REPORT TO THE WATER RESEARCH COMMISSION

WATER AND SANITATION IN URBAN AREAS:

FINANCIAL AND INSTITUTIONAL REVIEW

JUNE 1994

REPORT 6

SUMMARY REPORT

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LIST OF REPORTS

Main reports

Report 1: Overview of Institutional and Financial Arrangements in Water Supply and Sanitation with a focus on the Urban Areas of South Africa. (October 1993)

Report 2: Overview of the Demand for Costs of Water Supply and Sanitation Services in South Africa. (June 1994)

Report 3: Meeting the Demand for Water and Sanitation Services: Getting it Right in the Transition. (June 1994)

Report 4: International Perspectives: Some Lessons for South Africa from England, France, Italy, Brazil and Botswana and some Information on External Funding Agencies. (June 1994)

Report 5: Macro-economic Sketch: A Sketch of the Macro-economic Implications of Major Investment in the (domestic) Urban Water and Sanitation Sector. (June 1994)

Report 6: Summary Report. (June 1994)

Working Papers

11. Some Ideas to Inform the Current Tariff Policy Debate for Urban Water and Sanitation Services.(January 1994)

12. Capital Investment in the Urban Water and Sanitation Sector - Some Issues. (April 1994)

13. Institutional Restructuring in the Urban Water and Sanitation Sector: A Review of the Current Debate and Contribution of Some Further Ideas. (February 1994)

14. The Management of Water and Sanitation in Brazil: Some lessons for South Africa. (April 1994)

15. An Investment-Tariff Model for Urban Water Supply. (April 1994)

16. The Management of Water Supply and Sanitation in Botswana: Some lessons for South Africa. (March 1993)

17. Differing Patterns of Water Agencies in Britain, France and Italy. (October 1994)

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Although much of the source material used as the basis for this document was derived directly from people interviewed, together with documents, the synthesis, analysis and interpretation of the data presented in the report remains the responsibility of the researchers.

We would also like to acknowledge the assistance of the project steering committee members:

Mr DS van der Merwe, Water Research Commission
Mr N Alli, Ninham Shand Incorporated
Mr A Boraine, Institute for Local Government and Development (INLOGOV)
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Palmer Development Group, in consultation with the Water Research Commission (WRC), appointed David Kinnersley, an institutional consultant in the water and sanitation field with widespread international experience, to consult on the project. His primary contributions to the project were as follows: Working Papers 9, 10 and 16. The remaining reports were written by Ian Palmer and Rolfe Eberhard.

This report was written by Rolfe Eberhard.

DISCLAIMER

The evaluative content of the report, as well as the policy proposals put forward, are made on the basis of the research undertaken. They do not necessarily reflect the views of the Water Research Commission or the members of the steering committee.

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1. INTRODUCTION

1.1 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. The project is a natural progression of earlier socio-technical evaluations of the urban water and sanitation sectors carried out for the WRC. These projects originated out of the Water and Sanitation 2000 initiative which addressed the need for unified and concerted action in the water and sanitation sector to meet the large and increasing need for adequate services in both urban and rural areas.

1.2 Overall project 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[1] 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.*

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[1] Adequate water supply is defined as a clean, safe water supply of 20-30 litres per capita per day (lcd) within 200 metres of each household. Adequate sanitation is defined as 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.

1.3 Specific Objectives

Following from the overall project objective, six specific project objectives were identified in the Draft Project Inception Document (Working Paper 9) and are listed below:

1. Provide an overview of existing financial and institutional arrangements and relationships in South Africa for the provision of water supply and sanitation services including how existing services are being operated and new services arranged and funded.

2. Estimate future demands for water supply and sanitation services.

3. Estimate total costs (including capital investment and operation and maintenance costs) of meeting these demands on the basis of alternative levels of service.

4. Assess implications of existing financial and institutional arrangements in the light of these demands and costs.

5. Provide a brief outline of international experience and current policy trends relevant to the institutional and financial issues facing South Africa, including a thumbnail sketch of the availability of external financial support and the conditions under which this would be made available to South Africa.

6. Make a preliminary assessment of the macro-economic implications and linkages of major investment in urban water and sanitation services.

1.4 Project documentation

The project outputs consist of a series of six reports and seventeen working papers which are listed at the beginning of this report.

Each report covers one (or more) of the specific project objectives. The working papers were written to provide background material for the main project reports.

The **Summary Report** (this report) fulfils the function of an extended executive summary, outlining the contents of the five main reports and summarising the primary conclusions and recommendations of the project.

Report 1 (Overview) provides an overview of current institutional and financial arrangements in the water and sanitation sector, with a focus on the urban areas. Working Papers 1 to 8 provide background material compiled during the preparation of Report 1. These are only in rough form and are not intended for wide distribution.

Report 2 (Demand and costs) estimates total future demand and costs for water and sanitation services in the urban areas in South Africa. The results of this report provide essential inputs into Reports 3 and 5.

Report 3 (Getting it right in the transition) represents the core output of the Financial and Institutional Review project, bringing together 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.

Report 4 (International Perspectives) provides a summary of the more detailed working papers on management experiences in the urban water and sanitation sector in Britain, France and Italy (Working Paper 17), Brazil (Working Paper 14) and Botswana (Working Paper 16). The major lessons learnt have been incorporated implicitly and explicitly into Report 3.

Report 5 (Macro-economic sketch) outlines some of the macro-economic implications and linkages of major investment in water and sanitation. This was not a focus of the project.

The Working Papers provide background research material, although each has been written as a stand-alone document. Of the working papers, numbers 11 (Tariff Policy), 12 (Capital Investment), 13 (Institutional Restructuring) and 15 (Investment-Tariff Model) are the most important in terms of substantive contributions which are not fully reflected in the main reports.

An additional paper (Working Paper 10) was written by David Kinnersley as a contribution towards the debate concerning appropriate institutional arrangements.

2. PROJECT CONTEXT

2.1 Introduction

There are a number of issues specific to the water industry which, although important to the project, cannot be dealt with in any detail. These issues are outlined below.

2.2 The grouping of services

Water supply, waterborne sewerage, on-site sanitation, stormwater management and roads are all closely related services. These services, in turn, may also be regarded as part of "housing".

In broad terms, it is proposed that, generally, at the distributional level water supply, waterborne sewerage and on-site sanitation should be grouped in the control of single organisations (whether part of the local authority or in any other format). There are a number of reasons for this:

- The joint costing of water and sanitation services will facilitate rationale investment decisions which take into account the impact of the investment on the financial viability and sustainability of both the water and sanitation services.

- Economies of scale may be achieved through management of both water and sanitation by one agency in an urban area.

