REPORT TO THE WATER RESEARCH COMMISSION

WATER AND SANITATION IN URBAN AREAS: FINANCIAL AND INSTITUTIONAL REVIEW

JUNE 1994

REPORT 3

MEETING THE DEMAND FOR WATER AND SANITATION SERVICES: GETTING IT RIGHT IN THE TRANSITION

PROJECT LEADER: I PALMER

PREPARED BY: PALMER DEVELOPMENT GROUP
PO BOX 53123
KENILWORTH
7745

WRC REPORT NO. 571/3/94
ISBN 1 86845 066 X
ISBN SET NO. 1 86845 070 8

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PREFACE

BACKGROUND

The Water Research Commission (WRC) appointed Palmer Development Group to undertake an institutional and financial review of water supply and sanitation services in the urban areas of South Africa.

OBJECTIVE

The overall objective of this project is:

To present information and analysis that can help relevant community leaders and decision-makers:

- *to guide and promote the extension of services and the reshaping of organisations such as can enable all people living in the (urban) areas of South Africa to have adequate and appropriate water supply and sanitation, and*

- *to facilitate the related processes of financial, institutional, (legislative) and other changes that the adoption and implementation of the above objective will require.*

The specific objectives of the project and working assumptions have been set out in the Draft Project Inception Document.

This report is written in fulfilment of Objective 4, namely: to assess the implications of existing financial and institutional arrangements (described in Report 1) in the light of the demands and costs facing the urban water and sanitation sector (outlined in Report 2).

This report was written by Rolfe Eberhard.

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1. INTRODUCTION

1.1 Scope

This report forms the core output of the Financial and Institutional Review project, bringing together the lessons that have been learnt from the research undertaken in fulfilment of the project objectives. The report focuses on the key issues facing the **urban** water and sanitation sector, and suggests policy and implementation approaches that, in the opinion of the researchers, will best enable the sector to meet the significant challenges facing it. Where necessary, linkages with the rural water and sanitation sector are discussed[1].

The weight of the report's focus is on financial arrangements (rather than institutional arrangements). The reason for this is that, to date, more attention has been given to institutional arrangements and the debate around financial arrangements is less developed.

1.2 Objectives

The key objectives of the paper are:

- To suggest a policy approach to levels of service goals and minimum service levels.
- To propose ways in which new services provision, and ongoing operation and maintenance costs might be financed.
- To discuss which institutional arrangements will best help the sector to achieve its goals.
- To sketch the issues pertinent to the process of restructuring (both currently under way and imminent) in the urban water and sanitation sector, namely: managing institutional change, capacity building and policy implementation.

1.3 Sources

Working Papers 11, 12, 13 and 15 were written as stand alone documents for the specific purposes outlined below, as well as to provide background research material for this report.

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[1] All statements refer to urban water and sanitation services, unless specific reference is made to rural areas.

Working Paper 11 (tariff policy) was written as an input to policy work on water and sanitation tariffs undertaken by the National Standing Committee on Water Supply and Sanitation's (SCOWSAS) Sub-committee on Pricing, Finance, Standards and Technology Choice for the National Housing Forum (NHF).

Working Paper 12 (Capital Investment) did not form part of the initial brief of the project. However, in the light of the large future borrowing requirements in the sector (determined in Report 2), it was felt important that capital investment finance, and the factors influencing the cost and availability of this be further investigated as part of the project.

Working Paper 13 (Institutional Restructuring) was written specifically as an input to the deliberations of the National Standing Committee on Water Supply and Sanitation's (SCOWSAS) Institutional Sub-committee.

Working Paper 15 (Investment-Tariff Model) did not form part of the original brief of this project, but the researchers felt that it was important that the financial analysis of alternative institutional and tariff policy options be taken further. The Investment-Tariff model was developed as a tool to assist those involved in more detailed financial analysis and investment planning at the third tier (local authority) level. Quantitative information arising from real runs of the model for the Durban Functional Region have made an important contribution to the qualitative discussion provided in this report.

The report also draws on material presented in reports 1, 2, 4 and 5.

1.4 Terminology

Key terms and concepts are underlined in the text. These are explained and discussed in the Glossary in Section 10. **Bold** and *italics* are used for the purpose of emphasis.

1.5 Disclaimer

The opinions set out, and policy proposals put forward, in this report do not necessarily reflect those of the Water Research Commission or the members of the project steering committee.

2. SERVICE LEVEL GOALS AND MINIMUM SERVICE LEVELS

2.1 Introduction

It is likely that minimum service level standards for water and sanitation will be set at the national and/or regional levels. These standards will have an important impact on the overall investment requirements in the sector (see Section 3) and the setting of suitable standards is thus critical to the medium and long term financial viability and sustainability of the sector.

Likewise, service goals (which are distinct from minimum service standards) will set the investment agendas of the supply agencies and are equally important.

In this section, the principles that should be adopted in establishing these minimum standards and service goals are set out. Current consensus is summarised and a policy approach is proposed.

2.2 Principles

It is suggested that the following principles be adopted with regard to service level goals and minimum service levels[2]:

- **some for all rather than all for some**

  Any policy that is proposed and implemented should seek to ensure that all households have access to at least a basic acceptable level of service as soon as possible.

  This statement may require qualification in cases where settlements are not economically viable.

- **basic acceptable level of service**

  A basic acceptable level of service is one which contributes towards a healthy living environment through ensuring the adequate availability of safe water and safe disposal of human waste[3].

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[2] This discussion is based on Briscoe (1991).

[3] See definitions of adequate sanitation and adequate water supply in Glossary (Section 10).

- **financial viability and sustainability**

  An approach to services provision which is not financially viable and sustainable in the short, medium and long term, may in the end disadvantage the very people it was supposed to benefit.

- **realistic minimum standards**

  Any minimum standards that are set must be achievable, financially viable and economically sustainable.

- **aim for high service levels**

  Most householders aspire to a high level of housing and services. Policy should facilitate this while ensuring that the services are financially viable and sustainable in the long term[4].

- **upgradability**

  Households should not be "locked-in" to a low level of service. Policy and practice must allow for households to upgrade their level of service.

- **choice**

  Households should have realistic and real choices with regard to the level of service. These choices should take place within the total housing environment (that is, levels of service within and between the different housing related services, as well as location of residence) and within a rational financial and economic framework.

  For example, a household may prefer to have a better quality house with a VIP latrine rather than a corrugated-iron shack connected to a waterborne sewerage system.

  This choice implies that services are demand driven, depending on the preferences, choices, and willingness to pay of households (within a rational subsidy and payment

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[4] One way of doing this is to finance connection costs, making entry to a higher level of service more affordable, but being careful to take into account the affordability of ongoing operation and maintenance costs both to the newly connected consumer as well to the pool of consumers in the area of supply.

framework) rather than supply driven, with service level decisions being made by the supply agency.

- **fairness**

  All households should be faced with the same choices. There should be no preferential treatment of households or communities[5].

- ***flexibility***

  Enabling households to have real choices demands that the supply agencies be responsive and flexible to the communities' and individual household's preferences.

- **transparency**

  Households can only make sensible choices if they have access to accurate information. A level of trust must be developed between the supply agencies and the households in order to ensure effective and sustainable delivery of services. Transparency is a key pre-condition for this.

2.3 The current consensus

a) Service goals

There appears to be widespread recognition of the harsh economic reality that, in the light of the current backlog in services, the future demand for services, the degree of poverty amongst the people of South Africa, and the large and competing demands on a limited fiscus, that the goal of a formal house for every household with in-house treated running water and a flush toilet is not realisable in the short term.

At the same, there is consensus that it is imperative that all households have access to a basic acceptable level of water supply and sanitation service which contributes towards a healthy living environment, as soon as possible.

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[5] There is justification for some differentiation in the choices made available to urban and rural households respectively, for economic as well as practical reasons.

The Tripartite Alliance's[6] national Reconstruction and Development Programme (RDP), which is likely to form the basis of the development policy of the new government, has set the following goals with regard to water and sanitation: (both urban and rural areas)

> *"The RDP's short-term aim is to provide every person with adequate facilities for health. The RDP will achieve this by establishing a national water and sanitation programme which aims to provide all households with a clean, safe water supply of 20-30 litres per capita per day (lcd) within 200 metres [and] an adequate sanitation facility per site.*
>
> *In the medium term, the RDP's aims to provide an on-site supply of 50 - 60 lcd of clean water, improved on-site sanitation. Water supply to nearly 100 per cent of rural households should be achieved over the medium term, and adequate sanitation facilities should be provided to at least 75 per cent of rural households. Community/household preferences and environmental sustainability will be taken into account.*
>
> *The RDP is committed to providing operating and maintenance which ensure minimum disruptions in service within two years."*[7]

b) Minimum service levels

There is general agreement that, within the **urban** areas at least, the following **minimum** levels of service may be regarded as a basic acceptable level of service which would meet the criteria of contributing towards a healthy living environment:

Water: A communal standpipe with a treated, safe water supply within 100m of every urban household (at least one standpipe per 25 households).

Sanitation: A Ventilated Improved Pit (VIP) latrine or on-site aqua-privy type system, provided that it is properly designed and constructed, taking local ground conditions and environmental impact into account[8].

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[6] African National Congress (ANC), Congress of South African Trade Unions (COSATU) and South African National Civics Organisation (SANCO).

[7] ANC Reconstruction and Development Programme. Final. April 1994. Paragraph 2.6.

[8] In some circumstances, VIPs or other on-site sanitation systems will not be appropriate, and an off-site disposal system would be regarded as the minimum level of service acceptable in these circumstances. For an evaluation of sanitation systems, see Palmer Development Group (1993b).

2.4 Proposed policy approaches

In the light of the above principles and current consensus, it proposed that the following policy approaches be adopted with regard to service level goals and minimum service levels in **urban** areas.

a) National

Minimum service levels

The financial viability of the supply agency will be highly sensitive to the investment requirements to provide a stated minimum level of service and the costs associated with this investment.

It is proposed that, at the national level, a readily attainable minimum goal of a **basic, but adequate[9], level of service guaranteed to all** be established[10], and that it be the responsibility of the responsible supply agency to meet this goal within its supply area.

If an agency is not able to attain this goal (within defined time frames), given existing external capital sources[11], and, at the same time, maintain its financial viability, it is proposed that the state should assume responsibility for the shortfall that arises. This should be done in a transparent manner.

The state should **not** assume responsibility for any ongoing operation and maintenance subsidies. In other words, every supply agency must at least cover its ongoing operation and maintenance costs, including a capital replacement programme. Only new investment in basic infrastructure to extend adequate services to the previously unserved should be eligible for **extraordinary** assistance[12] from the state, and only on condition that such investment[13]

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[9] See definitions of adequate sanitation and adequate water supply in the Glossary (Section 10).

[10] As defined under "Minimum service levels" in Section 2.3.

[11] For example, a national capital subsidy for housing.

[12] That is, over and above that provided through an agreed capital subsidy programme, for example.

[13] That is, the new capital investment in basic infrastructure that is needed to extend adequate services to the previously unserved.

(without external assistance) would jeopardise the financial viability of the supply agency. The assistance should also only be given on condition that the supply agency is properly managed and existing resources are used efficiently.

Great care will need to be taken to ensure that this provision, designed to guarantee the provision of a basic minimum service to all urban households, is not abused by supply agencies seeking additional income from the state. The supply agencies should be required to demonstrate clearly, to a competent national or regional authority, why they cannot meet the minimum service goal without outside assistance[14]. It is proposed that the subsidy should be a once-off capital subsidy calculated on the basis of a fixed sum per household without adequate water and/or sanitation services.

b) Regional

Although it is likely that the minimum service level standard will be set nationally, regional governments may, if appropriate, set a standard for their region which is higher than the national standard. In this case the regional governments will be responsible for the extraordinary assistance discussed above.

c) Local

Service goals

Service goals for water and sanitation should be set at the local level in consultation with the community, taking into account local costs and affordability of services. Because local conditions differ significantly from urban area to urban area, it is likely that these service goals, and particularly their time-frames, will vary. However, the following service goals should provide a good starting point for each urban area.

Water: on-site metered water supply to all urban households

It is proposed that every agency responsible for supplying water to communities in the urban areas in South Africa should have as its medium term[15] goal the **provision of a treated,**

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[14] This function could, for example, be performed by the proposed National Water Auditor (See SCOWSAS, 1994).

[15] Not longer than 10 years.

metered water supply to each established[16] residential site, within its area of supply, subject to financial viability and sustainability.

A preliminary analysis of the demand for and cost of on-site water supply suggests that such a goal is achievable in most urban areas. More detailed financial analysis is, however, required before a firm conclusion can be drawn.

Sanitation: an adequate sanitation service for all urban households

Each sanitation agency shall have as its goal the provision of an adequate sanitation service to all households within its area of supply.

[16] Established is defined here as a site where there is an explicit or implicit recognition by the local authority of its 'permanence'. A time period that can be attached to the word 'permanent' would need to be agreed on. Two principles are at stake here:

- That the water agency has a goal to provide on-site water to households who are likely to reside at the site over the medium to long term.
- That the water agency not waste scarce financial resources on sites where the settlement is likely to be impermanent.

3. FUNDING URBAN WATER AND SANITATION SERVICES

3.1 Introduction

The term "financing" refers to all money borrowing activities related to maintaining the financial viability of an enterprise. In the context of water and sanitation services, one of the most important money borrowing activities is raising finance for capital investment in infrastructure[17]. In this report, this is referred to as capital funding or simply as funding.

It is common knowledge that large investments in urban water and sanitation services will be required over the next ten years to make up the large backlog in services provision and to cater for future demand. These investments will be at a scale that has not been experienced before in this country. Although a significant amount of grant finance from national sources may be made available for capital investment in water and sanitation services infrastructure[18], the remaining (not inconsiderable) amount will have to be raised through loans and the issuing of bonds on the local and international capital markets.

Loan finance can only be raised against a secure future income or on the basis of government guarantees. The capital funding of water and sanitation infrastructure is therefore also dependant on the income policy adopted by the sector. This section provides an overview of issues relating to the funding of future capital investment requirements in the water and sanitation sector. Income policy is discussed separately in Section 4.

As part of the project, a separate working paper on capital investment in the urban water and sanitation sector was prepared[19]. Key points raised in this paper are summarised here.

3.2 The funding of urban water and sanitation services - a proposed approach

It is useful, when discussing the funding of investment in water and sanitation infrastructure to distinguish between the "internal services" and "bulk and connector" components. The approach adopted in this project is described in Box 1.

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[17] The other major financing requirement is for working capital. This is not discussed in this report.

[18] This will, in all probability, come through a national housing capital subsidy (see Section 3.7).

[19] Working Paper 12 "Capital Investment in the Urban Water and Sanitation sector." (Palmer Development Group, 1994e).

Box 1: Definitions of bulk and internal services

- **Bulk water supply service:** The primary resource (dam or well-field), raw water conveyance and treatment and treated water conveyance to the point where it enters the local service reservoir.
- **Bulk wastewater service - wastewater conveyance and treatment:** Outfall sewers possibly including pump stations and rising mains, treatment works and treated effluent pipeline. In the case of on-site sanitation, the emptying of septic tanks and pit latrines is considered a bulk service.
- **Connector services - water:** Service reservoirs and conveyance from the reservoirs to the reticulation system within a township.
- **Connector services - wastewater:** Local connector sewers taking wastewater from local area reticulation to outfall sewer. Local pump stations and rising mains are included.
- **Internal services:** reticulation internal to the township. The on-site components of on-site sanitation are considered as internal services.

Internal services are often funded as part of the housing package, a once-off capital investment, whereas bulk and connector services are usually funded through rates and tariffs.

The following funding approach is proposed:

Internal services - where local authority provides water and/or sanitation services

- A portion of the national housing capital subsidy should go towards the internal services component of the water and sanitation services for households earning below a set income. The local community should have a say in how the housing capital subsidy is distributed between housing and the different housing-related services.

- These contributions may or may not cover the full costs of the internal services component of infrastructure developed in a given area.

- The developer[20] should be responsible for facilitating the financing[21] of the capital cost difference between the internal services costs and the amount made available through the capital subsidy.

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[20] Which may be the local authority itself, a private developer or a community based organisation.

[21] That is, arranging funding for.

- The developer may either pass this cost directly on to the household (through the purchase price of the stand) or enter into an agreement with the local authority whereby the local authority agrees to assume responsibility for the cost difference. The community for whom the area is being developed should be consulted and be made party to this agreement.

