Degree WSS Eng, 25 yrs	N/A	N/A	N/A	N/A
Engineer – WSS	Dip. Eng., over 2 years	N/A	N/A	N/A	N/A
Community Dev Off.	Vacant	BA Business Administration, 5 months	Cer. IT, Mgt. and Admin.	Dip. Community Development, 29 years	BA Dev. Studies, 4 months Min of Comm. Dev.
Procurement Officer	Cert. in procurement, 12 years	N/A	N/A	N/A	N/A
District Forest Officer	N/A	N/A	Dip. Forestry, Cert. Facilitation, Mobilisation,	N/A	Dip. Forestry, Cert Project Planning & Mgt., 4 years

POSITION	KAFUE	CHONGWE	ITEZHI TEZHI	NAMWALA	KALOMO
			M&E, 22 years		
Livestock Officer	N/A	N/A	Dip., Animal Health, Project Mgt & Planning, 9 yrs	N/A	Dist. Agric. Officer. MSc
Prog. Manager	N/A	N/A	N/A	N/A	Dip., 10 years

POSITION	KALABO	KAOMA	LUKULU	MONGU	SENANGA	SHANG'OMB0	SESHEKE
Council Secretary	Dip. Accounts	Degree In Regional Planning	Post filled, details unavailable	Post filled, details unavailable	Post filled, details unavailable	Post filled, details unavailable	Information Unavailable
Deputy Council Secretary	Post filled, details unavailable	Acting. Details unavailable	Information unavailable	Information Unavailable	None	Information Unavailable	Information Unavailable
Planning Officer	Vacant	Dip. as EHT	Acting. Cert. Community Mgt	Post filled, details unavailable	Post filled, details unavailable	Position Vacant	
Council Treasurer	NATECH, Dip. Financial Mgt.	NATECH, Dip. Fin. Mgt.	Post filled details unavailable	Post filled, details unavailable	Post filled, details unavailable	Post filled, details unavailable	Dip. Accountancy
Director of Works	Position Vacant	Acting, details unavailable	Cert. Carpentry & Bricklaying	Post filled, details unavailable	Post filled, details unavailable	Cert. brick-laying and plastering	
Dist. Health Officer	Post filled, details unavailable	PhD	Post filled, details unavailable		Post filled, details unavailable	Post filled, details unavailable	
Dist. Edu. Officer	Post filled, details unavailable	Dip. Education	Post filled, details unavailable	Post filled, details unavailable	Post filled, details unavailable	Post filled, details unavailable	
Community Dev Off.	Post filled, details unavailable	Dip. Social Work	Post filled, details unavailable	Post filled, details unavailable	Post filled, details unavailable	Post filled, details unavailable	

Source: MLGH/ COWI, Rapid Review and Capacity Assessment of 12 Districts, September 2006

Notes

1. Kafue District Council has no salary arrears and three (3) members of staff have resigned in the past 24 months.
2. Chongwe District Council has no salary arrears and one (1) member of staff has resigned in the past 24 months.
3. Itezhi tezhi District Council has salary arrears from January 2005 to date. No member of staff has resigned in the last 24 months.
4. Namwala District Council has salary arrears ranging from 1 to 17 months. The arrears differ from staff member to staff member. One (1) member of staff resigned in the last 24 months.
5. Kalomo District Council has no salary arrears and two (2) members of staff have resigned in the past 3 years.
6. Kalabo District Council has salary arrears but these differ from member of staff to member of staff. The arrears range from 1 month to 24 months. There has been a high turnover of staff especially the position of District Planner.
7. Kaoma District Council has salary arrears of over six months and has a high turnover of staff, especially the position of District Planner.
8. Lukulu District Council has salary arrears of two years, and the turnover of staff is very low.
9. Mongu District Council has salary arrears of two years, the turnover of staff is very low, but there are several vacancies
10. Senanga District Council has no salary arrears, but has a high turnover of staff, especially the position of District Planner.
11. Sang'ombo District Council has salary arrears of over two years, and the turnover of staff is high.
12. Sesheke District Council has no salary arrears. The report has no information on staff turn-over or vacancies.

Annex 5

Table 27: Detailed Staff Data from the Commercial Water and Sewerage Utilities
(Information mainly obtained from NWASCO)

Nkana WSC

Total Establishment **720**

Current Employed **408**

	Commercial	Technical/ Engineering	Finance	Human Resources/ Administration	Total	
Establishment	**239**	**395**	**41**	**45**	**720**	
Degree/Professional qualification	3	22	10	6	**41**	
Diploma	20	13	7	7	**47**	
Trades Certificate	51	175	14	16	**256**	
School Certificate	20	37	4	3	**64**	
Total	94	247	35	32	**408**	
Staff Deficit	145	148	6	13	**312**	

NWASCO Comment
Nkana WSC is generally ok in terms of Salaries. It inherited good technical staff from AHC.
It however needs to train more people particularly in the commercial aspects of the CU.
Apart from the above, the CU has 200 unskilled employees without even a school certificate

Kafubu WSC
Total Establishment **400**
Current Employed **301**

	Commercial	Technical/ Engineering	Finance	Human Resources/ Administration	Total	
Establishment						
Degree/Professional qualification	3	7	3	1	**14**	
Diploma	8	11	6	4	**29**	
Trades Certificate	29	119	1	8	**157**	
School Certificate	24	53	0	24	**101**	
Total	64	190	10	37	**301**	
Staff Deficit						

NWASCO Comment
Kafubu did not give its current departmental establishment.
The salaries are not competitive. Kafubu has a problem of inherited council workers.
The CU does not have money to retrench them so that it can employ qualified staff.