- It will enable later upgrading (eg. from on-site sanitation to water borne sewerage) to be handled by one agency, not two.

2.3 The autonomous water utility

Water utility services are attracting increasing public and political attention, and are requiring large amounts of investment finance, to ensure a better quality of service with wider availability.

This means that the status and structure of relevant agencies may need reconsideration. One main influence here is recognition that, once water is seen more as an economic resource, the activity of providing it (and taking it away after use) can be run more like a business, whether this be in the public sector or with private capital participation.

This leads to the idea of the "autonomous water utility" now at the centre of many discussions around the world. This idea may or may not mean the local authority losing much of its influence and financing responsibility for water and waste water (in England it has meant that; in France, certainly not). But it does mean that water utility services cease to be one of the things that the municipal authority is administering in detail alongside housing, health clinics, highways, land use planning etc. - all of them needing increased budgets, all of them inhibited to some extent by worries about the implications for increases in municipal rates.

In the context of this project, two points are of note:

- Water utility services are separable from other functions, and capable of becoming (via suitable internal or external borrowing) largely self-financing, because water utility incomes generally continue to be remarkably stable through boom and recession.

- One gain from a separation from the town council's other departments is that water management becomes more coherent, more holistic, and ceases to be technically dominated. The water accounts department, the water personnel office, the water lawyers, the water planners all gain an identity and a specialisation and a sense of team work which is hard to build within the town council's administration where accounts departments and personnel departments were responsible for all services with rules and policies that could not be tailor-made to suit any one of them completely.

Thus the distancing from local government of the water utility organisation is developing strongly as an international trend. Notwithstanding this, there remain several ways in which local authority influence and liaison can continue to be very important and helpful.

2.4 Expatriate involvement and private participation

Expatriate involvement poses the question of whether or not foreign-controlled organisations can bring such an addition of human resources and financial and managerial know-how that it is worth promoting their participation in water sector in South Africa. If this is to be considered, the contractual or asset-ownership base for their intervention is a highly sensitive matter.

The **privatisation** argument is partly broad politics, partly more narrowly financial.

Although these matters have a high profile in some other parts of the world, this project has given them very slight coverage, for the basic reason that both expatriate involvement and private participation on any significant scale require very thorough preparation. Such preparation is largely devoted to forecasting the future and negotiating with a reasonably high degree of clarity and certainty what the relevant organisations will put in (in operation, investment, skills, risks etc.) and what they will expect to get out. Monopoly abuse and the difficulty of revoking relationships established are particular hazards. Client, contractor and water users are fairly heavily locked together, so very thorough preparation is essential before the relationship is established.

It is therefore advisable that expatriate involvement and privatisation be given little or no serious attention until a later stage when an assessment of the main task and its implications is far clearer than it is at present.

2.5 The water environment

This is a larger and more complex subject than the previous one. It is briefly mentioned here for three reasons:

- Spending on the protection of the water environment is one of the main driving-forces for greatly increased investment programmes by water utilities that have long been mature in Europe and North America.

- This is occurring because water utilities have huge potential to aggravate or to reduce water pollution by being either well-managed and well-financed or the reverse.

- In South Africa, return flows into the water cycle from the non-consumptive use of water contribute significantly to the overall availability of water. Water and wastewater pricing, and decisions on the type of sanitation service installed, may have an impact on both water demand and return flows.

These issues go beyond the brief of the project, but should be kept in mind as an important context which may significantly affect policy and implementation decisions both at the national and local level.

3. WORKING ASSUMPTIONS

A number of points or themes, some obvious, others less so, deserve notice here because of their general importance to the project. These are called working assumptions and are summarized below:

1. The project assumes that, in the near future (within 12 months), a **new policy** will be adopted which will have as its goal the provision of an adequate[2] and appropriate water supply and sanitation service to every resident in South Africa. It is further assumed that there will be a commitment of sufficient resources to achieve the policy goal.

   Given the scale of the existing backlog in, and new demand for, services, the adoption of such a policy will have a profound impact, not only on the existing institutional and financial fabric of those organisations involved in water supply and sanitation services (the rationale for the project), but also on the fabric of society.

2. It is vitally important, when working within the narrower confines of the specific project objectives, that the **social change** implied by the implementation of the new policy is always kept in view.

   The most fundamental aspect of this change relates to the intrusive nature of (especially) sanitation services. Sanitation is, on one level, a deeply personal and private matter which must at all times be respected. There will thus exist a constant tension between the needs, preferences and aspirations of households on one hand, and the financial and other resource constraints existing at a broader macro level on the other.

3. **Community participation** is therefore not an expedience, added on as an after thought in an effort to make second best alternatives palatable to a poor community; rather it is fundamental to the process of service delivery, irrespective of income group. Recent experience in developed countries, where water utilities are being forced to become increasingly responsive to the consumer's (community's) needs and preferences, supports this view.

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[2] See definition of adequate on page 1.

4. In the light of the above, this project will make no attempt to prescribe an ideal institutional and financial model for the delivery of services, but rather support and help focus the process of institutional and financial transformation that will be necessary to implement the policy goal of extending services to all (urban) residents.

5. The **inter-action** of a wide range of stake-holders, both in this project, and in the processes that unfold from it, was viewed as essential. In this respect, the project cooperated on an ongoing basis with the Standing Committee on Water Supply and Sanitation (SCOWSAS), the National Housing Forum (NHF), the Local Government Negotiating Forum (LGNF) and the National Electrification Forum (NEF).

6. The scale of the challenge to provide adequate services to all necessitates that an **incremental approach** be adopted, in which there is a transitional period which co-exists alongside a long term perspective. New institutions, or fundamental changes to existing institutions, cannot be accomplished overnight. It is important that clear long term objectives be established early in the transition so that the possibility of achieving these in the longer term are not compromised during the transitional period. It may be expected that this transitional period could last between 5 and 15 years.

7. The relationship between water supply and sanitation services and housing on the one hand and local government on the other, is an intimate one. Although this project is concerned only with water supply and sanitation, it also considered the impacts of evolving local government and housing policy. Likewise, these policy developments should also take into account the perspectives offered by a sector specific approach.

8. The scale of the challenge further implies that the development of **human resources** will form an important part of a programme of implementation. Human resource considerations were not included in the project brief; nevertheless, the importance of this issue was borne in mind during the course of the project.

9. The project assumed that the economic and non-economic **benefits** arising from the provision of an adequate level of water supply and sanitation service to all (at least urban) residents are widely accepted, and the project thus made no attempt to quantify these benefits.