- If the local authority agrees to assume responsibility for the cost difference, it may either recover the cost directly from the households concerned (for example, through a special service levy or local area-specific tariff) or indirectly pass on the cost to all households in its jurisdiction through the service fee (tariff) or rates[22]. This would have to be negotiated between the local community and the local authority.

Internal services - where an autonomous utility provides water and/or sanitation services

In this case, the autonomous utility would also be involved in the negotiations between the community, developer and local authority. The utility would need to agree to accept responsibility for the cost difference and recover this from consumers through the tariff.

Upgrading of internal services

The supply agency is likely to be the developer where only the water and/or sanitation system is being upgraded in an area. In these cases, it is probable that the capital subsidy will not be available[23], and the costs of upgrading will have to be funded directly by the household itself or by the consumers as a whole (through the tariff or service charges) depending on the policy of supply agency. It has been suggested in Section 2 that supply agencies should adopt policies whereby households are encouraged to connect to a higher level of service, provided that the services are financially viable and sustainable for the body of consumers as a whole, within the defined income policy (See Section 4).

Bulk and connector services

- The housing capital subsidy should not be used as a contribution towards the capital costs of the associated bulk and connector infrastructure.

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[22] Where sanitation costs are recovered through a property tax.

[23] It will mostly be the case that these households have already received a capital subsidy from the state, and will therefore not be eligible for further assistance.

- The supply agency should be responsible for raising loan finance for the bulk and connector infrastructure and securing income (to cover the interest and redemption charges, operating and maintenance costs and make provision for future capital replacement costs) through a use related tariff (and possibly property taxes in the case of sanitation). See Section 4 for a discussion of income policy.

3.3 Urban - rural linkages

Although this project is urban focused, the funding of water and sanitation in the urban areas cannot be looked at to the exclusion of services provision in rural areas.

There are essentially four approaches to subsidising the provision of rural water and sanitation services:

i Provide a rural services capital subsidy which comes from national taxes and other sources of grant funding (including foreign donors).

ii Create utilities which span urban and rural areas, and cross-subsidise rural water and sanitation services (capital and operating) from operating "surpluses" generated in the urban areas.

iii A combination of the above two approaches in which operating "surpluses" from urban water and sanitation services is used to cross-subsidise predominantly the operating and maintenance component of the rural services.

iv Providing operating and maintenance subsidies from the central fiscus (supplementing any of the above finance mechanisms).

In the context of a national housing capital subsidy for urban residents, it is strongly suggested that the first approach is much more appropriate and economically justifiable than the others[24], for the following reasons:

[24] It should be noted that the issue of institutional capacity is separate from the financing principle and is discussed in Section 4.

- It is inequitable that urban residents receive a capital subsidy for housing and rural residents do not[25].

- The rural population in South Africa is highly unevenly distributed[26]. It therefore makes much more sense to spread the burden of a rural services subsidy across the whole nation (that is, use the central fiscus) than to place much of the subsidy burden on the relatively few (and not so wealthy) urban consumers in a few regions.

- The subsidy pathway in the second approach is convoluted because the initial subsidy goes from the national tax base to urban dwellers, and then a further subsidy goes from urban dwellers to rural services. It makes much more sense to have a second direct subsidy (for the capital component of rural services) that goes from the national tax base to rural areas.

- It is an universally accepted economic principle, around which there also appears consensus in South Africa, that all people (including the poor) should at least pay the full operating and maintenance costs of services. In the third and fourth approaches, this principle is violated.

- The way in which capital costs of water supply schemes are paid for differs in urban and rural areas. This is the basic rationale for a "housing" capital subsidy in the urban areas, and a "services" capital subsidy in the rural areas.

  In urban areas, a portion of the "housing" capital subsidy will go towards the internal infrastructure of the water supply system. The bulk and connector component of the infrastructure is paid for through the tariff.

  In rural areas, a portion of the rural "services" capital subsidy will pay the full cost of the bulk, connector and reticulation components of the water supply system. Thus, the tariff will only need to recover the operating and maintenance costs of the system, and

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[25] It is not suggested that rural households receive an equal subsidy to urban residents. There are economic grounds on which it may be argued that urban households should receive a higher subsidy than rural residents.

[26] For example, the rural population in the wealthy Western Cape region is minimal, whereas the Eastern Transvaal, for instance, has a very large rural population.

there should therefore be no need for additional subsidisation, say for example, from operating revenue in the urban areas[27].

- There are strong arguments for the finances of water and sanitation to be combined, at least in the urban areas. If this is done, then urban water and sanitation agencies will themselves struggle to maintain financial viability whilst undertaking large capital investment programmes to serve the unserved within their areas of supply.

In addition to these financial and economic arguments against a urban - rural transfer within the water and sanitation sectors, there are also strong institutional arguments against regional or sub-regional sector utilities with source to tap responsibility for services provision[28].

On the basis of these arguments, the funding of **urban** water and sanitation services are considered in isolation from the funding of rural water and sanitation services in the remainder of this report.

3.4 Estimated capital investment requirements

Estimates of gross capital investment requirements for urban water and sanitation services are summarised in Tables 1 and 3 below. The estimates relate to **residential demand** in the **low-income** sector only and are based on the following three simplistic scenarios:

- provide all households with at least a basic level of service in 10 years
- provide all households with at least an intermediate level of service in 10 years
- provide all households with at least a full level of service in 10 years.

The definitions of basic, intermediate and full level of service used in the cost estimates are given in Table 2.

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[27] Where a water scheme has been built to supply an urban area, but is also used to supply a rural area, it may be argued that the capital costs of the scheme be borne by the urban area, and that the rural area be only charged the operating and maintenance costs (of the scheme) apportioned according to the amount of water they draw from the scheme. This is only justifiable where the volume supplied to the urban area is large *vis a vis* the volume supplied to the rural area.

[28] See Section 4.

Table 1: Capital investment requirements: Water

(all figures 1993 R million)	Internal	Bulk	Total
Upgrading existing backlog (total)			
to BASIC	406	1 041	1 447
to INTERMEDIATE	874	2 695	3 569
to FULL	1 249	4 470	5 719
Rehabilitation of FULL	310	516	826
Catering for new "low-income[1]" demand (per annum)			
at BASIC	86	212	298
at INTERMEDIATE	137	400	537
at FULL	159	557	716
Total investment requirement over 10 years			
BASIC	1 270	3 160	4 430
INTERMEDIATE	2 250	6 700	8 950
FULL	2 840	10 040	12 880
Rehabilitation of FULL	310	520	830

Notes:
1. "low-income" equated to new black household formation.
2. Investment requirements for proclaimed urban areas (excluding "dense settlements".
3. There will still be significant investment requirements from year 11 onwards, corresponding to new demand (of the order of R 700 million per annum for a full level of service).

Source: Report 2, Palmer Development Group, 1994a

The intention of presenting these figures is to provide an estimate of the overall investment requirements based on alternative "minimum standards" policies. In practice, future investment will almost certainly be a mix of all three levels of service, and hence the total funding requirements will probably fall somewhere in between the high and low ranges shown.

Table 2: Level of service definitions

	Water	Sanitation
Minimal	Communal standpipe > 100m, other	Pit, shared toilet
Basic	Communal standpipe < 100m[1]	VIP latrine / on-site "aqua privy"
Intermediate	Yard tap	Intermediate sanitation[2]
Full	Metered house connection	Conventional waterborne sewerage

Note: 1. More than one standpipe per 25 households.

2. Intermediate sanitation is an aqua-privy linked to a solids-free sewer reticulation system. Very few of these systems exist in South Africa.

3.5 Estimated funding requirements

It is possible to estimate, in broad terms, the overall funding requirements[29] for water and sanitation over the next 10 years, if the following assumptions are made:

- The recently announced national capital subsidy scheme (or one similar to it) will be carried out by the new South African government.
- Annual state expenditure of R3 billion over the next 10 years on the national capital subsidy programme for housing.
- Housing subsidies of R12 500 per household earning below a set income.
- R 1 350 of the R12 500 available for water supply **internal reticulation**.
- R 3 450 of the R12 500 available for sanitation **internal services**.

Water

The total capital subsidy available for water supply in urban areas will be about R3.25 billion over 10 years. This subsidy is sufficient to fully finance the internal services component for a full level of service for all low-income households.

[29] That is, the net amount of money supply agencies will have to borrow, taking into account possible sources of grant finance.

Table 3: Capital investment requirements: Sanitation

(all figures 1993 R million)	Internal	Bulk	Total
Upgrading existing backlog (total)			
to BASIC	1 600	-	1 600
to INTERMEDIATE	2 410	1 920	4 330
to FULL	3 250	2 530	5 780
Rehabilitation of FULL	1 600	300	1 900
Catering for new "low-income[1]" demand (per annum)			
at BASIC	195	-	195
at INTERMEDIATE	276	215	491
at FULL	365	283	648
Total investment requirement over 10 years			
BASIC	3 550	-	3 550
INTERMEDIATE	5 170	4 070	9 240
FULL	6 900	5 360	12 260
Rehabilitation of FULL	1 600	300	1 900

Notes:
1. "low-income" equated to new black household formation.
2. Investment requirements of proclaimed urban areas (excluding dense settlements).
3. It should be noted that there will still be a significant investment requirement in year 11 onwards (of the order of R700 million per annum for a full level of service).

Source: Report 2, Palmer Development Group, 1994a

The funding requirement for bulk and connector services investment over the next 10 years will be:

- R3.2 billion for a basic level of service
- R6.7 billion for an intermediate level of service
- R10 billion for a full level of service

These costs are most sensitive to assumptions about average household consumption, which are shown in Table 4.

Table 4: Basic cost assumptions for water consumption

Level of service	Assumed average consumption litres per capita per day
Basic (standpipe)	50
Intermediate (yard tap)	120
Full (house connection)	250

Source: Report 2, Palmer Development Group, 1994a

Sanitation

The total capital subsidy available for sanitation in urban areas will be about R8.3 billion over 10 years. This subsidy is sufficient to fully finance the internal services component for a full level of service for all low-income households.

The funding requirement for bulk and connector services investment over the next 10 years will be:

- R0 billion for a basic level of service
- R4.1 billion for an intermediate level of service
- R5.6 billion for a full level of service

Implications

In addition to the bulk and connector services, supply agencies may be required to fund the upgrading of internal services where households who have already received a housing subsidy may wish to upgrade their level of water and/or sanitation service (for example, from basic to intermediate or full, or from intermediate to full). The additional funding requirements for upgrading, including the rehabilitation of existing "full services" could be of the order of R2 billion to R5 billion.

Therefore the total funding requirement of supply agencies over the next 10 years could range between ***R5 billion and R21 billion***[30]*, depending on national / regional minimum level of service policy, supply agencies' income (tariff) policies, household preferences and willingness to pay for different levels of service, and the consumers' (as a whole within each urban area) willingness and ability to cross-subsidise the provision of services to low-income households.*

It is therefore clear that **tariff and income policy** is a key component of any investment strategy in water supply and sanitation services. This is discussed in Section 4.

3.6 International trends in investment finance

Internationally, there is a trend of greater reliance on borrowing to fund investment in the water and sanitation sector, with the responsibility for raising finance being increasingly decentralised and the full costs of the services being shifted onto the users.

International capital flows are changing from being predominantly in the form of lending to governments (or enterprises with government guarantees) to independent flows going towards direct investment or domestic stock markets.

3.7 Future sources of investment finance

The major sources of future investment finance for the water and sanitation sector are likely to be:

- **Grant finance from central government** for the "housing" component (internal reticulation) of water and sanitation services. (R30 billion over 10 years for housing capital subsidy.) Rough estimates indicate that grant finance from the proposed national housing capital subsidy programme will be sufficient to cover the full costs of the internal services component of the water and sanitation services.

- **Local authority capital development funds.** (Local authority capital expenditure R5 billion in 1993.) The extent of available funds from this source could not be

[30] These figures may be put into perspective by comparing them with financing requirements in the electricity sector which have been estimated to be of the order of R 8.5 billion to R14 billion for an urban electrification programme, depending on the investment programme adopted.

ascertained, however it is likely that there will be many competing demands in the future, with investment needs greatly exceeding the availability of funds.

- **Regional Services Council levies** (R1.1 billion in 1991/92). These are likely to be made available directly to local governments in the future. It is probable that much of this source of income will be used for recurrent expenditure, with little available for capital investment (World Bank (1994b)).

- **Domestic capital market.** (Contractual savings institutions controlled assets worth R410 billion in 1993, increasing by about R4 billion per annum). Prescribed asset requirements may ensure that a significant portion of this is available for investment in the public sector.

- **Local development agencies.** (Of the order of R1 billion per annum.) In the context of loan applications greatly exceeding funding capacity, it is likely that loans will be extended for rural development in preference to urban areas where it is easier to secure investment finance from other sources.

- **Private sector investment.** Build-operate-transfer and build-operate-own contracts are not recommended in the South African context[31]. Long-term asset management contracts, if properly managed, could provide a significant source of direct private investment finance in the urban water and sanitation sector.

- **External funding agencies** (EFAs). Evidence suggests that sufficient sources of loan funding to meet all investment requirements in the urban water and sanitation sector is available from EFAs. However, the use of foreign loan funding for this purpose should be carefully considered prior to engaging with EFAs for the following reasons:

  - Domestic sources of capital should be used in preference to foreign sources of capital.

  - Loans from EFAs are not necessarily cheaper than loans from other sources.

  - Foreign exchange related risks may make the relative cost of foreign loans higher.

[31] A full discussion of the reasons for this is presented in Working Paper 12.

- The track record of EFA lending in the water and sanitation sector is not good[32].

- **Grant finance from donor countries.** (At least R1.5 billion in 1994/95 but likely to tail off rapidly.) It is unlikely that the **urban** water and sanitation sector can count on a significant amount of grant finance from this source, as much of it will probably be directed towards high profile areas affected by apartheid such as education and health.

It is clear from the above that a mix of funding sources will need to be used in order to finance capital investment in the urban water and sanitation sectors in the future.

3.8 Factors affecting the cost of private capital

The primary factors affecting the cost and availability of private capital loan finance are:

- credit risk and credibility of the issuing institution
- the term of the investment
- project specific risk
- return on the investment
- marketability of the issued stock
- size of the stock issue
- implementation capacity

The most important of these is the credit risk and credibility of the issuing institutions.

Unless the institutional and financial framework is established in such a way which ensures that the agencies created to manage urban water and sanitation services are financially viable and sustainable, it will not be possible for these agencies to raise capital finance at the scale required to upgrade the existing backlog and meet the investment needs arising from new demand over the next 10 years.

3.9 Proposed financial principles

It is proposed that the following **financial principles** should operate irrespective of the institutional options chosen:

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[32] For a discussion of this, see Report 4 and Working Paper 12.

- Financial autonomy and self-sufficiency of the urban water and sanitation sector *within each discrete urban area*, taking into account the availability of grant finance through the proposed national housing capital subsidy. That is, the users as a whole, should pay the full costs of the service within each discrete urban area.

- Any subsidy over and above that catered for in the above principle, should only be given where a supply agency cannot provide a minimum basic level of service to all residents within its supply area (within a reasonable time-frame) whilst maintaining financial viability and sustainability[33].

- Any subsidy envisaged in the principle stated above should be a once-off capital subsidy (coming from the central fiscus), provided on the basis of a fixed amount per household without a basic level of service.

- There should be *no on-going operating and maintenance subsidies* within the urban water and sanitation sector:

  - Coming from outside the sector.

  - In the form of transfers between supply agencies.

- The financial principles in **rural areas** should be:

  - Full cost recovery of operating and maintenance costs.

  - Subsidy of capital costs on the basis of a once-off fixed sum per household (from the central fiscus).

For further discussion of income and subsidy policy, see Section 4.

Institutional arrangements that will best facilitate the above financial principles, in the opinion of the researchers, are proposed in Section 5.8.

[33] See also Section 2.4.

It is important to note that the review of international experience in institutional development suggests that the inability of existing institutions to raise adequate finance for capital investment in new infrastructure has been a key catalyst for institutional change in many countries[34].

3.10 Developing appropriate funding mechanisms

The following suggestions may provide a useful starting point for an investigation into appropriate funding mechanisms in the water and sanitation sector:

- The funding of urban water and sanitation should be combined, as both services are integrally linked and whilst water has a secure source of consumption-related income from water sales, sanitation does not.

- The possibility of raising bulk finance for a suite of water and sanitation projects should be investigated as this will reduce the cost of finance through economies of scale and the spreading of risk.

- The possibility of establishing a national water and sanitation fund should be investigated, using the proposal for a National Electrification Funding Agency as the starting point.

