PRIVATISATION OF WATER, SANITATION &

ENVIRONMENT-RELATED SERVICES IN MALAYSIA

Japan International Cooperation Agency (JICA)
Malaysia Office

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ABBREVIATIONS

5MP	Fifth Malaysia Plan
6MP	Sixth Malaysia Plan
7MP	Seventh Malaysia Plan
API	Air Pollutant Index
AQM	Air Quality Monitoring
ASMA	Alam Sekitar Malaysia Sdn Bhd
BOD	Biochemical Oxygen Demand
BOT	Build-Operate-Transfer
BT	Business Times
CAP	Consumer's Association of Penang
CAQM	Continuous Air Quality Monitoring
CIMA	Cement Industries of Malaysia
CO	Carbon monoxide
CWQM	Continuous Water Quality Monitoring
DARA	Development Authority of Pahang Tenggara
DBKL	Dewan Bandaraya Kuala Lumpur (Kuala Lumpur City Hall)
DDG	Dust Deposit Gauge
DoE	Department of Environment
DSS	Department of Sewerage Services
E. coli	*Escherichia coli*
EDC	Environmental Data Centre
EIA	Environmental Impact Assessment
ELSOS	Employee Share Loyalty Option Scheme
EPU	Economic Planning Unit
EQA	Environment Quality Act
ESOP	Employee Share Option Plan
ESOP	Employee-share-ownership plan
ESOS	Employee Share Option Scheme
FELDA	Federal Land Development Authority
ft	feet
GDP	Gross Domestic Product
GOEs	Government-owned enterprises/entities
HD	Hospital Director
HMOs	Health Medical Organizations
ICP	Inter-department Committee on Privatisation
IJN	Institut Jantung Negara (National Heart Institute)
IPOs	Initial public offering
IPPs	Independent Power Producers
IWK	Indah Water Konsortium
JB	Johor Bahru
JICA	Japan International Cooperation Agency

KA	Kualiti Alam
KCT	Kelang Container Terminal
KEJORA	Lembaga Kemajuan Johor Tenggara (South-east Johor Development Authority)
KETENGAH	Lembaga Kemajuan Terengganu Tengah (Central Terengganu Development Authority)
KL	Kuala Lumpur
LRT	Light Rail Transit
Ltd.	Limited
MAS	Malaysia Airlines
MAWAR	Malaysian Agenda for Waste Reduction
MBJB	Majlis Bandaran Johor Bahru (Johor Bahru Town Council)
MBO	Management-buy-out
MDJBT	Majlis Daerah Johor Bahru Tengah (District Council of Johor Bahru Tengah)
MICCI	Malaysian International Chamber of Commerce & Industry
MLD	Million litres per day
MMA	Malaysian Medical Association
MoH	Ministry of Health
MPPJ	Majlis Perbandaran Petaling Jaya (Petaling Jaya Municipal Council)
MT	Metric tonnes
NEP	National Economic Policy
NO/NOX/NO_2	Oxides of nitrogen
NRW	Non revenue water
NST	New Straits Times
NWI	Northern Wastes Industries Sdn Bhd
O_3	Ozone
PJ	Petaling Jaya
PLUS	Projek Lebuhraya Utara Selatan (North-South Highway Project)
PM_{10}	Particulate matter
PMP	Privatisation Master Plan
PWD	Public Works Department
RESP	Rural Environmental Sanitation Programme
RM	Ringgit Malaysia
SIA	Singapore International Airlines
SO_2	Sulphur Dioxide
SWM	Southern Waste Management Sdn Bhd
SWSAs	State Water Supply Authorities
THC/MHC/NMHC	Hydrocarbons
TMB	Telekom Malaysia Berhad
TNB	Tenaga Nasional Berhad
TSD	Treatment, storage, disposal

UEM	United Engineering Malaysia
UMNO	United Malay National Organisation
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program
UPM	Universiti Putra Malaysia
UVB	Ultra violet blue
WHO	World Health Organisation
WMI	Waste Management Inc.
WQI	Water Quality Index
WQM	Water Quality Monitoring

Executive Summary

The tables summarise the status of privatisation for each of the environment-related sectors. The privatisation in these sectors, however, are at an early stage, especially in solid wastes which is at preparation stage and water supply is at transition stage.

