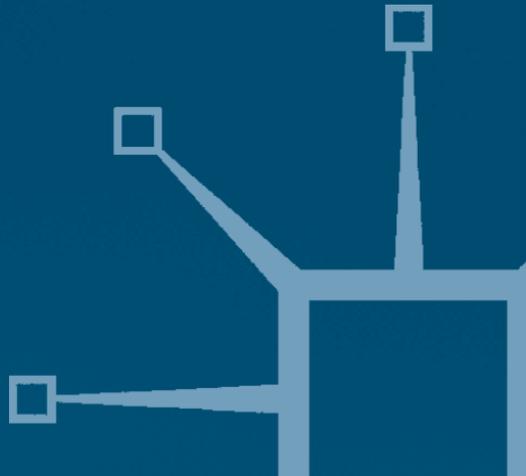


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Tapping the Market

The Challenge of Institutional Reform
in the Urban Water Sector

Andrew Nickson and Richard Franceys



Tapping the Market

The Role of Government in Adjusting Economies

General Editor: **Professor Richard Batley, International Development Department, School of Public Policy, University of Birmingham**

Over the last two decades there has been a strong emphasis on reducing the role of government and on reforming traditional public sector bureaucracies. The new conventional view has become that, where possible, services should not be provided directly by government but be contracted out or privatized. Where this is not possible, the predominant view has been that the public sector itself should change by setting up semi-autonomous agencies and by making public management more performance- and customer-oriented.

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Development*

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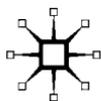
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First published 2003 by
PALGRAVE MACMILLAN
Houndmills, Basingstoke, Hampshire RG21 6XS and
175 Fifth Avenue, New York, N.Y. 10010
Companies and representatives throughout the world

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ISBN 0-333-73620-6

This book is printed on paper suitable for recycling and made from fully managed and sustained forest sources.

A catalogue record for this book is available from the British Library.

Library of Congress Cataloging-in-Publication Data

Nickson, Andrew

Tapping the market : the challenge of institutional reform in the urban water sector / Andrew Nickson and Richard Franceys.

p. cm. — (The Role of government in adjusting economies)

Includes bibliographical references and index.

ISBN 0-333-73620-6 (cloth)

1. Water utilities—Developing countries. 2. Municipal corporations—Developing countries. 3. Water supply—Developing countries.

I. Franceys, R. II. Title. III. Series.

HD4465.D44N53 2003

363.6'1'068—dc21

2003048062

10 9 8 7 6 5 4 3 2 1
12 11 10 09 08 07 06 05 04 03

Printed and bound in Great Britain by
Antony Rowe Ltd, Chippenham and Eastbourne

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List of Acronyms and Abbreviations

ADB	Asian Development Bank
BOT	Build-Operate-Transfer
BWUC	Botswana Water Utility Corporation (<i>Botswana</i>)
CMF	Change Management Forum (<i>India</i>)
COM	Community Ownership and Management
DWR	Department of Water Resources (<i>Zimbabwe</i>)
ESD	Engineering Services Department (<i>Bulawayo, Zimbabwe</i>)
ETOSS	Ente Tripartito de Obras y Servicios Sanitarios (<i>Argentina</i>)
GWSC	Ghana Water and Sewerage Corporation (<i>Ghana</i>)
IBT	Increasing Block Tariff
ICB	International Competitive Bidding
ID	Institutional Development
IMF	International Monetary Fund
LCR	Lease Contract Rate
LMIC	Low and Middle-Income Countries
LPCD	Litres per Capita per Day
LRMC	Long Run Marginal Cost
MDG	Millennium Development Goals
MJP	Maharashtra Jeevan Pradhikan (<i>Maharashtra State Water Board, India</i>)
MOUAE	Ministry of Urban Affairs and Employment (<i>India</i>)
NGO	Non-Government Organisation
NPM	New Public Management
NWSDB	National Water Supply and Drainage Board (<i>Sri Lanka</i>)
OFWAT	Office of Water Services (<i>England and Wales</i>)
OSN	Obras Sanitarias de la Nación (<i>Argentina</i>)
PHED	Public Health Engineering Departments (<i>India</i>)
PMC	Pune Municipal Corporation (<i>Maharashtra State, India</i>)
PPP	Public Private Partnership
PSP	Private Sector Participation
PWVs	Private Water Vendors
ROCE	Return on Capital Employed