- The electricity sector has developed an appropriate mechanism[35] for raising funds on the capital market which satisfies the criteria of offering a market related return on investment over the life time of the investment, maintaining the viability of the industry through tailored scheduling of financing obligations to match the return on the investment, and appropriately allocating and spreading the risk of the investment between the industry and the investor.

  The specific format of the electricity funding mechanism is not directly translatable to the water and sanitation sectors for two primary reasons: (1) sanitation is largely a sunk investment, with a large capital outlay, significant on-going operation and maintenance costs and no direct use-related income stream; and (2) post-connection water consumption is more stable over time (for a given level of service), than is the case for electricity.

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[34] For example, England, France, Italy and Brazil. For further discussion of this point, see Report 4 (International Perspectives).

[35] Electricity Participation Notes (EPN).

Nevertheless, the concept of the appropriate design of investment instruments to suit the nature of the investment is still valid, and effort should be directed towards this in the water and sanitation sectors.

4. INCOME POLICY

4.1 Introduction

It is not an overstatement to assert that the success or failure of a national water and sanitation programme, which aims to provide an adequate level of service to all urban residents both now **and in the future**, will stand or fall on the income policy adopted.

As part of this project, a separate working paper on **urban**[36] water and sanitation tariff policy was prepared[37]. The purpose of the paper was to put forward some ideas to inform the current policy debate.

It should be noted that some of the tariff policy proposals put forward are tentative and preliminary. It is hoped, however, that by putting them forward, these concepts will be debated and developed.

It should be noted that there is, at present, no general consensus concerning the most appropriate water tariff policy for urban areas in South Africa. Strong views for, and against, block-rising rate tariff structures may be found amongst current practitioners and policy makers. The discussion in this section seeks to put forward an argument for the application of a life-line tariff together with a block-rising rate tariff for metered residential water supply, on the basis of affordability, equity, economic efficiency and water demand management principles. This argument should be viewed as a contribution to the policy debate, and not as a policy proposal. It should be noted that the views expressed do not necessarily reflect those of the Water Research Commission or members of the project steering committee.

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[36] There is considerable justification for a differentiated tariff policy between urban and rural areas.

[37] Working Paper 11 "Some Ideas to Inform the Current Tariff Policy Debate for Urban Water and Sanitation Services". (Palmer Development Group, 1994d).

4.2 Principles

There is consensus concerning the general principles on which a tariff policy should be based. These are listed overleaf. For a discussion of each of these, see Working Paper 11.

- **affordability** — All South Africans have a right to reasonable access to a set minimum amount of safe water and a safe sanitation service. Tariff policies should take into account the fact that **all** people may not be able to afford the cost of these services.
- **fairness** — Individuals or groups of individuals should not be discriminated against.
- **sustainability** — Service provision must be sustainable in the long run.
- **efficiency** — Tariffs should promote the efficient allocation of resources and aim at reducing wastage and inefficient water usage[38].
- **economic development** — Tariffs should take into account their impact on economic development.
- **transparent subsidies** — All subsidies must be transparent.
- **accountability** — Supply agencies should be accountable to the people they serve.
- **price stability** — Significant fluctuations in prices should be avoided.
- **acceptability** — The tariff policy should also be acceptable to consumers.

Tariffs should be designed in such a way as to meet, as far as is possible, all of the above goals, with a minimum of trade-offs between goals.

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[38] See discussions on efficiency and efficient pricing in the Glossary.

4.3 Further principles and other considerations

- **Water and wastewater regarded as "trading services"**

  The full costs of water and wastewater services (less the likely "housing subsidy") should be paid for by the users of the service as a whole. Public moneys (for example, from national taxes) should not be used for this purpose[39].

- **The principle of payment for services**

  There is now general consensus on this point in South Africa.

- **Financial viability of the water and sanitation agencies**

  The total income generated from the tariff, together with any other sources of income, must be sufficient to cover the **full** operating and maintenance costs, the interest and redemption charges on borrowed capital, **and** make provision for the current and future replacement of capital assets[40].

- **Autonomous financial management of agencies**

  Water and sanitation supply agencies should have the freedom to set tariffs provided that:

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[39] This principle is endorsed by the Commission on Development Finance report "Making People-driven Development Work" (SANCO, 1994) which states "'Public utility finance' is for public services where users as a whole are expected to pay nearly all of both capital and running costs. This includes electricity, telephone, water, sewers, and post" (ibid, p7).

[40] In the context of the large backlog in water supply and sanitation services, it is likely that the financial viability of the water and sanitation agencies will be most sensitive to:

- The level of service regarded as the minimum acceptable, determining the investment requirement (see Section 2).
- The boundary of the agency (see Section 4).
- The level of and extent to which available external subsidies will reduce the investment burden on the agency.
- The proportion of water consumed (or wastewater generated) by industry and commerce and the capacity for cross-subsidisation from this sector.
- The relative mix of high and low income consumers in the supply area.
- The efficiency of the institution in carrying out its tasks. Financial criteria which need to be met to ensure an efficient agency include: adequate rate of return on assets, sound operating ratios, and sufficient internal cash generation.

- They comply with the principles of the national tariff policy framework.

- The agency remains accountable to the consumers within its area of supply (both the served and unserved).

- **Water and sanitation pricing should be local to each supply area**

  Water and sanitation pricing should **not** be uniform over a wide geographic area (for example, a province or district) for the following important reasons:

  - The costs of supplying water and providing sanitation services varies greatly within the country and within regions.

  - Applying a uniform tariff across areas with different input costs creates numerous internal cross-subsidies which are very unlikely to be transparent.

  - In this case, it is very difficult to monitor the efficiency of the implementing agency, as the "bench mark" of the actual cost of supply is rendered invisible.

  - A uniform tariff over a wide area will most probably be set in relation to political considerations rather than financial and economic considerations.

  - A large supply agency that acts across a wide geographic area is also very likely to loose its **accountability** to its consumers and the unserved within its area of supply.

  - Uniform pricing may encourage settlement in areas where costs are high relative to other areas, leading to the inefficient allocation and utilisation of resources.

- **Pricing should be uniform within each supply area**

  A uniform tariff structure within a water supply area and sanitation service area should be practised because it is **equitable** and it allows for cross-subsidisation between larger (predominantly wealthy) and smaller (predominantly poor) consumers.

This principle does not mean that prices within a supply area are necessarily the same, but that the bases on which they are calculated and implemented are uniform[41].

It is, however, recommended that the water prices within a metropolitan area and within each proclaimed municipal area are the same (to satisfy the principle of equity) even if differential costs exist in supplies to different communities within the urban area[42].

- **Determination of supply area boundaries**

The boundaries of the supply agencies should be determined by a representative and competent commission (at the national level), on the basis of submission of a well researched study into the implications of alternative boundary delimitations on sustainable service levels, tariff implications and the financial viability of the agencies.

- **The importance of consistent tariff enforcement**

A consistent policy should be implemented whereby failure to pay (correctly) billed amounts for water and / or sanitation services results in the consumer's water supply being restricted or disconnected. International and local experience indicates that this is the only way to develop and maintain a culture of payment[43].

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[41] For example, assume that one water agency has the responsibility of water supply to both Pietermaritzburg and Durban. The cost of supplying water to each urban area is different, hence the actual amount paid by consumers in each urban area consuming the same amount to water should be different. However, the way in which the tariff is calculated should be identical for both, with different numbers only being used for the bulk treated water component of the "cost" making up the tariff).

[42] For example, in the Durban metropolitan area, even though the cost of supplying water to Umlazi may be higher than supplying water to Pinetown (as it is further from the raw water source), a consumer consuming 30 kl/month should pay the same amount in both Umlazi and Pinetown.

[43] An argument is often put forward that water cannot be cut off because of the potential health risks, especially where waterborne sanitation is used. This argument is spurious, if cut-offs are done on an individual household basis (as they should only be done), because cut-off households will be able to negotiate with neighbouring households to obtain water and make use of their toilet facilities. The cost or embarrassment associated with this will provide a spur for households pay their outstanding bills and be reconnected. This will only work where there is a general culture of payment, which in turn can only be insured if tariffs are fair, affordable and consistently enforced.

- **Level of sanitation and externalities**

  A higher level of sanitation service does not necessarily imply an increased benefit in terms of health or environment (positive externalities[44]). However, a higher level of service does, in general[45], have higher cost implications (both capital and operation and maintenance)[46]. This should be taken into account when determining tariffs for basic, intermediate and full levels of sanitation service.

- **Hierarchy of subsidisation for sanitation services**

  It is proposed that there should be a hierarchy of subsidisation, in which subsidisation of piped sewer systems does not occur until or unless all households (within a given sanitation service area) not connected to piped systems are at least served with adequate systems[47]. Failure to apply this approach to subsidisation would mean that the principle of **equity** is breached.

- **Institutional capability and customer interface**

  Effective implementation of any tariff policy requires capable institutions and an appropriate customer interface. Emphasis will need to be placed on institutional development and capacity building, with special emphasis on human resource development and training. See Section 5.

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[44] Any sanitation service, provided it is adequate, should provide an equal positive externality in terms of the health benefit gained. A conventional flush toilet sanitation system does not provide more health benefits than a VIP toilet, provided both function correctly (Briscoe, 1991, p12). In fact, a failed waterborne system (which is a likely result if inadequate resources are made available for maintenance and operation of the system) may result in a greater negative externality than (isolated) failed on-site sanitation systems (see, for example, Terry *et al* (1993) and Palmer Development Group (1993b)).

[45] There may be exceptions to this. These cases should be well motivated and documented by the sanitation agency, and departure from the principles set out in this section should be approved by a competent regulatory authority.

[46] See Palmer Development Group (1993c).

[47] This principle is put forward by Bahl (1992, p345).

- Three general categories of consumer

  Tariffs should take into account that there are, in general, three categories of residential consumer:

  - the indigent Households comprising people who are unable to make **any** monetary contribution towards basic services, no matter how small the amount.

  - the poor In general, these households are only able to afford to pay the operating and maintenance component of the service, and are unable to contribute towards the capital redemption and interest costs.

  - the remainder

4.4 Residential[48] urban water tariff policy

a) On-site metered connections

An argument may be put forward that residential water tariffs for on-site metered connections should, in general, comprise three components:

i a "life line" or social tariff
ii a block rising rate tariff
iii new development and connection charges

i a "life-line" or social tariff

To meet the principle of affordability, the concept of a "life-line" or social tariff should be built into the tariff structure[49].

The social tariff should be implemented on the basis of **minimal payment for a set maximum amount of water.** It is commonly accepted that the minimum amount of

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[48] Tariff policy for industry, commerce and public institutions are discussed in Working Paper 11.

[49] The concept of a life-line tariff is widely support. See for example Department of Water Affairs (1993, p33), Briscoe (1993, p14), Bahl (1992 and Fowler (1992). The draft discussion document to the National Housing Forum proposing tariff policy also supports this concept.

water necessary to maintain a healthy environment is between 20 and 30 l/capita/day. The minimum amount should cater for larger than average households[50].

This water **should not be provided free.**

There is no agreement in South Africa, as yet, on what may be regarded as an **acceptable payment for this minimum amount of water**. One of the following two approaches are recommended:

- Using a commonly accepted measure such as the Minimum Household Subsistence Level (MHSL)[51] as a bench mark, and setting the social tariff as a percentage of this benchmark. This benchmark may be calculated nationally, regionally or locally.

- Setting the social tariff equal to the operating and maintenance costs of the supply.

It is still possible that a small proportion of households with no income of any kind (the indigent) may not even be able to afford this. It is proposed that these households submit to a **means test**[52] by an independent (from the water supply agency) government agency, and be supplied with tokens to the value of the life-line tariff (one per month) by this agency with which they can "pay" the water agency. The water agency can then redeem these tokens from the relevant government agency (for example, the welfare department).

This method ensures the transparency of the subsidy and also educates consumers as to the important principle of payment for services rendered.

It should be noted that the parameters: "minimum allocation" (kl/month), the rate of the social tariff (Rands/month) and the qualifying criteria for free water tokens, need to be set with two criteria in mind: (1) affordability and (2) financial viability of the supply agency.

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[50] A discussion on how to deal with households which are much larger that the average is presented in Working Paper 11.

[51] Brazil uses the statutory minimum wage as their bench mark for the calculation of affordable social tariffs.

[52] The idea of a means test as a method for determining tariff policy (payment for services) has already been proposed by the Department of Water Affairs (DWA, 1992, p35).

It is therefore recommended that these parameters be set locally for each supply area.

ii A block rising rate tariff

The implementation of a life-line tariff (to cater for affordability) necessitates the implementation of some form of cross-subsidisation. It is common practice for the cross-subsidisation mechanism to be implemented between large and small water consumers. An argument may be advanced that this is best achieved through a 'block rising rate' tariff structure[53], in which the greater the monthly consumption, the higher the unit tariff, for the following reasons:

- It creates the "surplus" necessary for the implementation of the social tariff.
- It allows "luxury" and profligate consumption to be priced economically, that is, at the long-run marginal cost (average incremental cost) of the water supplied to the area, satisfying the principle of pricing efficiency.[54]
- It allows both the social and rising block rate tariffs to be applied concurrently and uniformly within a water supply area, thus satisfying the principle of fairness. In other words, all households who consume the same amount of water in a given urban area pay the same amount irrespective of income.

The general form that the block rising rate tariff may take is outlined below:

Consumption	Tariff
0 - 10 kl/month	Life-line tariff.

[63] At present, a block rising rate tariff is not commonly used in South Africa. Arguments usually put forward in opposition to a block rising rate tariff structure are discussed in the sub-section below. It should be noted that a block rising rate tariff is not appropriate in all circumstances (see "Exceptions to a block rising rate tariff" below).

[64] See Glossary for a discussion of these key terms. Hollingworth (1992) provides a discussion on the economic rationale or tariff policies. The argument for water pricing based on marginal costs is also well put forward by Bahl (1992) and WASH (1991). Briscoe (1991) argues that the economic pricing of water is appropriate in the South Africa context.

10 - 30 kl/month	Intermediate tariff, set in between life-line tariff and average incremental cost (AIC) tariff.
> 30 kl/month	Tariff set on the basis of the average incremental cost (AIC) of supply[55].

The exact structure of the tariff is likely to (and should) differ depending on local circumstances, in accordance with the need to maintain the **financial viability of the water agency**. For example, the "consumption boundaries" and the intermediate tariff (relative to the social and average incremental cost tariffs) could vary. However, the proponents of a block rising rate tariff would argue that the principles of:

- minimal payment for basic need (30 l/cap/day)
- marginal cost pricing of "luxury" consumption (in excess of, say, 180[56] l/cap/day)

should not, without good reason[57], be deviated from.

A block rising rate tariff is supported by leading institutional and financial policy experts in the sector[58] and has been successfully implemented in a wide range of countries[59].

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[55] This tariff should, in fact, be slightly above the AIC such that the average unit cost paid is equal to the AIC at some set rate of consumption.

[56] A consumption of 180 l/capita/day for a family of 5.5 people (average household size in the urban areas of South Africa) represents 30 kl/month. This is perfectly adequate to cater for all "necessary" water consumption uses including cooking, bathing or showering, washing clothes, cleaning, and maintaining a modest garden. It could be argued that this allowance is too generous and that the lower tariff boundary for setting the tariff equal to the AIC be set at 20 kl/month (120 l/capita/day).

[57] Circumstances may exist which justify deviation from the application of a block rising rate tariff.

[58] See, for example, Briscoe (1993, p14).

[59] For example, Australia, Brazil, China, Cyprus, India, Israel, Italy, Japan, Jordan, Korea (Seoul), Malaysia, Spain, Sri Lanka, Thailand, Vietnam and Zambia. For descriptions of tariff structures in these and other countries, see Wiederkehr (1993).

- **Exceptions to the block rising rate tariff**

Most people who advocate the general application of a block rising rate tariff for urban residential consumers acknowledge that circumstances may exist which justify deviation from the application of a block rising rate tariff. Where (or when) water is plentiful, it may be in the interests of a water supply agency to encourage increased consumption so as to raise revenues and accelerate the payment of outstanding debt (thus rendering the water supply service cheaper in the long run). Advocates of block rising rate tariffs argue that marginal cost pricing should, in most instances, cater for this phenomenon as where future water supply is assured and cheap, then the marginal cost of water will be low (in comparison to the average historical cost).