1. Privatisation in the Health Sector

Medical Supplies Distribution

Concessionaire	Remedi Pharmaceutical (M) Sdn Bhd
Former Institution	Petaling Jaya Medical Store
Year	1994
Mode	Sale of assets
Regulatory Body	MoH
Scope of Service	To source for and acquire medicines, and distribution to all hospital-based medical stores and hospital-based pharmacies
Payer	Government hospitals and clinics

Institut Jantung Negara

Concessionaire	*Institut Jantung Negara*
Former Institution	Cardio Thoracic Unit of the Kuala Lumpur General Hospital
Year in Operation	1993
Mode	Corporatisation
Ownership	100 per cent owned by Government
Scope of Service	Perform open-heart surgery and treat various types of cardiovascular diseases
System	Operating on a commercial basis, but with a welfare component, as subsidies are provided to the poor

Health Monitoring System for Migrant Workers

Concessionaire	Fomema Sdn Bhd
Former Institution	MoH
Year of Privatisation Announced	1997
Period	15 years
Regulatory Body	MoH
Scope of Service	To monitor medical examinations of foreign workers, and handle the process of collecting medical reports and sending them to relevant authorities
Coverage	Penisular Malaysia, Sabah and Sarawak
Payer	Employers of foreign workers

2. Clinical Wastes Management and Non-medical Services

Concessionaire	Faber Medi-Serve Sdn Bhd	Tongkah Medivest Sdn Bhd	Radicare (M) Sdn Bhd
Former Institution	Public hospitals and health and medical institutions	Public hospitals and health and medical institutions	Public hospitals and health and medical institutions
Concession date (wef)	1 January 1997	1 January 1997	1 January 1997
Period	15 years	15 years	15 years
Mode	BOT	BOT	BOT
Regulatory Body	Engineering Division of MoH	Engineering Division of MoH	Engineering Division of MoH
Monitoring Agency (Private company)	Sihat Sdn Bhd	Sihat Sdn Bhd	Sihat Sdn Bhd
Scope of Service	1. Clinical waste management 2. Facility engineering maintenance 3. Bio-medical engineering maintenance 4. Cleansing 5. Linen and laundry	1. Clinical waste management 2. Facility engineering maintenance 3. Bio-medical engineering maintenance 4. Cleansing 5. Linen and laundry	1. Clinical waste management 2. Facility engineering maintenance 3. Bio-medical engineering maintenance 4. Cleansing 5. Linen and laundry
Coverage	Perak, Kedah, Penang, Perlis, Sabah and Sarawak	Negeri Sembilan, Malacca and Johor	Selangor, Federal Territory of KL, Pahang, Terengganu and Kelantan
Payer	Government hospitals and institutions (for all services); private hospitals/ clinics – for clinical waste management	Government hospitals and institutions (for all the services); private hospitals/ clinics – for clinical waste management	Government hospitals and institutions (for all the services); private hospitals/clinics – for clinical waste management
Existing assets	Assets to Government	Assets belong to Government	Assets belong to Government
Labour	Absorbed 1200 govt staff	Absorbed 490 govt staff	

3. Integrated Waste Management Plan (Hazardous Waste)

Concessionaire	Kualiti Alam Sdn Bhd
Former Institution	None
Concession date (wef)	18 December 1995
Period	15 years (exclusive right)
Mode	Build, operate and maintain
Regulatory Body	Department of Environment (DoE)
Scope of Service	Provides complete waste management for collection of scheduled wastes from the waste generator's premises, transportation, and treatment to final disposal.
Coverage	Peninsular Malaysia
Payer	Waste generators