ROFA	Return on Fixed Assets
SAGUAPAC	Cooperativa de Servicios Públicos 'Santa Cruz' Ltda (<i>Bolivia</i>)
SAFIR	South Asia Forum on Infrastructure Regulation
SEC	State Enterprises Commission (<i>Ghana</i>)
SEEG	Société d'Exploitation des Eaux de Guinée (<i>Guinea</i>)
SOE	State Owned Enterprise
SONEG	Société Nationale des Eaux de Guinée (<i>Guinea</i>)
TOR	Terms Of Reference
UFW	Unaccounted For Water
USAID	United States Agency for International Development
USO	Universal Service Obligation
UWS	Urban Water Supply
WASH	Water and Sanitation for Health Program
WHO	World Health Organisation
WR	Working Ratio
WSSD	World Summit on Sustainable Development
WTP	Willingness To Pay

Preface

This book originates from a research programme funded by the Economic and Social Committee on Research (ESCOR) of the Department for International Development (DFID). The facts presented and views expressed are those of the authors and do not necessarily reflect the views of DFID.

The research programme, entitled 'The Changing Role of Government in Adjusting Economies', recognises that over the last two decades there has been a growing emphasis in OECD countries on reducing the role of government and on reforming public management by adopting aspects of private sector practice. The new conventional view became that, where possible, government should enable and regulate the private and community sectors or arms-length public agencies rather than directly provide services. The research was premised on the view that similar practices were being introduced in developing countries, often in association with the structural adjustment of their economies. There has been considerable research on the difficult process of adjustment but little on the capacity of governments to manage the consequences and little on the outcome of such reforms.

The research investigated the application of such reforms outside their countries of origin, in Africa, Asia and Latin America. Underlying the enquiry is the question whether approaches generated from a diagnosis of the 'over-interventionist' state in, for example, Britain or New Zealand are appropriate responses to other forms of state, where the levels of public management capacity, market development, resources, political inclusiveness, legal effectiveness, as well as political and economic stability are quite different.

The research was undertaken through case studies of the organisation and performance of service provision in selected countries. The selection of the four service sectors – health care, urban water supply, agricultural marketing and business development – and the choice of countries for field work was intended to allow the examination of alternative possible organisational arrangements for service provision in different political and economic circumstances. It was also intended to examine whether there are organisational practices that seem to be more appropriate to particular services or national contexts.

The research programme involved five British research groups: the International Development Department of the School of Public Policy, University of Birmingham; the Health Economics and Financing Programme, Health Policy Unit, London School of Hygiene and Tropical Medicine; the Overseas Development Group of the School of Development Studies, University of East Anglia; the Water Engineering and Development Centre of Loughborough University of Technology; and the Department of City and Regional Planning, University of Wales. Richard Batley of the International Development Department, University of Birmingham provided overall coordination for the research programme.

The research on the urban water sector was developed and planned by Andrew Nickson and Richard Franceys. After an initial literature review by Andrew Nickson of institutional and economic perspectives on government capacity to assume new roles in the urban water sector, country case studies were carried out, with the lead being taken in Ghana by Philip Amis, in India by Richard Franceys and Kevin Sansom, in Sri Lanka by Richard Franceys, and in Zimbabwe by Richard Batley. Country collaborators in the case studies were Frank Asiedu in Ghana, Srinivas Chary in India, Harsha Aturupane in Sri Lanka and Ngoni Mudege in Zimbabwe. User surveys, which included views on water, were carried out by Carole Rakodi in Ghana and India, by Tudor Silva, and Steven Russell in Sri Lanka, and by Dorothy Mutizwa-Mangiza in Zimbabwe.