Mulonga WSC

Total Establishment **179**

Current Employed **162**

	Commercial	Technical/ Engineering	Finance	Human Resources/ Administration	Total	
Establishment	**26**	**133**	**11**	**9**	**179**	
Degree/Professional qualification		6	2	1	**9**	
Diploma	1	3	2	1	**7**	
Trades Certificate	25	110	6	5	**146**	
School Certificate	0	0	0	0	**0**	
Total	26	119	10	7	**162**	
Staff Deficit	0	14	1	2	**17**	

NWASCO Comment

Mulonga WSC salaries are very low to attract qualified personnel. It also has problem of council workers it cannot retrench due to lack of financial resources for such an exercise

Southern WSC

Total Establishment **270**

Current Employed **131**

	Commercial	Technical/ Engineering	Finance	Human Resources/ Administration	Total	
Establishment	**52**	**181**	**20**	**17**	**270**	
Degree/Professional qualification	2	7	1	3	**13**	
Diploma	3	5	3	2	**13**	
Trades Certificate	8	12	5	2	**27**	
School Certificate	27	18	0	0	**45**	
No School Certificate	10	14	6	3	**33**	
Total	50	56	15	10	**131**	
Staff Deficit	2	125	5	7	**139**	

NWASCO Comment

Salaries are generally ok for a rural CU, but not good enough to attract qualified personnel. The Technical Department and the Finance Depart. both need some capacity building. Most of the people in these two departments need training or just retrenment so that room can be created for qualified staff to be recruited.

Chipata WSC

Total Establishment **71**

Current Employed **69**

	Commercial	Technical/ Engineering	Finance	Human Resources/ Administration	Total	
Establishment					**0**	
Degree/Professional qualification				3	**3**	
Diploma	2	1	1		**4**	
Trades Certificate	4	10	4	4	**22**	
School Certificate	6	8		4	**18**	
No School Certificate	2	16		4	**22**	
Total	14	35	5	15	**69**	
Staff Deficit						

NWASCO Comment

Chipata WSC did not give its current departmental establishment.
Despite being one of the oldest Cus, Chipata WSC still needs some considerable capacity building. This includes both recruiting and training. The salaries are also not attractive.

North Western WSC						
Total Establishment	**96**					
Current Employed	**63**					
	Commercial	**Technical/ Engineering**	**Finance**	**Human Ressources/ Administration**	**Total**	
Establishment					**0**	
Degree/Professional qualification		4	1	1	**6**	
Diploma	1	3	1	1	**6**	
Trades Certificate	14	16	1	2	**33**	
School Certificate	1	15	0	2	**18**	
No School Certificate	0	0	0	0	**0**	
Total	16	38	3	6	**63**	
Staff Deficit						

NWASCO Comment

Salaries are generally ok for a rural CU, but not good enough to attract qualified personnel. The Cu has in place a good recruitment policy, however, it is loosing staff to the new mines in the province. The CU needs to recruit commercially oriented staff particularly in billing and customer care and also financial staff.

Chambishi WSC

Total Establishment

Current Employed

	Commercial	Technical/ Engineering	Finance	Human Resources/ Administration	Total	
Establishment					**0**	
Degree/Professional qualification		2	2		**4**	
Diploma	1	5	4	1	**11**	
Trades Certificate	3	19	2		**24**	
School Certificate	2	18	4		**24**	
No School Certificate	0	0	0	1	**1**	
Total	6	44	12	2	**64**	
Staff Deficit						

NWASCO Comment

The CU has a lot of set up problems. It has not managed to recruit the necessary staff despite being in existence for three years now.

Western WSC

Total Establishment

Current Employed **93**

	Commercial/ Finance	Technical/ Engineering	Human Resources/ Administration		Total	
Establishment					**0**	
Degree/Professional qualification	1	0	1		**2**	
Diploma	1	4	1		**6**	
Trades Certificate	6	31	2		**39**	
School Certificate	13	30	3		**46**	
No School Certificate	0	0			**0**	
Total	21	65	7		**93**	
Staff Deficit						

The CU has problem in recruiting staff. Recently the CU advertised some job vacancies and very few people responded. The CU has the lowest salaries in the sector and it is very difficult for it to attract qualified personnel.

Lukanga WSC

Lukanga is the latest established CU to provide services in the Central Province of Zambia. Lukanga WSC has been established with the help of the African Development Bank. Lukanga is in the process of recruiting staff. So far the Board is in place and the Managing Director has been recruited. Currently the company is operating with the staff from the Water Departments of the Local Authorities within the Central Province.

Lusaka WSC

Total Establishment

Current Employed **546**

	Commercial	Technical/ Engineering	Finance	Human Resources/ Administration	Total	
Establishment					**0**	
Degree/Professional qualification	18	24	3	16	**61**	
Diploma	15	19	10	4	**48**	
Trades Certificate	29	263	13	33	**338**	
School Certificate	17	34	5	10	**66**	
No School Certificate	8	3	0	22	**33**	
Total	87	343	31	85	**546**	
Staff Deficit						

NWASCO Comment

The Finance Department is adequately staffed. Other departments in particular, the Commercial and the Technical Departments need to retrain the staff or retrench them to create room for qualified staff to be recruited. Most of the staff in these two departments were inherited from the local authority. Salaries for professional staff are generally ok to attract qualified technical staff.

The Board of Lusaka WSC is expected to approve that the future number of established positions should be above 700.