4. Solid Wastes

Concessionaire	Northern Waste Industries Sdn Bhd	Southern Waste Management Sdn Bhd	Alam Flora Sdn Bhd	Eastern Waste Management Sdn Bhd
Former Institution	Local authorities – municipal councils, district councils, and city halls	Local authorities – municipal councils, district councils, and city halls	Local authorities – municipal councils, district councils, and city halls	Local authorities – municipal councils, district councils, and city halls
Period	20 years	20 years	20 years	20 years
Mode	BOT	BOT	BOT	BOT
Regulatory Body	Local Government Department	Local Government Department	Local Government Department	Sarawak State Government and Sabah State Government
Scope of Service	Management and maintenance of: • store, collect, transport, treat, and dispose of wastes, • existing garbage disposal sites, • manage all cleaning operations, and • Plan, develop and operate new waste treatment plants and sanitary landfill sites	Management and maintenance of: • store, collect, transport, treat, and dispose of wastes, • existing garbage disposal sites, • manage all cleaning operations, and • Plan, develop and operate new waste treatment plants and sanitary landfill sites	Management and maintenance of: • store, collect, transport, treat, and dispose of wastes, • existing garbage disposal sites, • manage all cleaning operations, and • Plan, develop and operate new waste treatment plants and sanitary landfill sites	Management and maintenance of: • store, collect, transport, treat, and dispose of wastes, • existing garbage disposal sites, • manage all cleaning operations, and • Plan, develop and operate new waste treatment plants and sanitary landfill sites
Coverage	Perak, Kedah, Penang and Perlis	Negeri Sembilan, Malacca and Johor	Selangor, Federal Territory of KL, Pahang, Terengganu and Kelantan	Sabah and Sarawak
Take-over on interim basis	Still under planning to take over in Ipoh	Taken over MBJB and MPJBT areas	Taken over DBKL area and will take over MPPJ in May 1998	
Payer		MBJB and MPJBT in the interim period	DBKL and MPPJ in the interim period	
Existing assets		Purchased by the privatised company	Purchased by the privatised company	
Labour		Absorbed 713 city council workers	Absorbed 538 DBKL staff and will absorb more than 100 MPPJ staff	

5. Sewerage Services

Concessionaire	Indah Water Konsortium Sdn Bhd
Former Institution	Sewerage/Engineering Department of local governments
Concession date (wef)	9 December 1993
Period	28 years
Mode	BOT
Regulatory Body	Department of Sewerage Services (DSS)
Scope of Service	To manage and operate public sewerage systems and to refurbish, upgrade and build new sewerage facilities to increase capacity and improve efficiency
Coverage	Whole of Malaysia (144 local authorities)
Payer	Households, commercial, industrial and government agencies

6. Environmental Monitoring

Concessionaire	Alam Sekitar Malaysia Sdn Bhd
Former Institution	Air and Water Monitoring Unit, DoE
Concession date (wef)	April 1995
Period	20 years
Mode	BOT
Monitoring Agency	Department of Enviroment (DoE)
Scope of Service	To install, operate and maintain a network of 50 Continuous Air Quality Monitoring (CAQM) stations and 10 Continuous Water Quality Monitoring (CWQM) stations
Coverage	Peninsular and East Malaysia
Customers	Government and any interested parties
Assets	All new assets are purchased and financed by ASMA. ASMA will take over the manual air and water monitoring operations of the DoE.

7. **Water Suppy**

State	Operator's Name	Former Institution	Type of Operation	Status
Selangor	Puncak Niaga Sdn Bhd	State Water Supply Department	27/29 treatment plants	BOT (25 years) - privatisation announced in January 1998
Negeri Sembilan	NS Water Consortium	State Water Supply Department	Treatment and distribution	RM763 million (30 years) - privatisation by end 1998
Perak	Metropolitan Utility Corporation Sdn Bhd	State Water Supply Board	Treatment	BOT (20 years) and management contract - fully privatised by end 1998
Terengganu		State Water Supply Department	Treatment and distribution	Corporatised by end 1998
Malacca	Malacca Water Corporation	State Water Supply Board	Treatment and distribution	Corporatisation, eventually privatisation
Kelantan	Kelantan Water	State Public Works Department	Treatment and distribution	Fully privatised
Penang	Penang Water Corporation	State Water Supply Board	Treatment and distribution	Corporatisation
Kedah	Sisma Management Sdn Bhd	State Public Works Department	Treatment	
Johor	Syarikat Air Johor Sdn Bhd	State Water Supply Department	Treatment	BOT (20 years) and management contract - corporatisation in 1994
Sarawak	LAKU	State Public Works Department	Treatment	Privatised for Miri, Bintulu and Limbang
Sabah		State Water Supply Department	Treatment	Privatised for main towns
Labuan	Labuan Water Supply	Federal Public Works Department Headquarters	Treatment	BOT (13 years)

CHAPTER 1

A Study Of Privatisation In Malaysia: Introduction

1.1 Introduction

Malaysia is made up of two major land masses – Peninsular Malaysia and east Malaysia – separated at the nearest point by 500 km of the South China Sea. Peninsular Malaysia (which has a land mass of 132,750 sq. km) consists of the states of Johor, Kedah, Kelantan, Malacca, Negeri Sembilan, Pahang, Perak, Perlis, Penang, Selangor, Terengganu and the Federal Territory (Wilayah Persekutuan) of Kuala Lumpur. East Malaysia comprises Sabah, including the Federal Territory of Labuan (63,620 sq. km) and Sarawak (123,985 sq. km). Figure 1.1 shows the geographical location of Malaysia.