10. The focus of the project was on **urban, domestic** water supply and sanitation / effluent services.

4. OVERVIEW OF CURRENT ARRANGEMENTS

4.1 Introduction

Report 1 provides an overview of institutional and financial arrangements in water supply and sanitation sector, with a focus on the urban Areas of South Africa. The report is descriptive in nature, rather than evaluative and had, as its principle aim, the clarification of issues pertinent to the rapid delivery of services to the unserved and the sustainability, effectiveness and efficiency of managing these service on an ongoing basis.

Some of the topics which the report focused on are listed below:

- Institutional arrangements

    - effect of demarcation on service delivery
    - linkages between water supply and sanitation
    - accountability of institutions
    - internal and external performance monitoring

- Financial arrangements

    - tariff policy and practice

- Capital investment in water and sanitation

    - relationship between investment in housing and investment in water and sanitation services.

4.2 Number of people without adequate services

The distribution of people without adequate water supplies and sanitation services, based on the best available data at the time of reporting, is summarised below:

Table 1: Distribution of population without adequate water

	Population million	Population without adequate water	% Distribution of urban population without adequate water
Metropolitan areas	17.4	3.1	66%
Towns	4.9	0.27	6%
Dense settlements	2.2	1.3	28%
TOTAL URBAN	**24.5**	**4.7**	**100%**
Rural	13.0	6.1	
TOTAL	37.5	10.8	

Sources: Palmer Development Group / UCT (1993a), Pearson (1991).

Table 2: Distribution of population without adequate sanitation

	Population million	Population without adequate sanitation	% Distribution of urban population without adequate sanitation
Metropolitan areas	17.4	3.8	51%
Towns	4.9	1.6	22%
Dense settlements	2.2	2.0	27%
TOTAL URBAN	**24.5**	**7.4**	100%
Rural	13.0	11.2	
TOTAL	37.5	18.6	

Sources: Palmer Development Group / UCT (1993b), Pearson (1991).

More comprehensive coverage data is presented in Report 2 (Appendix 4) and SALDRU (1993).

4.3 Institutional arrangements

a) Current deficiencies

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 urban and rural areas in South Africa. A fairly comprehensive listing and discussion of the current deficiencies is given by SCOWSAS (1993) and this is therefore not repeated here. The discussion that follows focuses on some key points that were highlighted in Report 1.

b) Boundary demarcation

Water board boundaries

The Minister of Water Affairs, has wide discretion in terms of the Water Act to establish water boards and determine (or alter) the boundaries of the area to be supplied by a water board. No clarification of the criteria for determining the areas of supply are given.

Metropolitan boundaries

How the metropolitan boundaries are drawn in the near future will have a profound influence on service delivery, and especially on the financial implications of different minimum service level goals.

c) Accountability

Water boards

The water boards at present have little direct accountability to consumers and the community within their areas of supply. Some water boards have recognised, and are actively trying to address, this problem.

Local authorities

It is fair to say that, as a general rule, most existing local authorities under the pre-interim management arrangements, were primarily concerned with consumer accountability (in its narrow definition) and that the unserved (that is potential consumers) were largely voiceless. Although local government is being restructured in a fundamental way, past practices are likely to form the basis of any future evolution in institutional practice. This implies that

some kind of "cultural revolution" will be required, especially within the existing "white dominated" supply agencies[3].

d) Performance monitoring

Water boards

Apart from the normal standard financial and 'procedural' controls, the key control exercised by the Minister of Water Affairs is the approval of the tariff schedules. If this control is exercised with care, then it may be said that reasonable external control over the activities of the water board exists.

However, there are a number of shortcomings in the external controls stipulated in the Water Act:

- No emphasis is placed (in the Act) on demand management.

- Considerable latitude is given to the water board to generate surpluses for accumulation in reserve funds. This, in itself, is not a bad thing. However, in the absence of a clear (national/regional) policy on water tariff structures, this places considerable economic power within the hands of the water board, which may be of concern in the context of monopoly control.

- There is no monitoring of performance and efficiency, other than through the water tariff schedule. Water supply is a natural monopoly (the Act in fact firmly entrenches this monopoly), and in the absence of competition, it is possible for a water board to abuse this position for its own gain.

- There is little direct accountability between the water board and its consumers (noted previously). This exacerbates the above situation.

The "Reporting by Public Entities Act" marks an important improvement in the scope of external control over water boards in that it is possible for the efficiency and effectiveness of these agencies to be monitored in terms of the Act and any anomalies in this brought to public attention. Nevertheless the Act does have some shortcomings:

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[3] See Section 6.6 (Managing the transition).

- The Minister of State Expenditure does not have any sanction to act should it be brought to his attention that a particular entity is performing unnecessarily inefficiently, for example.

- The Act is vague in terms of defining effectiveness and efficiency. It is recognised that this is necessary in that the Act applies to a wide range of different public entities, and it is possible for the Minister to make regulations pertaining to particular entities. However, no such particular regulations have been promulgated, and it is not clear whether or not there is any intention to do this. It would be possible, for example, to develop specific measures whereby the efficiency of water boards could be monitored.

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.

Local authorities

A number of external controls over local authorities exist, consisting of various pieces of legislation (both national and provincial) pertaining mostly to financial, procedural and technical aspects of services delivery, and instituted to protect the consumer. Most of these controls are, however, general. Where local authorities are responsible for many services, the rules and policies applicable to them are usually not tailor-made to suit any one of them completely. Thus considerable scope exists from improved monitoring and control of water supply and sanitation services in local authorities.

4.4 Financial arrangements

a) Local authority finances - a summary

- Total capital expenditure by all local authorities in 1993 was R5.0 billion, accounting for a third of the total local authority expenditure (capital and operating) of R15.0 billion[4]. The total deficit for the year (including capital expenditure) was R870 million, all of which was financed domestically.

[4] Source: Local Government Statistics, South African Reserve Bank in presentation by Deon Burger, of the Department of Finance, to the Municipal Finance Workshop, Kempton Park, 29 March 1994, called by the Transitional Executive Council.

- The total net borrowing requirements of local authorities have ranged between R500 billion to R1 000 billion per annum over the period 1983 to 1993.

- The total trading surplus for local authority water accounts was R392 million in 1992, compared to R1 298 million for electricity.

- Water and sewerage trading services account for about 15% to 20% of trading revenue.

- Trading revenue accounts for about 50% to 60% of total local authority revenue.

- The total income from the sale of water from the five largest water boards (Rand, Umgeni, Goldfields, Bloemarea and Magalies) was R1.1 billion in 1992/93. The total population living within the supply areas of water boards is approximately 13 million.

b) Tariffs

Theory

A theoretical basis for determining water and sanitation tariffs is presented in Report 1, based largely on the work of Bahl (1992). There is a strong theoretical economic argument for basing water tariffs on the long run marginal cost (or average incremental cost) of water supply.