This book has been written by Andrew Nickson and Richard Franceys, with Andrew Nickson taking the lead on Chapters 1, 2, 3 and 4; and Richard Franceys on Chapters 5, 6, 7 and 8. The series editor, Richard Batley reviewed and commented on the entire manuscript. We are most grateful to all the individuals who supported the country case studies, and also to Alistair Wray (DFID), Nick King (WaterAid) and David Kinnerseley (independent consultant) who formed a steering committee for the urban water sector research. We also gratefully acknowledge the contribution to our thinking of colleagues in the International Development Department of the University of Birmingham, the Water Engineering and Development Centre of Loughborough University of Technology, IHE Delft and the Institute of Water and Environment, Cranfield University.

1

Reform of the Urban Water Sector and the Role of Government

1.1 Introduction

One of the most glaring failures in government attempts at service provision around the world is the shortage of water faced every day by the urban poor. According to WHO/UNICEF data (2000), 171 million people have no access to affordable clean water in urban areas of Africa, Asia and Latin America. Millions have to buy water from private water vendors (PWVs), almost always at a price many times higher than that paid by people with higher incomes whose households are connected to the pipe network of state water utilities (Figure 1.1). Rapid urbanisation throughout the developing world has substantially increased the demand for water as poorer migrants move to the cities. But in most of these countries, urban water supply (UWS) has not kept pace with this increasing demand. As a result, in many large cities in Africa, Asia and Latin America a significant percentage of the population does not have access to piped water.

What is the reason for this mismatch between the supply and demand for water? In a minority of UWS systems, the explanation has to do with the depletion of natural resource endowment. In these cases, withdrawals from aquifers or surface water, usually to irrigate farmland, exceed recharge, threatening the long-term availability of fresh water. Governments in these countries face the difficult challenge of finding enormous investment funds either to abstract and transport water from long distances or to introduce expensive desalination plants. But in most UWS systems, a sufficient supply of water is available. Yet systems have been severely degraded due to chronic under-investment and inadequate maintenance of the urban pipe network, resulting in excessive water loss through leakage, poor water quality and unreliable flow



Figure 1.1: The urban poor pay more for water
 Source: World Commission on Water for the 21st Century, 1999.

as well as the failure to extend service coverage. In turn, this has contributed to serious disease and public health problems, especially in slums and squatter settlements. As a result, UWS systems in many low-income countries are facing an acute crisis.

Until the 1990s the world water industry was surprisingly complacent with regard to this problem. It lacked a critical awareness of its poor economic performance and its own organisational failings. Powerful stakeholders such as water engineers, international construction companies and public sector trade unions all had a vested interest in maintaining this *status quo*. As one observer noted, 'What other industry would allow upwards of a quarter of its finished output to be wasted?' (Barker 1992). But that observer was being too generous as in fact the industry was

losing closer to one half of its output. The sector tended to operate within the tradition of an engineering or 'supply-led' approach, with only a tenuous link between revenue and expenditure estimates through the annual budgetary cycle at the highest political level. This failure to generate adequate revenue was one of the main reasons why water utilities were making a loss. Initial expectations that urban water supply could be paid for through property taxes, with only industry and commerce paying a metered tariff, led to a continuing shortage of funds for maintenance and service expansion. Even when domestic metering was introduced in some countries, the reluctance of politicians to allow state-owned water utilities to set viable tariffs compounded the problem.

In many low-income countries, this imbalance between demand and supply was related to a lack of fit between a colonially-inspired urban fabric and a growing population of poorer migrants from rural areas. Design engineers often gave priority to raising the per capita level of water consumption rather than ensuring the widest possible coverage for the urban population. Rather than any lack of entrepreneurial initiative on the part of state water utilities, this was often the result of explicit government policies to not provide infrastructure in 'illegal' unplanned squatter settlements (Cairncross 1992). Engineers designed new systems according to arbitrary international standards of per capita water consumption that were based on an exaggerated perception of the contribution of clean water to overall economic development. For example, the standard of supply set by the government of Ghana was 110 litres per capita per day (lpcd) although no urban area in the country has ever achieved that. This figure compares with the UNCED global target for 2000 of only 40 lpcd. Little importance was accorded to the real structure of the demand for water in the planning of UWS systems. Consequently heavy investment in water production (reservoirs, treatment plants and pumping stations) was made at the expense of investment for network expansion to peri-urban areas. Engineers had been trained to build abstraction and treatment facilities, not to be water retailers.