- **Arguments against a block rising rate tariff**

Arguments commonly put forward in opposition to a block rising rate tariff are outlined and discussed below:

- The block rising rate tariff is inherently unjust and immoral

There is a view (advocated strongly by some[60]) that the general implementation of a block rising rate tariff is morally unjustifiable. The argument put forward in this view asserts that a block rising rate tariff discriminates against larger water consumers, amounts to a progressive wealth tax, and is open to abuse by the water supply agency. This view argues that a block rising rate tariff is only applicable in certain special circumstances, for example, in times of water scarcity, as a demand management tool. The Department of Water Affair's "Red Book" made the following comment:

> "... as demand nears the limit of supply, tariffs can be adjusted to make smaller, but acceptable basic quantities available at a cost that the majority can afford, while the reasonable additional demand for a more affluent standard of living can be supplied at a surcharge, provided that no-one is disadvantaged." (DWA, 1986, p6.35)

[60] Conley (pers comm, 1994).

Proponents of this view argue that block rising rate tariffs should only be implemented in special circumstances, not as a general principle, and provided that no-one is disadvantaged.

- The danger of political manipulation of the tariff.

  This is an important argument against the implementation of a block rising rate tariff. The danger is that consumer groups will lobby for the **tariffs** and monthly **water allocations** to the life-line and lower consumption blocks to be lowered and increased respectively[61].

  In this context, the autonomy of the water agency to set tariffs (within the national policy guidelines) is of particular importance.

- Excessive burden on large consumers.

  There is an additional danger that large consumers will resist the implementation of a block rising rate tariff because they will perceive it to be a tax on their wealth and thus unfair or discriminatory. This argument has been strongly put forward in the electricity debate[62], however, it is not as applicable to water supply for two reasons:

  - It may be argued that water is under-priced in South Africa at present[63].
  - The water bill comprises a relatively small portion of the average household budget.

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[61] An extreme example of this in the case of electricity occurred in Tanzania. As a result of political lobbying, almost all consumers (low and middle income) were included in the social tariff category, defeating the original objective of the tariff structure (Eberhard, pers comm, 1994).

[62] Current consensus in the electricity tariff debate appears to favour a flat rate unit tariff based on consumption. See, for example, Pickering (1993). The strongest argument for a flat rate in the electricity sector is, however, technologically based. The implementation of pre-payment electricity meters makes the fair implementation of such a tariff structure highly complex, if not impossible (ibid).

[63] See Report 1 for an overview and discussion of current water prices and pricing methodology in South Africa. It should be noted that there is not consensus on whether or not water is currently under-priced in South Africa.

The implementation of a block rising rate tariff will almost certainly result in increased water bills for larger consumers. Successful implementation will therefore require two strategies:

- Gradual implementation of the new policy.
- Good consumer information campaigns.

- Administrative expense and difficulties.

A block rising rate tariff is more difficult and expensive to administer compared to a flat rate tariff based on consumption[64]. However, the large number and wide range of countries, including many developing countries, implementing a block rising rate tariff provide evidence that these difficulties are not considered to be so significant as to render a block rising rate tariff structure impractical[65].

- Complexity and consumer confusion.

It may be argued that a block rising rate tariff is difficult to explain to consumers and/or that consumers will be confused as to how much they are paying and why[66]. This difficulty may be overcome by a good customer interface[67].

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[64] Especially with the widespread application of computers.

[65] In this regard, the experience of Brazil is of particular note. A block rising rate tariff structure has been widely and successfully implemented in the context of an import ban on computer equipment (to project the development of a local - expensive - computer industry) for the last decade or more.

[66] Pickering (1993) argues this in the electricity tariff debate.

[67] For example, the distribution of leaflets to consumers with a simple table:

Water used	Amount to pay (per month)
9 kl	R4
10 kl	R5
11 kl	R6
etc.	

- **Universal metering**

The successful implementation of a life-line and block rising rate tariff requires that the majority of water supplies are metered on-site connections[68]. As already stated, it is contended that this goal is achievable. Moreover it is also desirable as it allows for a much improved and more efficient management of South Africa's scarce water resource[69].

- **Researchers' view**

The researchers are of the view that, given the current situation and future challenges facing the urban water sector in South Africa, it is appropriate to advocate the implementation of a block rising rate tariff structure as a general principle for urban residential consumers, while noting that important exceptions will exist in certain areas and under certain circumstances.

iii New development and connection fees

The full cost of new development and connection fees (equal to the actual cost) should be borne by the user in economic housing development (that is, where the householder pays the full market related cost of the housing unit).

For sub-economic housing development, it is proposed that the development and connection costs be paid for through:

- A national housing capital subsidy (internal reticulation component).
- The water agency (connection cost).

Where financially sustainable, the water agency may contribute a portion of, or the full cost of, the internal reticulation.

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[68] A flat rate consumption related tariff is likewise dependent on universal metering.

[69] The case for metering of on-site supplies as a water management tool is widely supported in the literature. For example, the introduction of metering in Pietermaritzburg (1957), Port Elizabeth (1970), Durban (1971-76) and Lyons (France, 1931) resulted in reductions of between 27% and 35% of consumption (DWA, 1988, p3.5).

Subsidising the connection costs in this way encourages a high level of service which is desirable as long as it is sustainable[70].

The cost of the development of the bulk and connector infrastructure should be recovered through the consumption related tariff.

iv **A fixed monthly maintenance and administration fee**

Although there is an efficiency based economic argument that can be put forward, it is proposed that a fixed monthly maintenance and administration fee **not** be implemented in the case of water supply[71].

b) Off-site water supplies (residential)

- **Tariff policy for off-site urban water supplies**

If it is indeed the case that the provision of an on-site metered connection to the great majority of urban residents is financially viable and sustainable, then an argument can be supported for the provision of water to the remaining residents via public standpipes at a nominal rate or for free[72]. The major components of this argument can be outlined as follows:

In the case of public standpipe supplies:

- Recuperation of fees from users of standpipe supplies is notoriously difficult and **low rates of payment** are likely.

- A flat rate service charge levied on standpipe users is **inequitable** because all users are required to pay the same amount irrespective of usage. Residents nearest the

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[70] This is routinely done in Latin America, with purported success (at least for water supplies) (Briscoe, 1991, p12).

[71] The reasons for this are set out in Working Paper 11.

[72] This policy has been adopted by the Water Supply Authority in Botswana and by some state companies in Brazil with a great deal of success. See Working Papers 14 and 16.

standpipe supply and abusers of the service[73] are advantaged at the expense of those further away and who use less water, especially if the flat rate payment is calculated on the basis of average consumption per household.

- Service charges have little effect on consumption patterns because there is no direct link between an individual household's consumption and the tariff. Thus tariffs (in this case) are not effective in promoting the efficient use of water resources.

- Methods exists in which wastage from standpipes can be minimised[74].

- Levying a nominal charge or no charge at all for standpipe supplies will create an incentive for the water supply agency to provide on-site metered supplies to all households within their area of supply.

- International research indicates that in many urban communities, the willingness to pay for private connections is high and willingness to pay for public water points is low[75]. Although no systematic willingness to pay studies have been undertaken in the urban areas of South Africa, anecdotal evidence would seem to indicate that many of these communities would fall into this category of consumer.

In the case of kiosks:

- Past and recent research carried out in the urban areas South Africa[76] shows that kiosk costs and tariffs are almost invariably (and often significantly) more expensive than other forms of water distribution. Kiosk tariffs are thus likely to be **inequitable** as people pay more for a lower level of service.

- The argument for kiosks is that it is possible to attain better control over cost recovery. However this is achieved at the cost of greater distribution expense. If an equitable tariff policy is adopted, then these supplies will have to be subsidised (so

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[73] Abuse of standpipes can happen in a number of ways, for example, through "private connections" onto the standpipe, exercising monopoly control over the standpipes and filling up water tanks and retailing in areas without water supply.

[74] Innovative work in this field is being carried out by public agencies and consultants in the Durban Functional Region (Barnes, pers comm, 1993).

[75] Briscoe (1992, p17).

[76] See Rivett-Carnac (1989) and Palmer Development Group (1993d and 1993e).

that consumers pay less than those with a higher level of service) and hence the original rationale for the implementation of this system largely falls away.

- There may be a role for water vending in some instances, for example, where institutional capacity is weak and it is not financially viable to ensure adequate and sustainable water supplies through the methods outlined elsewhere in this tariff policy proposal. This is most likely to occur in peri-urban and rural areas[77].

- **Exceptions to proposed off-site water supply tariff policy**

Important exceptions to the above stated policy for off-site water supplies may exist. The predominant one is the financial viability and sustainability of the water agency. If, in a given water supply area, it is not possible for a water supply agency to adopt the above policy and remain financially viable through the cross-subsidisation mechanism proposed in the block rising rate tariff, then a counter argument exists for the implementation of tariffs more closely related to cost-recovery for off-site water supplies. How and what tariffs are applied would depend very much on the willingness of consumers to pay and it is therefore recommended that willingness to pay studies are designed prior to the design of water dispensing options and tariffs in these cases[78].

Given the difficulties of cost-recovery from public standpipes, water vending of some form or other may need to be implemented for off-site water supplies where free water from public standpipes is not a desirable policy option.

To prevent water agencies "opting out" of a policy of minimal charges for off-site water supplies, it is proposed that water agencies must reasonably prove to a competent regional or national authority why they must deviate from the proposed national policy for off-site water supplies to maintain financial viability.

4.5 Residential urban sanitation tariff policy

Sanitation tariff policy is more complex than water tariff policy because it has greater externalities, "consumption" is not price sensitive (once the system is installed). It is, in any

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[77] The experience of community based management of peri-urban water supplies in Malawi is instructive in this regard. See "Provision of water in peri-urban communities in Malawi" (Kankhulungo et al, 1993).

[78] Remembering to embody the principle of "hierarchy of subsidies".

event, difficult and expensive to measure (although it may be approximated by water consumption).

Sanitation tariff policy is more fully discussed in Working Paper 11, and only a summary of the tentative policy proposals is presented here.

a) **Conventional sewerage[79] (residential[80])**

Case 1: A mix of sanitation systems in use in the sanitation supply area

Where it is not financially viable and sustainable to achieve full conventional system coverage in the medium term (say 10 years), it is suggested that the following tariff design for conventional sewerage may be appropriate:

i. A fixed monthly charge[81].
ii A direct charge[82] with a life-line component.
iii Connection and development charges (for low-income households financed partly by the recipient households and partly by the sanitation agency).

Conventional sewerage is much more expensive than other on-site sanitation systems which provide an equal health benefit. Consumers who opt for this system should therefore be willing to pay towards the cost of connecting to the network and at least a significant portion of the full ongoing operation and maintenance costs of the system[83].

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[79] The case of small-bore or solids-free sewer systems is not dealt with explicitly in this paper. At present only a handful of systems are in operation in South Africa. It is suggested that tariff policy for this systems be based on the principles applied to conventional systems, but with the fixed monthly charge also covering the cost of septic tank desludging.

[80] Commercial, industrial and institutional sanitation tariff is discussed in Working Paper 11.

[81] The choice of the method of determining this charge should be decided by the consumers in the sanitation supply area.

[82] Based on water consumption.

[83] Full operation and maintenance costs should be fully recovered from the overall base of consumers using cross-subsidisation, for example, through implementing a property value based fixed charge.

Case 2: Universal conventional sanitation coverage financially viable and sustainable

In this case, it may be argued that an appropriate tariff design could comprise:

i A fixed monthly charge.
ii A direct charge with a life-line component.
iii Connection and development charges (for low-income households financed by the sanitation agency).

The financing of the development costs and connection fees will have the effect of encouraging consumers to connect to the network.

b) On-site sanitation (residential)

On the basis of the fairness (equity) principle, households with an on-site sanitation system should **not** pay more than those households with conventional sewerage (within the sanitation service area).

In the light of this, it is proposed that the tariff for on-site sanitation be structured as follows:

i **A monthly fixed charge**

This charge should be calculated on the basis of actual operation and maintenance costs of the on-site system, provided that it is less than the fixed monthly charge levied on (low-income) households with conventional systems, so that the "hierarchy of subsidies" principle is adhered to.

The operations and maintenance costs should include estimated pit/tank emptying/desludging, pit/tank maintenance, effluent drainage bed ("soak away") maintenance costs, and sludge/pit contents treatment costs, over the expected life of the on-site sanitation facility, calculated on a monthly basis.

ii **Development costs**

Development costs should be paid for in the same way as for conventional systems, provided that the contribution by the household is less than a set percentage (say 50%) of that paid in the case of conventional systems.

4.6 Closure

This section has set out:

- Proposed general principles on which a tariff policy should be based.
- Outlined other considerations that need to be taken into account in developing a tariff policy to meet the general principles proposed.
- Put forward an argument for the implementation of a tariff policy for urban water supply comprising a life-line tariff and a block rising rate tariff.
- Proposed tariff policy options for urban sanitation systems (both conventional and on-site systems).

Issues relating to the implementation of the proposed tariff policy are discussed in Section 6 (Managing the transition). The effect of alternative water tariff policies on the financial viability of water supply agencies is illustrated in Working Paper 15 (Investment-Tariff Model).

Institutional arrangements for urban water and sanitation supply are discussed in the following section.

5. INSTITUTIONAL ARRANGEMENTS

5.1 Introduction

It has been widely recognised that there are many deficiencies and shortcomings in the present institutional systems for water supply and sanitation in both the rural and urban areas in South Africa and that a restructuring of the sector is required[84].

Many ideas and proposals for future institutional arrangements have been put forward[85]. The most recent and comprehensive of these is that of the National Standing Committee on Water Supply and Sanitation (SCOWSAS, April 1994). Unfortunately, at the time of writing, this proposal was only in draft form, with important amendments still to be made. Nevertheless, the framework of the proposal is unlikely to be altered, and this is used as the point of departure for the discussion in this section.

5.2 International trends

A review of international trends in institutional development was undertaken as part of the project and are reported on in Report 4. The key trends identified are summarised below:

- A move towards integrated water cycle management.
- Increasing separation of regulatory and operational responsibilities.
- A move towards the decentralisation of operations.
- Increasing emphasis on public participation, especially in policy making and planning.
- A move towards treating water as an economic resource.
- Greater adoption of commercial management practices and techniques.
- Increased private sector involvement.

These are discussed in more detail in Report 4 (International Perspectives).

A review of experiences in institutional development in selected countries also formed part of the project and is reported on in Report 4. The lessons learnt from this review are not explicitly restated here, but inform the discussion on appropriate institutional arrangements presented in this section.

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[84] See, for example, SCOWSAS (1993), Bleibaum (1992) and (Palmer Development Group, 1993a).

[85] These have been reviewed in Working Paper 13.

5.3 Institutional principles

There appears to be general consensus regarding the principles which should guide the choice of institutional arrangements in South Africa. These are summarised below (SCOWSAS, 1994):

- **People focused**: with the prime objective of meeting all peoples' service needs.
- **Comprehensive**: with full geographic and demographic coverage by institutions.
- **Equitable**: in the provision and a set of enforceable minimum standards.
- **Responsible:** with proper management of South Africa's scarce resources.
- **Sustainable**: with implicit acceptance of the principle of payment for services rendered.
- **Accountable**: to the communities they serve, with clear roles and responsibilities.
- **Effective and efficient**
- **Empowering**: with devolvement of responsibilities and training and education.
- **Representative**: of communities in which they operate.

These principles align well with international trends in institutional development already outlined, and in particular with the following trends: integrated water cycle management, decentralisation of operations (facilitating accountability), and greater public participation (facilitating responsiveness and accountability). *Not explicitly stated in the SCOWSAS guiding principles is the importance of separating regulatory and operational responsibilities.*

5.4 Criteria for success

SCOWSAS (1994) identified the following criteria for success:

- **Boundaries**: These should be comprehensive; there should be clearly delineated responsibilities; and the impact on water resource management, economies of scale, viability and accountability should be taken into account.

- **Effectiveness**: Agencies must be able to achieve their mandates.

- **Finances**: Services should operate on sound business principles, with the responsibility of the consumers for paying for services provided clearly defined and understood. The appropriate level of service should be provided relative to the availability of capital, income and other resources of the consumers. Institutions must be financially viable. Subsidies should be clearly identified, goal orientated and carefully targeted, so as to keep distortions to a minimum, and at a level which is sustainable whilst meeting their objectives for as long as justified.

- **Accountable**: The institutions' strategies and plans should be accepted as appropriate by their consumers. Customers should be consulted in policy and planning strategies. There should be sound open financial management, auditing and reporting procedures, and a national performance audit.

- **Environment**: The strategies and plans of sector institutions should be sensitive to environmental issues and water resource use should be environmentally sustainable.

The criteria for success established by SCOWSAS are likely to receive wide acceptance. However, the approach adopted is one of equilibrium analysis - the criteria define whether an institutional arrangement is successful or not; they do not give any attention to the process of institutional restructuring. A methodology for institutional analysis was proposed in Working Paper 13 which stressed the need to *look at change processes rather than equilibrium analysis*, and the alignment of relationships (both structural and motivational) between elements of the institutional system.