Bulk water pricing policy in South Africa

Current water pricing policy and practice in South Africa is based almost exclusively on average historic costs (AHC).

Tariff policy for raw water from Department of Water Affairs owned and managed schemes, which has recently been changed, is described in Report 1. Although the new method marks a step towards marginal costing principles (through allowing for the "pre-payment" by consumers for future schemes), the new policy is not based on marginal costing principles.

Demand management is not addressed in the proposed new tariff structure. With certain exceptions, raw water purchased by the regional supply authorities from the Department of Water Affairs is taken under a reservoir allocation agreement (with receiving regional supply authorities meeting capital and operating costs in full) rather than under a volumetric tariff. There is no incentive to conserve water under such agreements (Thompson, 1992).

Marginal costs of bulk water supplies

Although the Department of Water Affair's "Red Book"[5] explicitly states that "decisions regarding the location of activities should be influenced by the full marginal costs of the water supply facilities, rather than by the prevailing tariff" (DWA, 1986, p6.34) marginal cost information for raw and treated water supply to the major metropolitan areas is not readily available and, where available, is not comparable to other areas due to a lack of uniformity in the costing methodology employed.

It is important for this kind of information to become available to policy makers in South Africa as, even if actual water tariffs are not based on marginal costing principals, the marginal costs of water are still important to inform economic and urban development policy. For example, if the future cost of water to the Pretoria-Witwatersrand-Vereeniging (PWV) area is going to be many times higher than the current costs, the present essentially distorted price signals (from an economic point of view) may result in a situation in which water intensive industry is located in areas in which their long term future may be jeopardised.

Data made available for the Lesotho Highlands Water Project (LHWP), which is to begin supplying water to the PWV metropolitan area in 1997, suggests that the marginal cost of this (raw) water, at today's prices, will be R 1.50 per kl. However, the average cost (and tariff) of the raw water supplied to the PWV in 1997 will be 30 c/kl (today's prices), which is calculated by spreading the total cost of the scheme over the total sales of water (from all sources) from the Vaal River system. Thus the average long run marginal cost of water is some five times higher than the average historical cost for the PWV metropolitan area. If future raw water schemes are taken into account beyond the first phase of the LHWP, then this difference is even higher.

Intuitively, it is likely that the marginal costs of water in other major urban areas are likely to be less than that for the PWV, but still substantial.

Bulk treated water costs in the metropolitan areas

The average costs of bulk treated water in some of the major metropolitan areas are summarised in Table 3.

The following points may be made with regard to the average costs presented in the table:

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[5] "Management of the Water Resources of South Africa" (DWA, 1986)

Table 3: Average Bulk Water Costs - Metropolitan Areas

Metropolitan Area	Bulk Water Supply Authority	Cost of Bulk Treated Water (c/kl)	
		(91/92 actual)	(92/93 actual)
Cape Town	Cape Town Municipality	39	48
Bloemfontein	Bloemarea Water Board	54	63
Port Elizabeth	Port Elizabeth Municipality	61	92[1]
PWV	Rand water Board	66	74
Durban	Umgeni Water Board	67	93

Notes: The above are average costs of water as supplied by the regional water authority based on actual 1991/92 and 1992/93 total expenditure (including contributions to capital reserves) and total water sales.

1. This cost higher than normal because of drought conditions.

- It is surprising that the bulk water tariff in the water scarce PWV area is lower than for the Durban / Pietermaritzburg area (a water rich region) (Briscoe, 1991). The relative costs of water in the PWV and Durban regions will, however, change in the future as the result of the introduction of the Lesotho Highlands Water Project in 1997.

- Raw water currently makes up about 22% of the total cost of water to the end user in the PWV area. As more expensive sources of water are developed the raw water cost, and hence the percentage of the end user price, will increase progressively. "The days of relatively cheap water in the Vaal River supply area are over and consumers will have to prepare themselves for higher costs" (Krige, 1992).

Economic value of water

To date, relatively little work has been done in South Africa on determining the economic value of water, although the theory and principles of economic pricing are beginning to gain currency (cf Hollingworth, 1992, Jackson, 1991, Forster and Mirrilees, 1993). A preliminary study to determine the economic value of water for the Vaal River System area was undertaken for the Department of Water Affairs in 1991 (Urban-Econ, 1991). The study concluded that the "value of water was substantially higher than the present cost of water"

(ibid, p29). This, together with the discussion above on marginal costing, supports the contention that water is under-priced in South Africa at present[6].

Domestic tariff structures used in South Africa

The distribution of the various types of water tariff structures in use in South Africa, based on a sample survey of about 270 local authorities (both black and white) , are shown in Figure 2. It should be noted that this data is not weighted by population nor is it necessarily representative; black local authorities in particular are under-represented. Hence the flat rate service charge which is applied by many black local authorities is under-represented. Nevertheless, the data does give an indication of the kinds of tariff structures in use.