1.2 Rethinking urban water supply

The argument in favour of the direct public provision of UWS has traditionally been based on the assumption that it is a 'public good'. Although in common parlance 'public good' is usually defined as any good or service that is provided directly by the public sector, the theoretical

definition of what constitutes a public good is far more restrictive. The essential properties of public goods (sometimes called 'common pool goods') are non-excludability (that is, if provided for one person, it is automatically available for everybody else) and non-rivalry (that is, there is no less available for any one person because another person is enjoying it). According to economic theory, it is these properties that should dictate whether collective provision is made at zero direct cost to the individual consumer, with the cost financed instead out of general taxation.

In fact, UWS is a private good and not a public good. It is characterised neither by non-excludability nor by non-rivalry. It is feasible and common practice both to charge users and to exclude non-payers. Although collectively provided, there are few cases in the world where UWS has been provided at zero direct cost to the consumer, as is normally the practice for pure public goods.

However, although UWS is a private good, it has three production and consumption features that give rise to the likelihood of market failure (that is, the inability of an unregulated market to achieve allocative efficiency). First, UWS is usually a natural monopoly. This is a function of the economies of scale associated with pipe networks, whereby one firm can produce at lower average costs than can be achieved by two or more competing entities. These economies of scale are not simply a function of the cost of duplicating the provision of pipes but are also linked to the size of pipes and storage tanks. This is because the surface area of three-dimensional objects increases at a much slower rate than their internal volumes. For example, when a pipe diameter is doubled, its carrying capacity is increased by five times. As a result of these factors, operating costs per connection in urban areas are inversely proportional to the number of connections. Furthermore, unlike in the case of other network monopolies such as telecommunications, gas and electricity, in the case of UWS there is no significant competition between deliverers, nor from products or services produced outside the industry, perhaps due to the relatively low cost of water. In the absence of any dramatic technological advance such as has occurred in the telecom sector, this situation is unlikely to change in the foreseeable future. The urban water industry is therefore the natural monopoly *par excellence* (Littlechild 1986).

Second, there is the issue of externalities, whereby the behaviour of one producer or consumer affects that of other parties. Where the total benefits and/or disbenefits of an activity cannot be 'captured' in market prices, an unregulated market system will result in a sub-optimal allocation of resources. UWS has considerable health-related externalities,

both positive and negative. For example, the provision of clean water provides enormous positive externalities to public health through the control of infectious, water-borne diseases. On the other hand, the unregulated disposal of effluent by water utilities can cause enormous negative externalities to public health in the form of environmental contamination. Third, UWS is sometimes characterised by an asymmetry of information between providers and poorly educated consumers, especially in low-income countries. The water provider often has a greater understanding than these consumers themselves of the benefits of clean water to their health and well-being. Hence UWS may be classed as a 'merit good', one from which the consumer benefits to a greater extent than s/he realises.

These three features of UWS – natural monopoly, externalities and merit good – do not provide any argument in favour of direct public provision. However, in the event that direct provision is carried out by the private sector, they do provide a strong argument for public sector regulation in order to correct market failure and to counter possible divergences between private and social costs and benefits in UWS.

1.3 Urban water sector reform

In response to the problems created by this supply-driven approach, a growing consensus for reform of UWS has emerged in recent years among international financial institutions. This derived from two major international conferences – the International Conference on Water and the Environment (Dublin) and the United Nations Conference on Environment and Development (the 'Rio Conference') – both of which were held in 1992. The new consensus subsequently appeared in policy statements by the World Bank (in 1993) and the OECD (in 1994). At the core of this reform consensus are two fundamental principles:

- *the institutional principle* – that water management should be based on a participatory approach involving users, planners and policy-makers at all levels, with decision-making taken at the lowest appropriate level according to the concept of subsidiarity;
- *the instrument principle* – that water has an economic value in all its competing uses and should be recognised as an economic good. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources. An important corollary is that water companies should be treated as commercial enterprises.