5.5 Constitutional and legislative context

a) The interim constitution

The proposed constitution is likely to be in effect for the next few years and, to the extent that its principles can be shown to work, it is likely to provide the basis for governing South Africa for some time to come.

The impact of the constitution on financial and management arrangements in the water and sanitation sector have been reviewed in Working Paper 13. Salient points are summarised here:

- **The right to adequate water supply and water**

  To the extent that inadequate water and sanitation are detrimental to health and/or well-being (which they clearly are), the constitution "guarantees" every person the right to an adequate water supply and sanitation service.

- **Responsibility for supply to households**

  The responsibility for providing water and sanitation services, as well as accountability to households clearly rests with local government. Initial legal opinion is fairly clear that the constitutional principles do not preclude the possibility of autonomous sector agencies rendering services on behalf of the local authority.

b) The Local Government Transition Act

The Local Government Transition Act (1993) provides for revised interim measures with a view to promoting the restructuring of local government.

The provisions of the Act have been described in Working Paper 13. A summary of some of the some of the implications of the Act for the future provision of water and sanitation in urban areas is given below:

- The legislators clearly had in mind, when writing the act, the provision of water and sanitation services by local authorities, with bulk services being provided either by metropolitan authorities, the existing water boards, services councils (non-metropolitan areas) or the local authorities themselves.

- However, provision is made for national legislation to override the Act in terms of water and electricity provision. Sanitation / "sewerage" is not included in the "national legislation override" clause.

- The Act makes provision for the constitution of second-tier[86] politically based multi-function services agencies along the lines of the current Regional Services Councils in non-metropolitan areas.

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[86] SCOWSAS might possibly define these services councils as operating at the third tier level.

- The section specifying the pre-interim phase powers and duties of local government coordinating committees (non-,metropolitan areas) has an interesting clause which explicitly makes provision for an outside body to render electricity services. Water and sanitation services do not have this proviso.

- It is a local government responsibility to ensure that all households should have access to "sewerage purification" (clause s7(1)(C)(i)(aa)). The phrasing of the clause is unfortunate because it implicitly implies guaranteeing every household access to a waterborne sewerage system.

5.6 The SCOWSAS institutional proposals

SCOWSAS have proposed a three tier institutional model, which is summarised in Table 5. A diagram of the model is attached as Annexure A.

The SCOWSAS institutional proposals embody the following general principles: (SCOWSAS, 1994)

Allocation of functions

- Choice of delivery model is left to the third tier local entities.

- Second tier undertakes water resource management function.

- Second tier is deliverer of last resort or on request of third tier entity.

- Second tier plays role in regional or large water and wastewater schemes

Boundaries

- Boundaries of second tier entities should be based on water resource management considerations. SCOWSAS envisages approximately 30 second tier utilities with contiguous boundaries covering the full geographic area of South Africa.

- "In order to ensure sustainability, the size of the third tier authorities is critical in order to ensure viability through the achievement of a balance between those consumers who can pay for their services in full and those who cannot."

Table 5: Institutional model proposed by SCOWSAS

First tier	National Water Authority - a public utility responsible for water and sanitation, including: - national management strategy - operation of multi-regional and international water schemes - national water resource planning National Water Auditor - ombudsman protecting the rights of people and the environment National Water Commission - allocations, subsidies, legislation
Second tier	Water Area Utilities - non-profit, public utilities, approximately 30 in all, contiguous boundaries - responsibility for water and sanitation - management strategy for Water Area - water resource management, planning and development - operation of bulk water and wastewater schemes; tariffs based on AHC - supplier of services direct to consumer on request of local entity or as last resort - advisory role on tariffs and subsidies at third tier level - develop third tier capacity where weak - carry out delegated audit/monitoring functions (finance, performance, environment) Water Area Commission - allocations, subsidies and policies
Third tier	Local interest options for water and sanitation delivery systems:
Metro	Metropolitan council in-house department Metropolitan utility Sub-regional cooperative utility Private sector contracts
Towns	Municipal council in-house department Contract for services from another town / city council Sub-regional cooperative utility Private sector contracts
Rural	Community committee District councils Sub-regional cooperative utility Development NGO

- "It is suggested that river and stream catchments should be used as the building blocks

to define the size and shape of the third tier structures."

Tariffs and subsidies

Financial arrangements, tariffs and subsidies are dealt with peripherally in the draft that was available at the time of writing (17 April). More attention was being given to these aspects and hence it is not possible to describe or comment on them in any detail, other than to note the following:

- Second tier entities set bulk water and wastewater tariffs on cost-recovery basis.
- Third tier entities set own local tariffs on cost recovery basis, but are encouraged by second tier to adopt life-line and progressive sliding scale tariff structures.
- Subsidy decisions are made by political bodies (national and regional government), but on the advice of second tier utilities and the national and regional Water Commissions.

5.7 Commentary on SCOWSAS proposals

Second tier institutions

There appears to be a danger of allocating too many responsibilities to the second tier utilities. *It is recommended that a clear distinction be made between the functions of*:

- Water resource management and regulation.
- Water resource development (building dams and bulk supply pipelines), and utility services (supplying water and sanitation to individual consumers).
- Financing and subsidy flows.

with separate agencies undertaking the respective functions.

The experiences of England and France are pertinent here with respect to the separation of the first two functions:

- England combined river basin functions (water resource management and pollution control) and water utility functions in the 1970s. It was subsequently realised that this was a mistake and the process was reversed during the 1980s.

- In France, water resource management is also clearly separated from water resource development and utility functions. The water resource management agencies use economic tools for resource allocation through charging utilities for water withdrawals and effluent discharges. This function could not be carried out if the water resource management function was combined with the utility function in the same agency.

The experience of Brazil offers a good model for the separation of financing, monitoring and operating functions. The financing of water and sanitation was managed by a special water and sanitation secretariat within a national housing bank. Technical monitoring (of investment feasibility studies and operating performance) was undertaken by small agencies comprising a small core of professionals. Although the model is not necessarily directly applicable to South Africa, *it is recommended that the advantages of separating the three functions should be evaluated in the South African context.*

Third tier institutions

The institutional model proposed by SCOWSAS leaves the choice of specific service and supply options at the third tier level to local interests. This is compatible with the principles of decentralisation of operations and accountability.

The SCOWSAS draft made available at the time of writing did not have much more detail on the third tier options than is shown in Table 5, and thus it is possible to make the following general remarks only:

- The review of international experience[87] suggests that local authorities can manage water and sanitation services effectively, provided that:

  - They can give water and sanitation services the special attention they deserve.

  - They can secure adequate finance to meet capital investment needs.

  - They retain flexibility so as to be able to adapt to changing circumstances.

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[87] See Report 4 (International Perspectives).

- Allocating the responsibility for water and sanitation to the local authority level is the best way of ensuring democratic accountability of service agencies to the local population.

- Care should be taken to ensure that water and sanitation services within metropolitan areas are managed as one economic and financial unit. The experience of Brazil in this regard is highly pertinent: wealthy local authorities within metropolitan areas have opted out of metropolitan level service provision (exercising their "democratic right" because they can do it cheaper on their own) with the effect of jeopardising services provision to adjacent poor areas[88].

- Private sector, long-term asset management contracts, although attractive under certain circumstances, should be entertained only if the following pre-conditions are met[89]:

  - A coherent policy and regulatory framework is established, with adequate support being provided to local authorities from capable central or regional agencies in the development of the contract with private agencies.

  - A mature and competitive tendering environment exists.

  - The likely efficiency gains (less the extracted surplus) are greater than those probable under public management.

- The review of Brazil's experience in the management of water and sanitation in a developing country context suggests that there are three important factors which can help to ensure that agencies are responsive to the needs of the poor[90]:

  - A favourable political and policy context.

  - Inter-agency competition.

  - Community mobilisation.

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[88] See Working Paper 14 (Palmer Development Group, 1994g) for further discussion.

[89] See Working Paper 12 (Palmer Development Group, 1994e) for further discussion.

[90] For discussion of these factors, see Working Paper 14.

Financing principles and subsidy flows

As has already been stated, the financial principles (and particularly subsidy flows) were relatively undeveloped in the draft available at the time of writing. It was the intention of the committee to pay greater attention to these when amending the report.

Proposed financing and subsidy principles, that will, in the opinion of the researchers, best meet the overall objectives of the water and sanitation sector, have already been spelt out in Sections 3 and 4 are not repeated here. It is, however, worth emphasising the following point: *a clear distinction should be made between the issue of institutional capacity and financial principles in the debate on appropriate institutional arrangements for the water and sanitation sector as a whole in South Africa.*

5.8 Proposed institutional arrangements in urban areas

On the basis of the financial principles set out in Sections 3 and 4, it is proposed that the following institutional arrangements in the urban areas will best ensure the financial viability and sustainability of the water and sanitation sector:

- **Metropolitan areas**: A financially autonomous water and sanitation agency, operating within a clear political and policy context, in each metropolitan area (either within or autonomous from metropolitan government) responsible for (at least) investment planning, tariff policy and income collection.

  Motivations for a financially autonomous metropolitan level agency managing both water and sanitation have been given in Working Paper 13 and are not repeated here.

- **The metropolitan fringe**: It is likely that the new metropolitan boundaries will incorporate most peri-urban settlements on the edge of metropolitan areas. The areas within the metropolitan boundary would be treated uniformly in accordance with policy applicable through the metropolitan area. However, it is likely that there will still be some settlements outside of the metropolitan boundary which, from a technical or capacity point of view, are best served by the metropolitan agency. In these cases, it is suggested that the metropolitan agency be involved in an ad-hoc or contract basis with the local authority for the area. The tariff and payment conditions should not be the same as the metropolitan policy, but negotiated on a case by case basis. In general, money for capital development should be made available from the national fiscus, and operation and maintenance costs should be fully recovered from the community. The

metropolitan agency should strive to develop capacity within the local authority for the area so that it can assume responsibility for the operation and maintenance of the system as soon as possible. In the short term, bulk water supply boards could be involved in supplies to these areas on a similar basis, much like Umgeni Water is doing at present.

- **Towns**: Local authority responsibility for water and sanitation management in the non-metropolitan proclaimed urban areas (towns). Services could be contracted out to a second tier agency, another local authority or a private agency. A cooperative agency serving a group of local authorities could also be established.

  In general, the following principles should be followed:

  - Towns should be **financially self-sufficient** in the provision of water and sanitation services (taking any national housing capital subsidies into account).

  - Development and operation of these services should be operated by the local authority where possible, with technical and financing support from higher level agencies being received only where necessary.

  - A second-tier water resource management agency should oversee local authority development and management of water and sanitation services.

- **Support agencies**: One or more small water and sanitation technical and financial support agencies[91] with the specific mandate of supporting investment planning in third tier water and sanitation agencies, and raising bulk grant and loan finance for investments in water and sanitation. Separate agencies could exist for urban and rural areas as the nature of financing and delivery may be quite different[92]

The compatibility of these arrangements with financial principles for, and institutional arrangements in, rural areas has already been discussed in Sections 3.3 and 3.9. Further discussion of possible institutional arrangements for water and sanitation in rural areas is provided in Working Paper 13. The recently released "Rural Water and Sanitation Institutional Proposals" (DWA, March 1994) put forward, amongst others, the following institutional principles for rural areas:

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[91] Comprising a small core of competent professionals. These are <u>not</u> implementing agencies.

[92] For further discussion, see Working Papers 12 and 13.

- The role of the state should be to create an enabling and supportive environment.

- Implementation should be carried out as far as is possible by the authority closest to the users, if not by the users themselves, with the role of the [state] being support, rather than implementation.

5.9 Monitoring of supply agencies and transparency

Water supply and wastewater services are natural monopolies, and thus it is necessary to set up mechanisms whereby these agencies are effectively monitored by a monitoring / regulatory agency.

In terms of monitoring the tariffs charged by water and sanitation agencies, the relationship between these and actual costs, and the overall **efficiency and performance** of the supply agency, it is proposed that the water and sanitation agencies be required to publish the following information[93]:

- Tariff information (including the number of consumers to which each tariff section was applied).

- Cost information (including both actual average historical costs and average incremental costs (long-run marginal cost) of the service), with a clear breakdown between the capital cost related components and operating and maintenance costs.

- Level of service information (number of households with respective levels of water supply and sanitation services).

- Performance measures[94].

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[93] Provision for transparency and performance monitoring (to some extent) has already been made in the "Reporting by Public Entities Act" (Act No. 93 of 1992). However, the specific provisions of the act are vague and no regulations pertaining specifically to water and sanitation sector public entities have been promulgated to date. The Act does, however, provide a legislative framework within which performance monitoring for the water and sanitation sectors could be developed.

[94] To date, little attention has been given to the development of specific performance criteria for water and sanitation sector agencies in South Africa, and is an area that requires further investigation and research. See, for example, WASH (1992) for a discussion of possible performance indicators that might be considered.

- Subsidy information (including disclosure of the extent of both internal cross-subsidies between various categories of consumers and external subsidies received from other sources and how these were applied).

The disclosure of the information in an annual report will promote the **transparency** of the agency.

The **methodology** for calculating the costs and performance measures should be clearly set out by a competent authority, and be consistently applied in the water and sanitation agencies across the country.

5.10 Customer interface

Institutions should develop an appropriate customer interface which:

- Informs and educates customers about tariff policy, tariff rates, methods of payment etc.
- Attends timeously to customer queries on accounts and other matters.
- Is accessible to and approachable by all consumers within the supply area.
- Provides support to consumers wishing to upgrade their level of service.

6. MANAGING THE TRANSITION

6.1 Introduction

The discussion in the previous sections has focused on the question: what form of institutional and financial arrangements is most appropriate to meet the needs of all (urban) South Africans for an adequate water supply and sanitation service?

The institutional and financial arrangements proposed in the previous sections are, in many respects, different from current arrangements, and major institutional change will therefore be required. Major institutional change may be disruptive and ways to make the transition as "seamless" as possible need to be found: water and sanitation services need to be kept operational at all times.

In this section, some tentative suggestions are made as to how the process of restructuring, starting from the present position and moving towards the appropriate institutional and financial arrangements proposed, may be managed.

6.2 Institutional restructuring: some principles and considerations

Briscoe (1991), on the basis of his extensive international experience in institutional development made the following two suggestions with respect to principles to be followed during the transition:

- Efficient local institutions should not be dismantled in favour of sector-specific utilities[95].

- The efficiency and accountability of supply agencies within some existing local authorities should be built upon, rather than starting from scratch with new organisations[96].

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[95] Briscoe (1991, p15) cites experience in other developing countries which shows that the creation of vertical, sectoral utilities often result in short-term efficiency gains but that these gains are lost in the medium- and long-run because the fundamental link in accountability - namely to the local people - is lost.

[96] Briscoe (ibid) notes that the technical and managerial capability of white local authorities is impressive, by any standard in the world, and that these authorities are furthermore held accountable to their community via a series of measures (good accounting practices, oversight by elected officials and rate-payers' associations).

An incremental approach to institutional restructuring is also supported by Kinnersley (pers comm, 1993). However, Fowler (pers comm, 1994) had grave reservations, seeing this as an attempt to keep the status quo, and delay fundamental restructuring of the management and organisational structures of water supply agencies[97].

Both points of view would appear to be valid:

- The sector needs to make maximum use of existing scarce management, technical and other skilled human resources.

- There is a need for the new agencies to be seen to have the interests of the communities whom they serve at heart, and one way of achieving this is to have agencies which are representative of the communities they serve.

A dynamic tension exists between the two:

- Retaining the existing (largely white) structures of old white local authorities will be least disruptive to services provision. These agencies have technical capacity, planning and management skills etc. to effect a rapid and major improvement to existing services provision in the old black local authority areas.

- However, the view that only expanding the existing (largely white) structures will be sufficient to meet the greater services demands, whilst possibly being technically correct (the point made above), misses a major point, namely: (previously white) local authority water and sanitation departments will be moving into a completely new paradigm in terms of the community whom they are serving and, possibly, the nature of the services provided.

Ways need to be sought to incorporate both perspectives into the institutional restructuring process.

6.3 Institutional restructuring: time frames

In the context of the significant challenges facing the water and sanitation sector, there needs to be a clear separation made between urgent short term tasks and medium term objectives.

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[97] Two of the major issues here being the representativeness of the organisation in terms of the community being served, and the related affirmative action and training programmes necessary to achieve this.