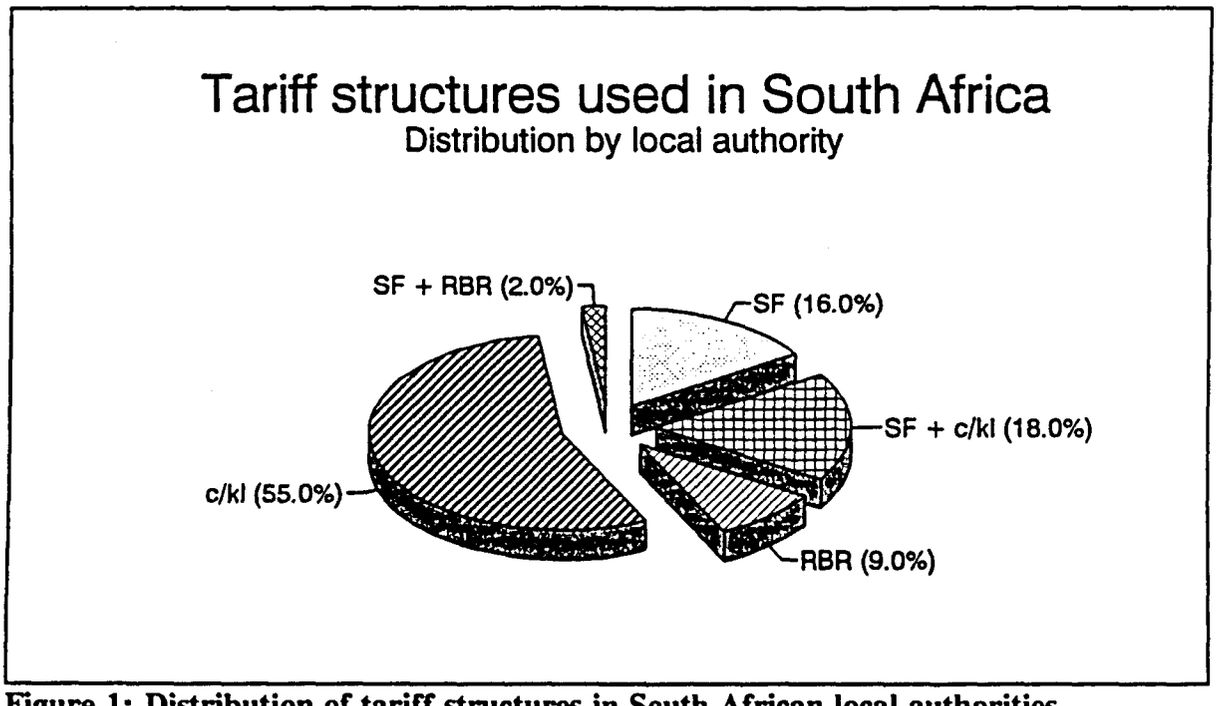

Figure 1: Distribution of tariff structures in South African local authorities

Average domestic water prices in South Africa

The range of average domestic tariffs charged in South Africa (both black and white local authorities) is illustrated in Figure 2. Note that the data is not weighted by population but rather gives an indication of the range of tariffs by local authority.

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[6] See also Pansegrouw (1994) (in Municipal Engineer, April 1994) who argues that South Africa's urban water tariffs are too low and that increased water tariffs may actually benefit the country in many respects.

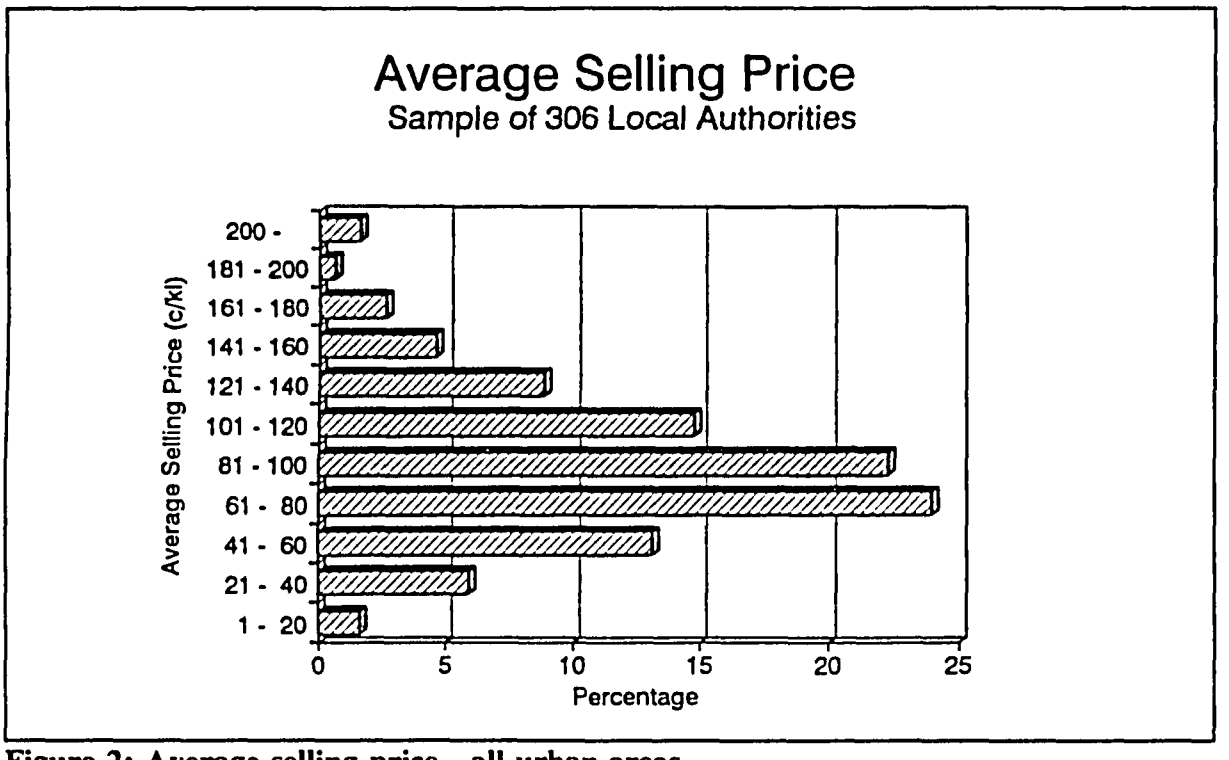

Figure 2: Average selling price - all urban areas

About 17 million people live in the metropolitan areas in South Africa (71% of total urban population). Typical average selling prices of water in these regions are illustrated in Table 4.

Table 4 Water prices in metropolitan areas (1992/93)

	Bulk [1] (c/kl)	Retail [2] (c/kl)
Witwatersrand	74	166
Durban	93	150
Cape Town	48	130
Port Elizabeth	92	128/190[3]
Bloemfontein	63	141
East London	na	111

Notes: 1. Data from Table 3.
2. Based on core white local authority, consumption of 30 kl/month, current tariffs as at July 1993.
3. Normal / water shortage

c) Implications of current arrangements for future payment for services

Subsidies and sustainability

The following important conclusions may be drawn from the financial arrangements for water supply and sanitation in the Witwatersrand and Durban Functional Regions which are sketched in Report 1:

- Most low income residents have become accustomed to paying nominal amounts for services, or nothing at all. Although the grounds for this can be argued on the basis of illegitimate institutions, poor quality of services, etc., it is wishful thinking that once legitimate institutions are in place and service delivery has been normalised, that high levels of payment for service at rates close to the actual cost of delivery will be achieved, especially in the short term.

- Although it is true that spreading the burden of cross-subsidisation over a wider base will result in a reduced general financial burden, the data presented in Report 1 indicates that the provision of levels of service that are not affordable could result in a significant ongoing burden on recurrent expenditure and seriously threaten the financial viability of supply authorities.

Significant subsidisation of tariffs (an example)

Soweto provides an example of the implementation of highly subsidized tariffs policies during the transitional phase. Negotiations over an acceptable tariff, which took over two years, resulted in a flat rate service tariff of R 45 per month for all services being agreed upon. The current total costs of services provision is estimated to be about R 300 per formal residential site per month and thus significant cross-subsidisation will be necessary, at least in the short (and probably medium) term.

Ramifications of widely varying tariffs (an example)

Inanda, a densely settled area on Durban's northern urban fringe, about 24 km from the city centre, has a complex pattern of formal and informal settlements. Because of the fragmented institutional arrangements, the level of service provided and the rate of payment for these services is highly variable over short distances. For example, a household could pay anything between 35 c and 280 c per kl for the same amount of water, depending on which area it lives in and which government agency provides the service. Serious anomalies arise from this, for example:

- Many people in Inanda are required to pay more (per kl) for their water than communities elsewhere in Durban with much better levels of service.

- Within Inanda, communities with lower levels of service have to pay more for their water than neighbouring communities with much higher levels of service.

- Communities in the old "RSA" portion of Inanda are required to pay more for their water than communities with the same level of service in neighbouring KwaZulu areas.

In general, the level of payment for services in these areas is very low, which is understandable in the light of the above facts.

4.5 Capital investment in water and sanitation infrastructure

a) Definitions: internal, connector and bulk services

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.

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. All internal services costs used in this project include the cost of the toilet superstructure (privy) and other on-site components (eg. toilet pedestal).

b) Housing and internal services

The "internal services" portion of water and sanitation services may be regarded as part of "housing". It is likely that the funding of housing over the next ten years will be guided by the principles and approach incorporated in the recently announced national housing policy, summarised below:

- A once-off capital subsidy to be paid to (or on behalf of) households who have not previously received a subsidy, and who earn below a set income level.

- The capital subsidy is to be made available for internal services and the house itself, and is not to be used to contribute towards bulk and connector infrastructure.

- The amount of the subsidy will be calculated according to household income. The initial subsidy amounts have been set as follows:

Table 5: National housing capital subsidy

Household monthly income	Subsidy
up to R 1 500	R 12 500.
R 1 501 - R 2 500	R 9 500
R 2 501 - R 3 500	R 5 000

c) Bulk and connector costs

The national housing capital subsidy will not contribute towards the capital costs of the associated bulk and connector infrastructure. This money, therefore, will either have to come from the supply agency (who will borrow the required money and recover it through a use related tariff[7]) or through grant finance from the government or other sources.

Proposals with respect to the funding of water and sanitation services are made in Section 6.3.

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[7] And possibly property taxes in the case of sanitation.

5. DEMAND FOR, AND COSTS OF, FUTURE SERVICES

5.1 Introduction

The objectives of Report 2 ("Overview of the Demand for and Costs of Water Supply and Sanitation Services in South Africa") were:

- To quantify the existing backlog in water supply and sanitation services in the urban areas of South Africa, in terms of the number of households and levels of service.

- To quantify in broad terms future low-income demand for water and sanitation services, in terms of the number of households.

- To quantify the capital costs of making up the backlog in services and meeting new demand for services, based on estimates of costs per site and bulk infrastructure costs, and assuming various scenarios for the level of service provided.

- To compare the estimates of this analysis to other studies.

It should be noted that the costing presented in Report 2 and summarised here is very preliminary (and was not a major focus of the project). Much more extensive work is currently under way, making use of the investment-tariff model described in Working Paper 15, to refine and develop the costs presented in this project. This work is being undertaken by and on behalf of the Department of Water Affairs, the Water Research Commission, the Standing Committee on Water Supply and Sanitation and the Development Bank of South Africa.

5.2 Current backlog

The current backlog in services, already presented in Table 1 and Table 2 may be expressed in "upgrading requirements", that is, the number of households that would have to be upgraded, assuming a certain minimum level of service. The results are shown in the matrix below: (to bring all households to the level stated - basic, intermediate or full)

Table 6: Upgrading requirements - number of households (000's)

	Basic	Intermediate		Full		
	1->2	1->3	2->3	1->4	2->4	3->4
Water	683	683	581	683	581	393
Sanitation	1 186	1 186	130	1 186	130	0

Notes: 1 = minimal level of service
2 = basic level of service
3 = intermediate level of service
4 = full level of service

Source: Report 2, Table 5. (excludes dense settlements)

5.3 New demand

The number of new households per annum requiring services, based on demographic information used in Report 2 is summarised below.

Table 7: New low-income household formation

	New households per annum
Metropolitan areas	122 000
Towns	22 000
Dense settlements	20 000
TOTAL	164 000

Source: Report 2, Table 6

Discussion

De Loor (1992) estimated total annual "functionally urban" new household formation at 198 000 per annum and hence the above "low-income" demand represents 83% of the De Loor figure.

5.4 Estimated capital investment requirements

Estimates of gross capital investment requirements for urban water and sanitation services are summarised in Table 9 and Table 10 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 8. Unit cost data is presented in Report 2.

Table 8: 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 includes an aqua-privy linked to a solids-free sewer reticulation system. Very few intermediate systems exist in South Africa.

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 9: 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".

Source: Report 2

5.5 Estimated funding requirements

It is possible to estimate, in broad terms, the overall funding requirements[8] 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.

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

Table 10: 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).

Source: Report 2

- Housing subsidies of R12 500 per household earning below a set income.
- R 1 350 of the R12 500 available for water supply **internal services.**
- 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.

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 11.

Table 11: 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

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**[9], depending on national / regional minimum level of service policy.

[9] 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.

6. GETTING IT RIGHT IN THE TRANSITION

6.1 Introduction

Report 3 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.

The specific objectives of Report 3 were:

- To suggest a policy approach to levels of service goals and minimum service levels.
- To propose ways in which new services provision, and on-going operation and maintenance might be financed.
- To discuss which institutional arrangements will best help the sector 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.

Report 3 draws on Working Papers 11, 12, 13 and 15 as well as Reports 1, 2, 4 and 5.

The key policy and implementation proposals made in Report 3 are summarised here.

6.2 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[10], level of service guaranteed to all be established[11], and that it be the responsibility of the designated supply agency to meet this goal within its supply area.

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[10] See definitions of adequate sanitation and adequate water supply on Page 1.

[11] These are defined in more detail in Report 3, Section 2.3.

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[12] goal the provision of a treated, metered water supply to each established[13] 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.

6.3 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 would not normally 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. 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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[12] Not longer than 10 years.

[13] "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.

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 Report 3.

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 should be maintained 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.

- 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.

- 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.

6.4 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 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 should be financed by the supply agency where possible.

- If it is 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 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).

6.5 Institutional arrangements

SCOWSAS proposals

The Institutional Sub-committee of the Standing Committee on Water Supply and Sanitation (SCOWSAS) have written two documents dealing with institutional arrangements in the water and sanitation sector:

- "Institutional Options for Water Supply and Sanitation. Discussion document." (June 1993).