The immediate challenge facing the water sector is to get water and adequate sanitation facilities to households as quickly and as efficiently as possible, but in an environmentally and economically sustainable way. Most energy should be focused on this, whilst maintaining an eye on the medium and long term water resource management objectives.

The establishment of catchment-based water resource management institutions is a medium term objective. Certainly, work on this should be begun now, but this should not detract focus and energy from the immediate objectives.

6.4 Institutional restructuring: possible legislative requirements

Kinnersley, in a paper aimed at stimulating the debate on the restructuring of the South African water sector, concluded the following with respect to future legislative requirements:

> "There will almost certainly be a need to legislate about new-style local authorities. If they are to retain the major responsibility for water supply distribution and wastewater disposal, up-to-date legislation about the powers and obligations as water utility operators should be prepared now, with special attention to general flexibility, but also to the coherence of the water sector and its effective financing"[98].

6.5 Institutional restructuring: supporting the process

In the short term, all local authorities will be undergoing major transformations and restructuring. As Kinnersley notes, adequate attention may not be paid to the interests of water and sanitation services in this greater process. There is thus considerable justification for supporting this process, from a sectoral point of view. There are surely many similarities in the restructuring process that local authorities will follow and in the new challenges they will face. Two questions arise in this context: (1) Is it not possible to establish support structures whereby local authorities can share their experiences and resources? and (2) Is there not a role for external advocates of change to smooth the restructuring process, helping to ensure that the new institutions will be effective and efficient in the provision of services to all the households within their area of jurisdiction?

Urgent attention needs to be given to these questions, and ways sought to facilitate the restructuring of institutions taking into account the new challenges facing the water sector.

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[98] Working Paper 10.

6.6 Institutional restructuring: the need for clear guidelines for the private sector

The absence of clear guidelines for private sector involvement has already been noted. Guidelines need to be established, as a matter of urgency, for private sector involvement in the sector, specifically in the more contentious areas of (1) build-operate-own contracts, (2) long-term asset management contracts and (3) outright sale of assets.

Both Kinnersley (1993) and Briscoe (1991) strongly cautioned against options (1) and (3) in the current context in South Africa. Whilst it has been noted that option (2) may well be attractive in certain circumstances, this option should only be considered if a clear policy context exists with specific guidelines to assist agencies[99].

6.7 Managing institutional change

a) Introduction

To date, little attention has been given to the actual process of institutional change. Much more emphasis needs to placed on this in the near future, in particular with respect to establishing guidelines for effective change in institutional systems taking sufficient account of the need for: context sensitivity, strong leadership and commitment to the process, strong management to drive the process, and the sustainability of the change programme.

Many texts have been written on managing institutional change[100]. Some common themes and important points arising from the literature are summarised here.

b) Some principles for change management[101]

- Institutional development is a human process requiring adaptability and flexibility in change strategies.

- Most institutional reform engenders opposing forces. These need to be recognised and ways sought to realign or minimise the effect of the opposing forces.

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[99] See Section 5.7 (sub-section: "Third tier institutions") for the pre-conditions proposed for long term asset management contracts.

[100] See, for example, WASH (1988), Cooper (1984), Local Government Management Project (1977) and Habitat (1992).

[101] Based on WASH (1988), but also drawing on various other sources.

- Institutional reform should not be too ambitious. Where possible, an incremental approach should be adopted, starting with areas that are likely to achieve visible success quickly.

- The disruptiveness of restructuring on an organisation's functional effectiveness during (and for some time after) the process should not be under-estimated.

- Institutional change should be comprehensive. The whole system, and particularly the linkages between levels (up, down and sideways), should be analyzed.

- Information is power in organisations. Effective communication which seeks to keep all people informed is crucial to successful organisational change.

- If outside consultants are used, the effectiveness of the consultant - client relationship is directly related to the amount of trust that can be established and maintained.

c) Requirements for effective organisational change

There are a number of requirements for effective organisational change. Most of these speak for themselves and are thus only listed below: (after LGMP, 1977)

- There needs to be a clear identification of goals and objectives for organisational change.

- There must be direction in the process (leadership) and involvement (opportunity for employees to make significant and recognised contributions to the process).

- There must be management awareness of possible and realistic alternatives available for institutional change.

- It is critical that the role of manager is understood. The manager is not a technical expert with a technical input, but a manager of people and the processes in the organisation.

- Improved managerial performance is necessary for organisational reform to be accepted by employees and thus be sustainable.

- The unique needs of local government managers must be recognised. These managers operate within political constraints that commercial managers do not.

- Personality has an important influence on institutional change. Different personalities may hinder or facilitate the process of institutional change. The choice of "change agent" must take personality factors into account.

- All managers within an organisation have a crucial role to play during organisational change. These managers need to have interpersonal and conceptual skills, be flexible, be good at coordinating activities and have open and free communication with their superiors, peers and subordinates.

- Managers who stand to lose during the process of organisational change may hinder and block the process. Management incentives should be built into the organisational change process.

- Local government councillors may lack the required skills or expertise to effectively steer organisation change policy, and hence there may be a need for councillor education, the proper briefing of councillors, and looking at ways of best facilitating a good council / administration interface.

d) Dangers to avoid / obstacles to overcome

Management overload

Existing and new managers face significant challenges in the near future: in addition to their normal management functions, new and complex tasks will be added: integration of administrations, taking on greater responsibilities, dealing with a larger customer base, facing new technical, administrative and financial challenges etc.

In this context, there is a great danger of management overload occurring. This, in turn, will hamper an organisation's ability to fulfil its functional mandate and at the same time effect the necessary transformations demanded of it.

A large number of factors may contribute to management overload[102]:

- unclear delineation of responsibility
- confusion regarding role, direction and/or goals of the department
- inadequately managed or motivated staff

[102] After LGMP (1977).

- poorly established planning routines
- inappropriate political interference by councils
- poorly established processes and procedures for cross-departmental programmes / tasks
- poor communication between managers
- lack of prioritisation of tasks and not shedding irrelevant tasks
- poor filing and information retrieval systems
- energy going towards "internal politicking' rather than the task at hand
- lack of training / capacity among subordinates

It is important that measures are adopted which minimise the risk of the above conditions occurring and adversely affecting management performance.

e) The importance of approach and personality[103]

While it is important to specify and get the right mix of skills on an "institutional change team", *it is even more important to be able to select individuals who have the right attitude and personality for working with managers and individuals during an organisation change process.*

The "expert approach" to organisational change, that is, showing people that they don't know what they are doing (or that their old way is now wrong) and demonstrating the right way of doing it, is inappropriate.

Helping managers and employees to gain new skills and learn new ways of doing things by removing or working through the constraints in the current system is a much more effective approach. This requires a flexibility and the willingness to "working along with" people in the organisation.

Often the issue is not that the manager or employee does not know what is right (or even how to do it right) but that he/she is constrained or prevented from doing it.

Proposed solutions to identified problems (combined effort of both client and consultant) need to be "reality tested" under local conditions. The developed procedures need to be "worked through the system" to implementation. This "working through" requires a strategy to disseminate and train others in its use.

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[103] After WASH (1988) "Managing Institutional Development Projects: Water and Sanitation Sector."

"About 80 percent of the institutional development work is communication, trust and patience; 20 percent is expert knowledge; all of it training" (WASH, 1988).

f) Skill requirements for institutional development work

Skills required of people working in institutional development include[104]:

- Communication skills.
- Listening skills.
- Interpersonal maturity and patience ("unflappability").
- Ability to work with groups as well as individuals.
- A strong, confident self-concept able to withstand resistance and frustration.
- Maturity sufficient to take a back seat and not claim credit or take over and deprive others of learning opportunities.
- A certain measure of toughness and persistence in the face of obstacles, mixed with a positive or optimistic point of view ("It's hard, but we can do it.").
- A non-confrontational style.

g) Summary

Institutional change is a complex process, the difficulties of which should not be underestimated. In the water and sanitation sector, the institutional challenge encompasses both the need for integration of the existing disparate and fragmented supply agencies, at the same time as rapidly expanding services delivery capacity.

Professional support from external change agents, particularly those with sectoral experience and expertise, could greatly facilitate the process of institutional restructuring in the water and sanitation sector.

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[104] After WASH (1988).

6.8 Building institutional capacity

Existing institutional capacity will most certainly need to be expanded in order for the sector to meet the challenge of providing adequate services to all in the near future. Constraints to this expansion are likely to be in the following areas:

- managerial skills
- technical skills
- personnel with good operational experience

Training needs, and issues relating to training, have been the focus of a SCOWSAS Training and Education sub-committee and are thus not dealt with in this project, save to mention one possible tool for capacity expansion, namely "twinning".

"Twinning" may be defined as a professional relationship between two **operating** entities, one mature and strong, the other weak and/or in need of some form of assistance.

The services that can be provided by the strong entity differ from those of a consulting firm in the following respects:

- The giver of technical assistance has operating experience.

- The technical assistance may be more easily integrated with training.

- The twinning arrangement allows for long term flexible contracts.

Twinning lends itself more to "institutional" assistance rather than direct engineering assistance, and the appropriateness of its use between supply agencies within South Africa should be investigated.

Information on the design of twinning arrangements, criteria for success, notes on some important considerations to be kept in mind, and a proposed process of implementation, are provided in Annexure B.

6.9 The transition: service rendering and finances

The "Agreement on Finance, Services and Services Rendering[105]" (January 1994) sets out the following principles for services rendering and financing in the transition:

Services and service rendering

- The primary responsibility for services responsibility rests with local government. But local government will require regional and national financial and technical support.

- Services should be rendered in an environmentally sustainable manner and should be financially and physically practicable.

- Residents need to experience a visible and sustained improvement in the quality and quantity of services over time.

- The immediate priority is to provide services to a level that meets basic health and functional requirements for each resident. The medium term goal is to provide services to a level that meets the basic requirements for sustained economic activity for each resident, and the community as a whole.

Finances

- All municipal finance should be based on the principle of one municipality, one tax base.

- Fiscal transfers from other tiers of government will be required to address historical backlogs.

- Arrangements will be made to write off arrears.

Tariffs

- The cost of providing services must, as far as possible, be recovered by the relevant tariff structures.

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[106] Negotiated at the Local Government Negotiating Forum.

- Capital costs of extending infrastructure should be equitably borne within the whole municipal area.

- Tariffs should be equitable across all classes of consumers within the municipal area.

- The Transitional Councils shall, in their discretion, determine such interim tariffs as may be appropriate for the restoration of good governance in their area of jurisdiction.

- Tariff structures should be set in such a manner that they address the problems of poverty and unemployment.

Payment for services

- The principle of payment for services is accepted by all parties.

- Interim tariffs may be applied where services are, or service rendering is, inadequate (that is, where basic standards are not met).

- Procedures must be established to deal with cases of genuine indigence.

- Equitable and fair default procedures to deal with instances of non-payment for services must be established by Transitional Councils in accordance with national guidelines.

- Practical steps must be taken to enhance payment for services through upgrading administrative capacity and implementing appropriate procedures.

6.10 The transition: rationalising tariffs - some issues

The tariff policy for water and sanitation proposed in Section 4 assumes:

- Accountable agencies.

- Rationally defined and contiguous boundaries of the supply areas.

- Well functioning capable agencies rendering an acceptable customer service.[106]

[106] Adequate response to breakages, complaints, etc. and proper administration of billing systems etc.

- Provision of an on-site metered water supply as a goal for all water supply agencies responsible for urban areas.

- Universal metering of on-site water supplies.[107]

- Provision of an adequate sanitation service to all households as a goal of every sanitation agency.

- High levels of payment for services.

The establishment of Transitional Councils to replace existing local authority councils, and the "Agreement on Finance, Services and Service Rendering", outlined above, will go some way towards creating a framework in which the Tariff Policy proposed in Section 4 may be implemented.

One of the outstanding issues which needs to be addressed is: *implementation of the new tariff policy may result in significant increases in the monthly bills for certain groups of consumers which may be politically resisted.*

Lessons for tariff implementation can be learnt from local negotiations which have had tariff policy as a key issue, the most prominent (and prolonged) of which have been the **Soweto tariff negotiations** involving the Central Witwatersrand Metropolitan Chamber. Some lessons from these negotiations as well as other general considerations are outlined below[108]:

- Negotiations over tariffs must include all stakeholders.

- The dangers and obstacles of populism should not be underestimated.

  Politicians, especially in the current pre- (local) election context, are unwilling to broker agreements which would result in significant increases in present tariffs and

[107] As a general policy, all water supplies should be metered. A water utility should know how much water is going into an area supplied with communal standpipes, for example.

[108] Source: Greater Soweto Services Agreement, 10 November 1993, Central Witwatersrand Metropolitan Chamber.

payments by their constituency households due to the fear of making themselves unpopular with the electorate[109].

Service provision should therefore be depoliticised by removing it from the area of political competition so that no political body or person has to take the blame or can claim the credit.

- Increases in tariffs should be linked to measurable improvements in the quality and level of service provided.

- Increases in tariffs should be implemented in small increments over time, rather than in large step jumps, to overcome political resistance.

- It is much more difficult than is commonly imagined, to get households to resume realistic rates and levels of payment after they have become accustomed to not paying for services for a lengthy period of time.

- Significant attention must be paid to consumer education.

- Attention must be paid to institutional development, in particular, accountability, improved customer interface, capacity and personnel training.

- Low initial payment rates and incremental implementation of tariff policy must be taken into account in investment viability studies.

6.11 Implementation: linking with public works programmes

It is likely that the new government will embark on a major public works programme. It will be in the water sector's interest to develop a strong linkage between the public works programme and a national water and sanitation programme. Much preparation work is

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[109] Forster and Mirrilees (no date) note that "the impact of hasty pre-election promises on a community's willingness to pay for water should not be under-estimated. They quote World Bank studies (World Bank, 1991) which have shown that "while people are prepared to pay a water vendor a high price (up to R 25 per cubic meter in parts of South Africa) for water of dubious quality, these same people are only prepared to pay a few cents for a reasonable supply of safe water provided by the state. The reason quoted is a right which was promised to the people by the politicians, therefore why should they pay but a nominal price for it?" (ibid).

necessary in order to optimise this linkage. Specific points that need to be considered are discussed in Working Paper 13.

6.12 Implementation: investment planning

Service goals and tariff policies will have a significant impact on the financial viability of supply agencies. It is essential that supply agencies undertake more detailed strategic planning to determine what level of service (or what mix of levels of service) is sustainable within their area of supply, and realistic time frames to achieve interim and long-term service goals. A tool for undertaking such an analysis has been developed as part of this project and is reported on in Working Paper 15 ("An Investment-Tariff model for Urban Water Supply").

7. SUMMARY AND RECOMMENDATIONS

7.1 Introduction

Although this project had, as its prime objective, a **review** of the current institutional and financial arrangements in the urban water and sanitation sector, some recommendations and proposals concerning future policy and policy implementation, arising from the review, have been made. These are summarised here. It should be noted that the proposals are preliminary and are put forward for the purposes of consideration and debate. These recommendations should also be viewed within the context within which they were made (see main body of report).

7.2 Minimum service levels and service level goals

Minimum service levels

- It is proposed that, at the national level, a readily attainable minimum goal of a **basic, but adequate**[110]**, level of service guaranteed to all** be established[111], and that it be the responsibility of the responsible supply agency to meet this goal within its supply area.

Service level goals

- **Water:** It is proposed that every agency responsible for supplying water to communities in the urban areas in South Africa should have as its medium term[112] goal the **provision**

[110] See definitions of adequate sanitation and adequate water supply in the Glossary (Section 10).

[111] As defined under "Minimum service levels" in Section 2.3.

[112] Not longer than 10 years.

of a treated, metered water supply to each established[113] residential site, within its area of supply, subject to financial viability and sustainability.

- **Sanitation:** It is proposed that each sanitation agency shall have as its goal the provision of an adequate sanitation service to all households within it's area of supply.

7.3 Capital funding for new investment

Proposed approach to funding

- A portion of the national housing capital subsidy should go towards the **internal** services component of the water and sanitation services for households earning below a set income. The local community should have a say in how the housing capital subsidy is distributed between housing and the different housing-related services.

- The housing capital subsidy should not be used as a contribution towards the capital costs of the associated **bulk and connector infrastructure**. The supply agency should be responsible for raising loan finance for the bulk and connector infrastructure and securing income through a use related tariff (and possibly property taxes in the case of sanitation).

- In the case of **upgrading**, where the housing capital subsidy may not be available, the costs of upgrading should be funded directly by the household itself or by the consumers as a whole (through the tariff or service charges) depending on the policy of the supply agency. It has been suggested in Section 2 that supply agencies should adopt policies whereby households are encouraged to connect to a higher level of service, provided that the services are financially viable and sustainable for the body of consumers as a whole, within the defined income policy.