- "Report on proposed institutions." (May 1994).

A discussion of these documents is presented in Report 3 and is not repeated here. Because of the extensive work that has already been done on institutional arrangements, this project has placed more emphasis on the financial aspects of water and sanitation service provision.

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 (but outside) of 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 like Umgeni Water is doing at present.

- **Towns:** Local authority responsibility for water and sanitation management in the non-metropolitan proclaimed urban areas (towns) is supported. 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 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[14]. 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 Report 3, but more detailed research is required in this area.

Customer interface

- Institutions face major challenges in developing a new and appropriate customer interface 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.

[14] These agencies could operate within, or outside of, regional government.

6.6 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 task 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[15].

  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 Report 3.

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[15] 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 Report 3.

- 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.

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.

7. INTERNATIONAL PERSPECTIVES

7.1 Introduction

In many parts of the world, water is coming to be recognised and treated as an economic resource. This change, together with an increasing focus on water quality issues, is having an important influence on the way water and sanitation is being managed, both in developed and developing countries. There is much to learn from the experiences of other countries and it is possible for this to be a sizeable study in itself. The focus and resources of this project, however, required a more limited and strategic approach to gaining knowledge from international experience that is directly relevant to the South African context.

The specific objectives of Report 4 ("International Perspectives: Some lessons for South Africa from England, France, Italy, Brazil and Botswana and some information on External Funding Agencies.") were:

- To provide a brief description of three national systems in Britain, France and Italy.

  The purpose of this was not to offer a serious and detailed evaluation of each, but rather to expose the range of differences between them, the historical and contemporary reasons for these, and the impacts on the way in which the systems function.

- To provide a brief description of the experience of institutional development in Brazil.

  Brazil has fast growing urban areas, a large unserved urban population and a high income gap between the rich and poor, conditions which are also being experienced in South Africa.

  Brazil developed a comprehensive national water and sanitation plan (called Planasa) which was implemented in the period 1968 to 1986. South Africa has never developed a national plan and it was felt that useful lessons could be learnt from Brazil's experience.

- To provide an outline of the policy trends currently attracting attention among the multi-lateral and larger bi-lateral lending agencies, notably the World Bank.

- The gathering and presentation of such information as can be usefully gained in general terms (without commitment or negotiation) about which agencies might lend to the South African water and sanitation sector, on what scale and subject to what terms and conditions.

The project team also investigated water and sanitation management arrangements in Botswana.

7.2 Key international trends in institutional development

The key trends identified in Report 4 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.

7.3 Some lessons from Britain, France, Italy, Brazil and Botswana

The lessons learnt from this brief review of selected international experience are summarized below.

Macro-economic context

- An investment programme should be affordable to the country and should not create macro-economic imbalances, for example: excessive inflation, balance of payment problems, large external debt burdens and dependence on foreign aid. (Botswana and Brazil)

Constitutional and legislative context

- Allocating the responsibility for water and sanitation services at the local authority level is the best way of ensuring the democratic accountability of service agencies to the local population. (Botswana, Brazil and France)

- In metropolitan areas, financial resources, investment planning and bulk service provision should be coordinated at the metropolitan level. (Brazil)

A national water and sanitation plan

- A comprehensive (though not authoritarian) national water and sanitation plan setting out service goals, time-tables, investment requirements, methods of funding and cost-recovery, tariff policy, materials requirements, training programmes and minimum service standards is undoubtedly an important tool in mobilising the water and sanitation sector to improve service coverage and quality, and should be developed as a matter of priority in South Africa. (Brazil)

- There are important pitfalls in developing a national water and sanitation plan which need to be guarded against. Amongst these are centralisation of decision making and control, and development of policies which are too rigid and prescriptive and which discourage innovative and appropriate solutions to local challenges. (Brazil)

- Botswana's rural sanitation programme should be studied more closely, with a view to determining what aspects of this programme could be usefully incorporated into the soon to be established national sanitation plan.

Institutional arrangements

- The institutional option of autonomous public water utilities that are not too large should not be discarded out of hand and deserves serious consideration for possible application in South Africa, with appropriate adaption (for example, more emphasis on local democratic accountability). (Botswana)

- The separation of water and sanitation service functions between two organisations very different in character (for example, an independent water utility and sanitation under local government management) may result in the development of sub-optimal policies, and should therefore be carefully examined before embarking on this route[16]. (Botswana)

- Local governments can manage water and sanitation services effectively, provided that:

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

[16] See also "Grouping of services" in Section 2.

- they can secure adequate finance to meet capital investment needs;

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

(England, France, Italy)

- Public accountability can only be guaranteed if the operations and performance of the water and sanitation agencies are open to public scrutiny. Local government responsibility does not, in itself, guarantee openness, as is evident from England's experience.

- Local government only can be effective in longer-term management of water and sanitation services in settings where it is not frustrated by breakdowns in central government or its own financing. (Italy)

- The small independent Brazilian technical support agency, which provided technical support to municipalities requesting such assistance, and also operated and managed systems on behalf of the municipalities (under contract) on request without assuming control or ownership of the assets, and which operated in Brazil prior to and in parallel with the implementation of Planasa, provides a good role model which could be translated into the South African context with good effect, especially for remote small towns.

- Special institutional arrangements are required in metropolitan areas to ensure adequate coordination of investment planning, bulk service provision and the pooling of financial resources between local authorities. (Brazil)

- Competent and effective technical monitoring agencies (responsible for one or more provinces) are vital to ensure that wise investment decisions are made and that projects and services are properly, effectively and efficiently implemented and managed. (Brazil)

- River basin functions (water resource management and pollution control) should not be combined with water utility functions (water supply and wastewater treatment). (England)

- In France, although local government retains responsibility for services management, most do not operate or manage their water and wastewater services, but contract these out to private companies. Under the right conditions, the French system appears to operate exceedingly well, attaining the dual goals of accountability and efficiency through combining local government and business interests within a competitive framework. To

the outsider, the extent of competition in the system may appear to be muted as changes of contractor are usually infrequent. However, Kinnersley, through discussions with those involved, is of the opinion that this competition is very real. He remarks that the competitive maturity of the system is admirable. However, it is not clear how one would start a French style system in a foreign context where there is no previous experience of it. It requires an appropriate attitude among civic leaders as well as in the companies concerned. There could be dangers of monopoly or of corruption if the constructive relationships built up in France were not reliably achieved. French (and British) companies offer to work in this way in overseas developing countries, but this appears open to disadvantages compared to a country not reliant on external finance or business know-how.