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[113] Established is defined here as a site where there is an explicit or implicit recognition by the local authority of its 'permanence'. A time period that can be attached to the word 'permanent' would need to be agreed on. Two principles are at stake here:

- That the water agency has a goal to provide on-site water to households who are likely to reside at the site over the medium to long term.
- That the water agency not waste scarce financial resources on sites where the settlement is likely to be impermanent.

Urban - rural linkages

- The funding of water and sanitation services in **rural areas** should be considered separately from urban sector funding. Rural subsidies should derive from the central fiscus in preference to neighbouring urban areas. The many good reasons for this approach are spelt out in the main body of the report.

Sources of grant finance

- It was estimated that about R11.5 billion will be made available over the next 10 years, from a national housing capital subsidy, to the water and sanitation sector for investment in internal services.

- It was assumed that an insignificant amount of additional grant finance would be made available to the **urban** water and sanitation sectors over the next 10 years.

Funding requirements

The total funding requirement (taking grant finance into account) of supply agencies over the next ten years could range between **R5 billion and R21 billion**, depending on national / regional minimum level of service policy, supply agencies' income (tariff) policies, household preferences and willingness to pay for different levels of service, and the consumers' (as a whole within each urban area) willingness and ability to cross-subsidise the provision of services to low-income households. *It is therefore clear that tariff and income policy is a key component of any investment strategy in water supply and sanitation services.*

Future sources of investment finance

The above funding requirement will have to be obtained through loans primarily from one or more of the following sources:

- Local authority capital development funds
- Domestic capital market
- External Funding Agencies (EFAs)

Of these, the domestic capital market is likely to be the most important source.

Domestic sources of capital should be used in preference to foreign sources of capital because loans from EFAs are not necessarily cheaper than loans from other sources, foreign exchange related risks may make the relative cost of foreign loans higher, and the track record of EFA lending in the water and sanitation sector is not good.

Further financial principles

- Financial autonomy and self-sufficiency of the urban water and sanitation sector *within each discrete urban area*, taking into account the availability of grant finance through the proposed national housing capital subsidy. That is, the users as whole, should pay the full costs of the service within each discrete urban area.

- Any subsidy over and above that catered for in the above principle, should only be given where a supply agency cannot provide a minimum basic level of service to all residents within its supply area (within a reasonable time-frame) whilst maintaining financial viability and sustainability[114].

- Any subsidy envisaged in the principle stated above should be a once-off capital subsidy (coming from the central fiscus), provided on the basis of a fixed amount per household without a basic level of service.

- There should be *no on-going operating and maintenance subsidies* within the urban water and sanitation sector: coming from outside the sector, or in the form of transfers between supply agencies.

It is important to note that the review of international experience in institutional development suggests that the inability of existing institutions to raise adequate finance for capital investment in new infrastructure has been a key catalyst for institutional change in many countries.

Developing appropriate funding mechanisms

- The funding of urban water and sanitation should be combined, as both services are integrally linked and whilst water has a secure source of consumption related income, sanitation does not.

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[114] See also Section 2.4.

- The possibility of raising bulk finance for a suite of water and sanitation projects should be investigated as this will reduce the cost of finance through economies of scale and the spreading of risk.

- The possibility of establishing a national water and sanitation fund should be investigated, using the proposal for a National Electrification Funding Agency as the starting point.

- The development of an appropriate mechanism for raising funds on the capital market which satisfies the criteria of offering a market related return on investment over the life time of the investment, maintaining the viability of the industry through tailored scheduling of financing obligations to match the return on the investment, and appropriately allocating and spreading the risk of the investment between the industry and the investor, should be investigated.

7.4 Income policy

Principles

- Water and sanitation pricing should be local to each urban area.

- Pricing should be uniform within each area.

- There should be a hierarchy of subsidisation, in which, for example, the subsidisation of piped sewer systems does not occur until or unless all households (within a given sanitation service area) not connected to piped systems are at least served with adequate systems.

Water tariffs

- An argument is put forward, for the purpose of contributing to the tariff policy debate, that urban residential water tariffs should, in general, comprise a life-line tariff for a set maximum amount of water, and a block rising rate tariff (progressive stepped tariff).

- The indigent should be accommodated through a token or coupon system.

- A fixed monthly maintenance and administration fee should **not** be implemented in the case of water supply.

- New development and connection costs for low-income households should, where possible, be financed by the supply agency.

- If it is the case that the provision of an on-site metered connection to the great majority of urban residents within an urban water supply area is financially viable and sustainable, then an argument can be supported for the provision of water to the remaining residents via standpipes at a nominal rate or for free. Exceptions to this general policy will, however, exist.

Sanitation charges

- On the basis of fairness, households with an on-site sanitation system should **not** pay more than those households with conventional sewerage (within the same sanitation service area).

7.5 Institutional arrangements

Comment on SCOWSAS proposals

- The latest SCOWSAS proposals (17 April 1994) were used as the departure point for the discussion of institutional arrangements.

- To date, the institutional analysis undertaken by SCOWSAS has been one of equilibrium analysis. Future institutional work needs to concentrate more on *change processes*.

- The institutional work undertaken by SCOWSAS has also, to date, largely neglected the study of financial and financing principles, and the impact of these on institutional arrangements.

- An inadequate (institutional) separation is made in the SCOWSAS proposals between water resource management (and regulation) and water utility functions (water resource development and supply functions).

Some general comments

- The review of international experience suggests that local authorities can manage water and sanitation services effectively, provided that: (1) they can give water and sanitation services the special attention they deserve; (2) they can secure adequate finance to meet

capital investment needs; and (3) they retain flexibility so as to be able to adapt to changing circumstances.

- Allocating the responsibility for water and sanitation to the local authority level is the best way of ensuring democratic accountability of service agencies to the local population.

- Care should be taken to ensure that water and sanitation services within metropolitan areas are managed as one economic and financial unit.

- Private sector, long-term asset management contracts, although attractive under certain circumstances, should be entertained only if the following pre-conditions are met: (1) a coherent policy and regulatory framework is established, with adequate support being provided to local authorities from capable central or regional agencies in the development of the contract with private agencies; (2) a mature and competitive tendering environment exists; and (3) the likely efficiency gains (less the extracted surplus) are greater than those probable under public management.

- Inter-agency competition and community mobilisation are important factors which can help to ensure that agencies are responsive to the needs of the poor.

Proposed institutional arrangements

It is proposed that the following institutional arrangements in the urban areas will best ensure the financial viability and sustainability of the water and sanitation sector:

- **Metropolitan areas:** A financially autonomous water and sanitation agency, operating within a clear political and policy context, in each metropolitan area (either within or autonomous from metropolitan government) responsible for (at least) investment planning, tariff policy and income collection.

- **The metropolitan fringe:** In cases where peri-urban communities exist on the fringe of (but outside) the new metropolitan boundaries, it is suggested that the metropolitan agency be involved in an ad-hoc or contract basis with the local authority for the area. The tariff and payment conditions should not be the same as the metropolitan policy, but negotiated on a case by case basis. In general, money for capital development should be made available from the national fiscus, and operation and maintenance costs should be fully recovered from the community. The metropolitan agency should strive to develop capacity within the local authority for the area so that it can assume responsibility for the

operation and maintenance of the system as soon as possible. In the short term, bulk water supply boards could be involved in supplies to these areas on a similar basis, much as Umgeni Water is doing at present.

- **Towns**: Local authority responsibility for water and sanitation management in the non-metropolitan proclaimed urban areas (towns). Services could be contracted out to a second tier agency, another local authority or a private agency. A cooperative agency serving a group of local authorities could also be established.

  In general, the following principles should be followed: (1) towns should be **financially self-sufficient** in the provision of water and sanitation services (taking any national housing capital subsidies into account); (2) development and operation of these services should be operated by the local authority where possible, with technical and financing support from higher level agencies being received only where necessary; and (3) a second-tier water resource management agency should oversee local authority development and management of water and sanitation services.

- **Support agencies**: Consideration should be given to the establishment of one or more small water and sanitation technical and financial support agencies with the specific mandate of supporting investment planning in third tier water and sanitation agencies, and raising bulk grant and loan finance for investments in water and sanitation. Separate agencies could exist for urban and rural areas as the nature of financing and delivery may be quite different.

Monitoring

- To date, inadequate attention has been given to agency monitoring, specifically with respect to performance. Some suggestions in this regard are made in the text, but more detailed research is required in this area.

Customer interface

- Institutions face major challenges in developing new and appropriate customer interfaces which (1) informs and educates customers about tariff policy, tariff rates, methods of payment etc.; (2) attends timeously to customer queries on accounts and other matters; (3) is accessible to and approachable by all consumers within the supply area; and (4) provides support to consumers wishing to upgrade their level of service.

7.6 Managing the transition

Institutional restructuring

- An incremental approach to institutional restructuring is proposed, holding in tension the need to make maximum use of existing scarce resources (especially management) with the expectation that the new agencies be seen to have the interests of the communities whom they serve at heart.

- A clear separation needs to be made between urgent short term tasks (getting services to the unserved) and medium term objectives (improved water resource management).

  The development of second tier catchment-based water management agencies should be a **medium** term objective and should not divert significant attention and resources away from the immediate tasks at hand: getting services to people.

  The "second tier" institutions that do exist, should use their resources as appropriate to support the immediate short term objectives, whilst planning to fulfil a "truer" second tier function in the medium term[115].

  Thus, the institutional restructuring advocated here is a more pragmatic and gradual one. Existing institutional strengths should be used and built upon, being gradually transformed, as may be appropriate, to fulfil changing future roles.

  This approach is against a fundamental restructuring of second tier institutions now.

- Urgent attention needs to be given to ways in which institutional restructuring at the third tier level can be supported from a professional water sector perspective.

- There is an urgent need to establish guidelines for private sector involvement in the urban water and sanitation sector. Some proposals in this regard are made in the text.

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[115] For example, Umgeni Water sees itself as developing into a true second tier catchment-based water management agency with a bulk water supply function to third tier agencies. However, in the near term, it will supply water directly to consumers where such third tier capacity is lacking, at the same time as seeking to develop their capacity.

Managing institutional change

- The principles of, and requirements for, successful institutional change management are set out in the text.

- Institutional change is a complex process, the difficulties of which should not be underestimated. In the water and sanitation sector, the institutional challenge encompasses both the need for integration of the existing disparate and fragmented supply agencies, at the same time as rapidly expanding services delivery capacity.

- Professional support from external change agents, particularly those with sectoral experience and expertise, could greatly facilitate the process of institutional restructuring in the water and sanitation sector.

Building institutional capacity

- Institutional "twinning" is put forward as having the potential to make a contribution towards easing the constraints on skilled human resources in the water sector. The essential features of "twinning" are outlined and it is recommended that this be investigated further.

Implementation

- It is proposed that urgent investigation into possible linkages between an investment programme in water and sanitation and the proposed public works programme is required, given the fairly long lead times required between planning and implementation.

- It is proposed that it is essential that supply agencies at the local authority level undertake more detailed strategic planning to determine what level of service (or what mix of levels of service) is sustainable within their area of supply, and realistic time frames to achieve interim and long-term service goals. The Investment-Tariff model developed as part of this project and described in Working Paper 15 may provide a useful tool in this regard.

8. THE WAY FORWARD

8.1 National strategy, policy framework and legislation

National strategy

The development of a comprehensive national strategy is of some urgency.

Policy framework

The national strategy must obviously be implemented within a coherent policy framework. Whilst the Tri-partite Alliance's Reconstruction and Development Programme provides some pointers towards a water and sanitation policy, the new policy will need to be much more comprehensive and detailed.

Legislation

There will almost certainly be a need to legislate about new-style local authorities. If they are to retain the major responsibility for water supply distribution and wastewater disposal, up-to-date legislation about the powers and obligations as water utility operators should be prepared now, with special attention given to general flexibility, but also to the coherence of the water sector and its effective financing.

Recommendation

A series of well-ordered invitation workshops should be arranged to discuss the relevant issues or a Committee of enquiry could be set up. Such a committee might be small and not dominated by the Department of Water Affairs (or equivalent new government department) or any other interest. It should be explicitly intended to consider a wide spectrum of voices and views from witnesses concerned with using or managing water and wastewater services.

8.2 Short-term support for institutional restructuring

Strategic planning for investment

Local authorities will face pressures to make early investment decisions. It is important that these decisions are taken with a long term view of the sustainability of the chosen investment programme. The investment choice regarding levels of service and time-related targets at the beginning of the programme may have a profound impact on the long-term sustainability of the sector. It is therefore important that investment planners are aware of the long term implications.

As part of the project, an investment - tariff model was developed for the purpose of assisting agencies responsible for water supply in urban areas in the development and evaluation of investment scenarios and tariff policy which aims to make up the backlog in water supply services whilst maintaining the financial viability of the service.

The investment - tariff model evaluates the impact of different investment scenarios and tariff policies on the financial viability of a supply agency which has overall responsibility for water supply in a unitary urban area, but which purchases bulk treated water from an external bulk supply agency.

Management support

In the short term, all local authorities will be undergoing major transformations and restructuring. Adequate attention may not be paid to the interests of water and sanitation services in this greater process. There is thus considerable justification for supporting this process, from a sectoral point of view. There are many similarities in the restructuring process that local authorities will follow and in the new challenges they will face.

Recommendations

- Consideration should be given to the establishment of support structures through which local authorities could share their experience and resources during the transition process.

- Professional support from external change agents, particularly those with sectoral experience and expertise, which could greatly facilitate the process of institutional restructuring in the water and sanitation sector, should be encouraged.

- Consideration should be given to the use of the investment-tariff model developed as part of this project as a tool to assist those involved in strategic planning in the water and sanitation sector at the third tier (local authority) level.

8.3 Research needs

Treating water as an economic resource

South Africa will have to, in the medium and longer term, come to terms with the fact that increasingly water will need to be treated as an economic resource. In Europe, as well as elsewhere, water is slowly coming to be recognised more clearly as an economic resource. Good water is getting scarcer even where physical resources appear sufficient. This greatly increases the need for (1) river basin authorities independent of bulk supply boards and

utilities to allocate access to raw water withdrawals and effluent disposal capacity between all interests having a claim on it; (2) a move towards charging for withdrawals and effluent disposal. It is likely that there will be general resistance to this, as it necessarily implies increased charges. Local governments responsible for water services may be particularly resistant to this idea.

Performance monitoring of supply agencies

Water supply and sanitation are natural monopolies, and hence external control is essential to ensure effective and efficient organisations. While control over pricing is one means of achieving this (and is fairly well developed in South Africa), little attention has been given to the development of specific performance criteria. This would appear to be an area worthy of further investigation.

Recommendations

- Further systematic and comprehensive research and investigation into appropriate institutional and financial arrangements for water resource management in South Africa should be conducted.

- Further research into water tariff policy and the implications of pricing water as an economic resource in South Africa should be undertaken.

- In the short term, the way in which water supply agencies are monitored should be reviewed.

- In the medium term, and in the context of the establishment of catchment-based water resource management agencies, attention should be given to:

  - Separate economic and environmental regulatory and monitoring bodies.

  - Developing performance criteria, reporting and monitoring procedures for water and sanitation supply agencies.

9. CLOSURE

Many challenges face the urban water and sanitation sector over the next ten years. In this report some proposals have been made as to the ways in which these challenges can best be met. It is hoped that these will make a positive contribution to policy development and implementation in the sector.

10. GLOSSARY

Adequate sanitation
A sanitation service which provides an adequate level of protection to individual households and neighbouring communities against the spread of sanitation related diseases. Properly functioning VIP (Ventilated Improved Pit) latrines, aqua-privies, septic tank, small-bore / solids free and conventional sewerage systems may be regarded as adequate according to this definition. Inadequate systems include bucket collection systems and unimproved pit latrines. It should also be noted that improperly designed, constructed or maintained systems may also be inadequate due to the failure of the system to adequately protect against the spread of sanitation related diseases.

Adequate water supply
A clean, safe water supply of 20-30 litres per capita per day (lcd) within 200 metres of each household in urban areas.

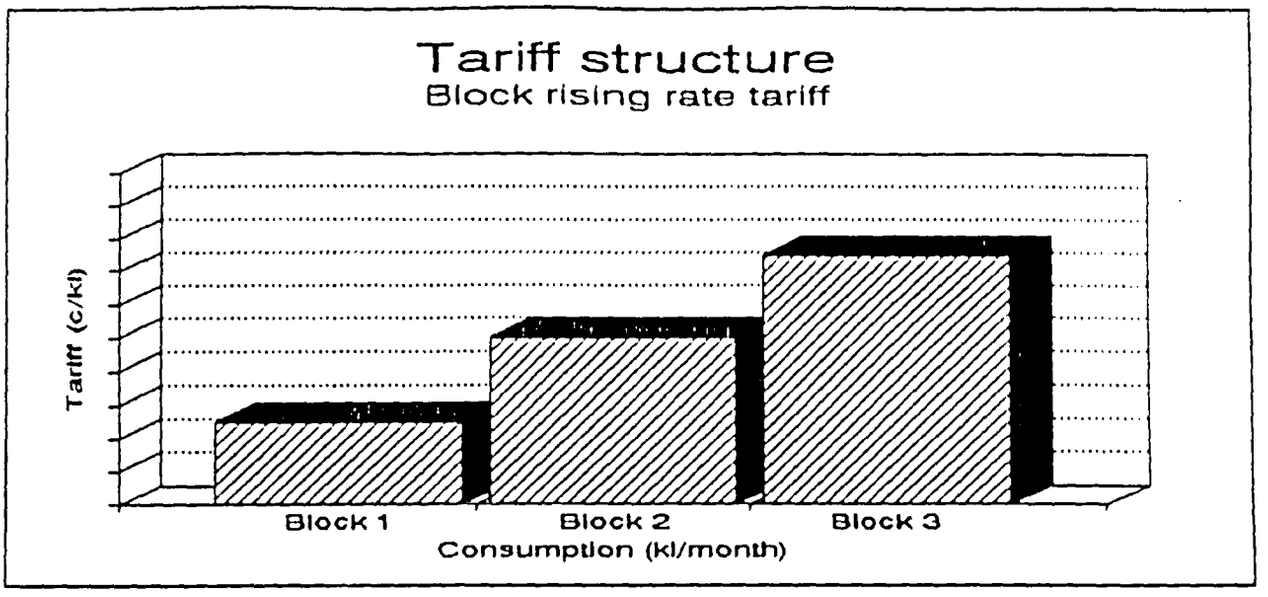
Average incremental cost (AIC)
This is the **long run** marginal cost in which price is set equal to an estimate of operation and capacity cost of projected new works averaged over time using discounted cash flows. The long-run marginal cost should be used in preference to the short run marginal cost in the case of both water supply and wastewater treatment because of the "lumpy" nature of investments in these sectors (intermittent periods of high capital investment with low investment in between). Tariffs based on short-run marginal costs would fluctuate significantly resulting in price instability.

See also efficient pricing.

Block rising rate tariff
A tariff structure, in which the greater the monthly consumption, the higher the unit tariff, as illustrated in the diagram overleaf.

Bulk and connector infrastructure

Bulk water service: The primary resource (dam or well field), raw water conveyance and treatment, treated water conveyance to the point where it enters the local service reservoir or distribution network.



Bulk sanitation: Outfall sewers (possibly including pump stations and rising mains), treatment works and treated effluent pipelines. In the case of on-site sanitation, the emptying of septic tanks and pit latrines is considered a bulk service.

Connector (water) Service reservoirs and conveyance from reservoir to internal reticulation within a suburb / township.

Connector (sewerage) Local connector sewers taking wastewater from local area reticulation to outfall sewer. Local pump stations and rising mains are included.

Capital funding

Refers to the financing of capital infrastructure, primarily the borrowing of money (by whatever means, for example loans or bond issues on the capital market) to fund capital infrastructure development.

Efficiency

The efficient use of resources implies that existing resources are used optimally and wastage is reduced to a minimum. Inefficient resource utilisation means that the same resources could be put to better use without incurring any additional costs.

Efficient pricing

An efficient pricing policy is one that is designed in a manner which encourages the efficient use of resources. According to economic pricing theory, resources are used most efficiently when the price is set equal to the marginal cost[116]. The success of pricing as a tool in the efficient allocation of resources is dependent on how responsive usage of the resource is to changes in its price, as well of the existence of externalities.

In the case of **water** supply, the response of consumers to significant price increases during periods of water scarcity, suggests that pricing can be used successfully to achieve a more efficient allocation of resources in the water sector. However, it should be noted that this area is still relatively under-researched in South Africa and thus conclusions drawn on the basis of this experience still need to be tested[117].

Efficient pricing of **sanitation** services is more complex because of the existence of externalities.

See also average incremental cost.

Externalities

An externality is a benefit or cost which is not included in the "price" or value of a good / resource. For example, sanitation has a positive externality because a household which pays for the cost of installing an adequate sanitation system not only benefits itself (in terms of improved health conditions and convenience), but also benefits the community at large (through improved health and/or environmental conditions for his/her neighbours).

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[116] This principle is widely accepted and implemented in the world of commerce and industry, but is equally applicable to natural resource economics and is gaining currency and being implemented in relation to the realisation of the scarcity of respective natural resources, clean water being an example.

The basis of this principle is as follows: When the price equals the marginal cost, then the marginal or opportunity cost of the resource is just equal to the marginal value of the good to society, reflected in the price that people are willing to pay for that amount of additional output. If the price of resource is higher than the marginal cost, then too little of the resource will be made available, and if the price is lower than the marginal cost then too much of the resource will be made available. Where price equals marginal cost, the allocation of resources is thus at an optimum.

For further discussion, see Bahl (1992) and WASH (1991).

[117] See, for example, Forster and Mirrilees (no date, p2).

Financing

The term "financing" refers to all money borrowing activities related to maintaining the financial viability of an enterprise. In the context of water and sanitation services, one of the most important money borrowing activities is raising finance for capital investment in infrastructure[118]. In this report, this is referred to as capital funding or simply as funding.

Flat rate tariff

A uniform tariff (value per unit) directly related to consumption. For example, a tariff of 150 c/kl is a flat rate tariff if this rate is applicable to all consumption levels.

Funding

Refers to the financing of capital infrastructure, primarily the borrowing of money (by whatever means, for example loans or bond issues on the capital market) to fund capital infrastructure development.

Hidden subsidy

A subsidy which has one or more of the following features:

- the target of the subsidy is not clearly specified and known
- the source of the subsidy is not clearly known
- the amount of the subsidy is not clearly known

Income policy

The policy on tariffs and other forms of income, such as property taxes used to raise income to operate the water and sanitation services.

Input pricing

Pricing a good on the basis of its value as input into a productive process.

Internal reticulation

Reticulation internal to a suburb / township. The on-site components of on-site sanitation are also considered as internal services.

Life-line tariff

A life-line tariff consists of a subsidised low tariff for consumption of a set minimum amount of safe water necessary for the maintenance of a healthy domestic environment.

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[118] The other major financing requirement is for working capital. This is not discussed in this report.

Marginal cost
The marginal or incremental cost incurred in supplying an additional amount of a good or service over and above that which is already being consumed.

In the case of water supply, the marginal cost is the cost of supplying the next "batch" of water over and above that currently available. For example, the marginal cost of the raw water supply in the Pretoria-Witwatersrand-Vereeniging region is the actual cost of the water (in c/kl) entering the Vaal Dam from the Lesotho Highlands Water Project.

The marginal cost of wastewater treatment is the unit cost of treatment of the next (major) increase in treatment capacity.

See also average incremental cost and efficient pricing.

Minimum Household Subsistence Level (MHSL)
The amount of money that a household requires to maintain a set (minimum) standard of living, as determined by a competent authority. The MHSL will usually be different for different urban areas.

National housing capital subsidy
A once-off capital subsidy given to households earning less than a specified income to be used exclusively towards the capital costs of a serviced site / housing package.

Sanitation agency
The agency responsible for sanitation within a sanitation service area. A sanitation agency may provide sanitation services outside of its area of responsibility, but will do this under contract with the responsible authority in that area.

The sanitation agency may be part of the local government, metropolitan government, an autonomous public sector agency or a private company, depending on the institutional model adopted.

A sanitation agency may also be the same agency as the water agency, if these functions are combined in one agency.

Sanitation service area
The boundaries of the sanitation service area may coincide with either the water supply area or area of local government jurisdiction, depending on the institutional model adopted.

Social tariff
See life-line tariff.

Supply agency
A water supply agency, sanitation agency, or water and sanitation agency.

Transparent subsidy
A subsidy is transparent if the exact amount of the subsidy and the date of the transaction is known to both the (clearly defined) beneficiary and the donor (the source of the subsidy). All parties affected by the subsidy in anyway should also have full knowledge of the above details.

An example of a transparent subsidy is the use of tokens for households who cannot afford to pay a life-line tariff.

Urban
Urban areas are defined to comprise:

- Metropolitan areas : defined by the boundary of the proclaimed metropolitan authority.
- Cities and towns : Other cities and towns that have been proclaimed as urban areas and who have established local authorities. The boundaries of these areas are defined by the local authority boundaries.

Water agency / water supply agency
A water supply agency is the responsible authority for water supply in a water supply area. A water supply agency may provide water supply services outside of its area of responsibility, but will do this under contract with the responsible authority in that area.

The water supply agency's functions may include responsibility for (depending on the institutional model adopted):

- bulk water supply (optional[119])

[119] May purchase bulk water from a bulk water supply agency or a neighbouring water supply agency.

- conveyance and treatment of water (optional[120])
- internal reticulation to individual sites
- metering of site connections
- meter reading, administration and finance

The water agency may be part of the local government, metropolitan government, an autonomous public sector agency or a private company, depending on the institutional model adopted.

A water agency may also be the same agency as the sanitation agency, if these functions are combined in one agency.

Water supply area

A water supply area should comprise one of the following:

- A metropolitan area as defined by its metropolitan boundary.
- An urban area as defined by the boundary of the local government.
- A boundary based on water resource considerations, usually comprising one or more (contiguous) river basins which may be sensibly managed as a unit in terms of water resource management and water supply to the local (and neighbouring) urban areas.

[120] May be carried out by a bulk water supply agency or neighbouring water supply agency.

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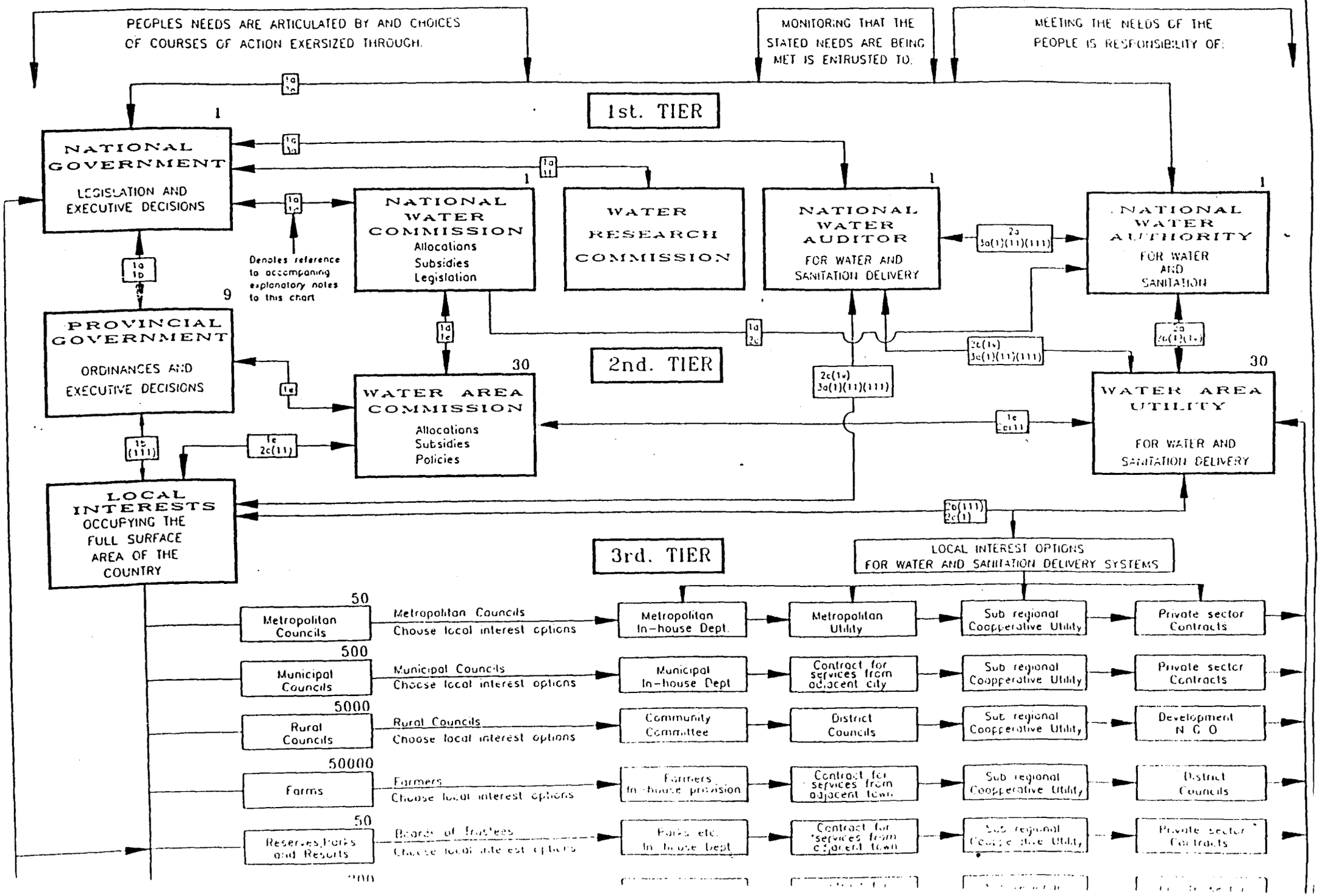
HART INDICATING SCOWSAS INSTITUTIONAL PROPOSALS FOR WATER AND SANITATION DELIVERY



ANNEXURE B

THE TWINNING OF INSTITUTIONS

- Notes from Cooper (1984) -

A description / definition of "twinning"

Twinning may be defined as a professional relationship between two operating entities, one mature and strong, the other weak and/or in need of some form of assistance.

The services that can be provided by the strong entity differ from those of a consulting firm in the following respects:

- The giver of technical assistance has operating experience.
- The technical assistance may be more easily integrated with training.
- The twinning arrangement allows for long term flexible contracts.

Twinning lends itself more to "institutional" assistance than direct engineering assistance.

Design of the Twinning Arrangement

The following components need to be considered in the design of a twinning arrangement:

- How the supplier's staff should be used: location, length of time, frequency and capacity (line-position, advisers, trainers, backup).
- Training of the receiver's staff: location, duration, frequency and nature of training (formal, informal, on-the-job, observation).

Criteria for successful twinning arrangements:

- There should be a correspondence in the operations of the two entities.
- The technology used by the supply agency should be appropriate in the context of the receiving agency.
- Management and operating principles used by the supply agency should be appropriate to the receiving agency.
- The supply agency should only provide services within its area of expertise.
- There should be commitment to the twinning arrangement by the top managers of both entities and mutual trust between the organisations.
- The objectives should be clearly specified and feasible.
- The contract should be long term and allow for flexibility (changing in accordance with changed circumstances).
- Adequate resources should be made available to attain the specified goals.

Other important factors

- The nature of the working relationship and informal contact between individuals will stipulate how and according to what schedule the requisite skills and responsibilities can be transferred.

- A third party can strengthen a twinning relationship through provision of additional expertise or resources and lessening the risk of excessive client dependency.

- Institution-to-institution impact (role modelling) may be increased by the presence of supplier staff at all levels in the receiver's facilities a the short period (3 to 5 years), and fewer staff present over a longer period of time (15 to 20 years).

- There should be clearly defined lines of communication between supplier and receiver staff in order to keep track of progress, call attention to problems, and provide feedback.

- There may be resistance to providing feedback on poor performance by supplier staff in the field, and attention needs to be given to ways of overcoming this.

- The staff and financial constraints implicit in a long-term contract can be overcome by:
  - general services agreement
  - a visiting expert system
  - free advice services
  - bi-lateral or multi-lateral funding
  - post-project funding

Proposed process of implementation

- Identify need
- Consensus on appropriateness of technical assistance to meet need
- Examine commitment to technical assistance
- Design technical assistance services
  - initial diagnosis
  - development of contract (specification of requirements)
- identify and assess potential twins, in terms of:
  - motivation of supplier
  - appropriateness of technology
  - appropriateness of staff skills
  - potential for institution-to-institution impact
  - experience in twinning and consultancy
  - availability of supplier staff
  - strain on supplier resources
  - management commitment and potential for mutual trust
- finalise and sign contract
- review progress and contract periodically