- Privatisation was not the inevitable result of the (primarily investment finance motivated) restructuring in the water sector in England towards autonomy from local government. The privatisation was politically motivated by the Thatcher government, which was not prepared to make the large public investments in the sector which were required at the time.

- It is possible, even in a relatively small country such as the United Kingdom, for a national government to accept regional differences in the management and financing of the water sector[17].

Finance and tariff policy

- The use of loan funds is an appropriate means of funding a large investment programme in water and sanitation. (Brazil)

- The development of revolving credit funds can be done in such a way as to ensure the long-term sustainability of the water and sanitation sector without the need for recourse to additional outside sources of funding for future investment needs. (Brazil)

- Care should be taken when using foreign loans for investment in water and sanitation, and, in general, these loans should only form a small proportion (say less than 10%) of the total loan funding required. (Brazil)

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[17] This is not the case in the energy sector, whose network of supply and distribution is much more integrated.

- South Africa should examine the possibility of using contractual savings as a source of loan finance for investment in water and sanitation. (Brazil)

- Outside of support for housing development (through a capital subsidy), it is probably unwise for the water and sanitation sector to rely on grant financing from central government to finance water and sanitation services.

  The reliance on central government grants has proven ineffective in Britain and Italy. French local government, notably, does not rely on central grants but largely on private capital. Brazil made use extensively of loan funding, with only limited use of targeted grant finance. Botswana's urban water sector is completely self-financing, however the sanitation services rely to a large degree on central government subsidies which are proving to be unsustainable.

- Cross-subsidisation between wealthy and poor communities, and between industry / commerce and residential consumers, can be implemented in a way which ensures the affordability of services to the poor and is sustainable in the long term. (Brazil, Botswana)

- However, cross-subsidisation over a wide geographic area between cities and towns, or between urban areas and rural areas, other than through the central or regional fiscus (taxes) is not recommended. (Brazil) South Africa should not consider implementing a uniform water tariff across different urban areas which experience different costs of water supply. (Botswana)

- The implementation of life-line and progressive block rising rate tariffs is practically possible and can achieve the dual objectives of ensuring affordability of services for the poor and raising sufficient income for the viability of the water and sanitation service agencies. (Brazil, Botswana)

Management

- Political interference in the day to day management of water and sanitation services and in project investment decisions is highly detrimental to the effective and efficient operation of water and sanitation agencies; and this should be strongly guarded against in South Africa. (Brazil)

- Adequate monitoring and control should be exercised over water and sanitation agencies. The two best ways of achieving this are: (Brazil)

  - Ensuring direct democratic accountability to the local community.
  - The creation of small competent monitoring agencies (see above)

- Operating and monitoring agencies should preferably be separate from each other. (Brazil)

- Good quality management is crucial to the effective and efficient operation of water and sanitation agencies, and the importance of this should not be under-estimated. (Brazil, Botswana)

7.4 External Funding Agencies

External Funding Agencies are discussed in Report 4 as they may have significant influence over water and sanitation sector policies and institutional and financial arrangements.
The focus of the discussion is on the World Bank. Bi-lateral funding from other sources is also reviewed briefly.

The two key points that emerged from the brief review of External Funding Agencies are:

- Multi-lateral funding agencies most certainly will be willing and interested in lending money to the urban water and sanitation sectors in South Africa. South Africa should examine carefully the policies and practices of these agencies, and the implications of foreign lending on the sector, and more broadly the South Africa economy, before committing itself to borrowing significant sums of money from external funding agencies.

- When considering grant finance, care needs to be taken to understand constraining conditions attached to the grants which may negatively impact future development prospects. Recent estimates (April 1994) indicate that not less that R1.5 billion will be made available in grant finance to South Africa for the 1994/95 financial year, although it is unlikely that much of this will be available for investment in the urban water and sanitation sector.

8. MACRO-ECONOMIC SKETCH

8.1 Introduction

Investment in urban water and sanitation services will form a major component of an overall reconstruction and development programme. Understanding the linkages between (1) investment in water and sanitation and economic development, and (2) the economic impact of investment in water and sanitation *vis a vis* investment in other sectors, is thus critical in order to optimse the overall social infrastructure investment programme.

The specific objectives of Report 5 were: (1) to sketch the macro-economic context; (2) to outline the linkages between investment in water and sanitation services and economic development; and (3) to contextualise the investment requirements in the urban water and sanitation sector with those in other sectors.

8.2 Key points arising

Macro-economic context
A large capital investment programme will only be affordable if South Africa embarks on strategies to increase labour and capital productivity and investment in capital stock. Investments in water and sanitation should contribute, or at least not detract from, these overall macro-economic objectives.

Infrastructure investment - distributional issues
South Africa's investment has, unfortunately, been skewed in the past, and this will affect the efficiency and effectiveness of future investments. Investment in water supply and sanitation are long-term investments, and great care needs to be taken in ensuring that the location of investments will facilitate efficient and effective use of the infrastructure.

Water investment - the importance of price
Water pricing policy is the key to the efficient allocation of resources within the water sector and ensuring that adequate, but not excessive, resources are allocated to the sector.

Sanitation investment
There is no guarantee that a higher level of sanitation will result in greater economic benefits than a basic level, and there is therefore a strong economic argument that the additional costs of providing a high level of sanitation as opposed to a basic level of service, should be borne by the users.

9. THE WAY FORWARD

9.1 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 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.

9.2 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[18] 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 surely 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.

[18] Described in Working Paper 15.

9.3 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.

Inter-sectoral macro-economic linkages

Little work has been done to date on understanding the linkages between investment in water and sanitation and economic development, and the economic impact of investment in water and sanitation *vis a vis* investment in other sectors. A greater understanding of these linkages is necessary in order to inform decisions concerning the allocation of scarce public resources for investment at the national level between sectors.

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 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.

- Further work on understanding the linkages between investment in water and sanitation and economic development, and the economic impact of investment in water and sanitation *vis a vis* investment in other sectors, should be undertaken.

10. CLOSURE

This report has summarised the main outputs from the Financial and Institutional Review Project for the urban water and sanitation sector.

For the sake of conciseness, much of the rich contextual information supporting the statements set out in this summary, as well as the detail and complexity of some of the arguments advanced, has had to be reduced and/or simplified. The reader is encouraged to refer to the main reports and working papers for the necessary supporting information.

Many challenges face the urban water and sanitation sector over the next ten years. In this report, the proposals made by the project researchers as to the ways that these challenges can best be met have been summarised (Section 6). Suggestions for immediate action and further research have also been made (Section 9).

It is hoped that the review, the tentative policy and implementation proposals advanced, and the suggested way forward, will make a positive contribution to policy development and implementation in the sector.

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