Malaysia is a middle income country. Its per capita GDP was estimated to be RM12,000 in 1997 or about US$3,200 (Economic Report 1997/98). The Malaysian economy has been experiencing high growth for nine consecutive years since 1988, with the average annual growth rate of Gross Domestic Product (GDP) exceeding 8 per cent per annum. On the basis of this indicator, Malaysia has been classified as a very successful developing country, dubbed as one of the upcoming "Asian Tigers". Indeed, in 1991, the Government announced the Vision 2020 Policy. The goal of Vision 2020 is for Malaysia to be a developed nation by the year 2020.

In the latter half of 1997, however, the Malaysian economy started to show signs of a downturn. The economy registered a GDP growth of 7.8 per cent per annum, a little lower than the previous years. This was triggered off by the currency crisis that affected Malaysia and the rest of South-east Asia in mid-1997, which subsequently led to the devaluation of the Malaysian ringgit. The Malaysian economy has since been experiencing a slowdown, with GDP growth for 1998 projected to be only 2 per cent to 3 per cent per annum (Far Eastern Economic Review, 2 April 1998). This is a steep decline in growth, compared to the previous years.

Adopting radically different policies in the 1980s, the Government has gone from very heavy regulation of the economy to one in which the private sector has been singled out as the main engine of growth. In that framework, the privatisation policy has taken on a very significant role in the development of Malaysia, especially in the past nine years, with a booming economy.

Privatisation's basic policy has accorded high priority to the welfare of employees and the principle used is that the affected employees are offered terms and conditions of service which are no less favourable than the existing ones. This is because employees are free to decide whether to be employed with the new company or to retire from service, for which, as a special consideration, pensions are immediately paid.

Other benefits to the employees are that they will be offered an immediate 17.5 per cent increase in their present salary and allowances, an additional salary increment and will be emplaced on the next higher salary point of their salary scale with the new company. In addition, opportunity might also be given to employees to own equities in the new company through such schemes as Employee Share Option Scheme (ESOS) or Employee Share Loyalty Option Scheme (ELSOS). Furthermore, the new company is barred from terminating the services of its employees within a period of five years except on disciplinary or health grounds (Zainuddin, 1997).

What then is so special about the privatisation experience of Malaysia? Has it been successful? And if so, in what ways? What were the problems associated with the privatisation effort? Is the so-called privatisation success peculiar only to Malaysia, in terms of. the institutional, economic, social and political context? Can one learn something useful out of this experience?

These are some of the questions that this study would seek to address. To obtain a better understanding of this experience, JICA Malaysia has asked for the study to focus areas that have environmental implications. JICA placed emphasis on the environment field because privatisation in this field is not a common practice compared to the power supply, telecommunications and transportation sectors. Thus, in this context, Malaysia case is the most challenging, especially in terms of the privatisation of environment-related services, among the developing countries. Hence, this study will examine Malaysia's privatisation experience in selected environment-related services in the urban sector of Malaysia. The study covers the following sectors:

- Health,
- Clinical wastes management and non-medical services,
- Hazardous wastes,
- Solid wastes,
- Water supply,
- Sewerage, and
- Environmental monitoring.

It should be noted that the disposal of hazardous wastes service is an exclusive case of privatisation. It is a build, operate and maintain concept which is different from the Build-Operate-Transfer (BOT) concept. It is included to better understand the Malaysian context for public sector involvement in private sector activities.

It is understood that other environment-related aspects are being considered for privatisation. They include environmental enforcement and the air surveillance service over the Melaka Straits for oil tankers, and special ships to desludge their wastes. While there are merits to the privatisation of certain services and infrastructure, it must be noted that it is not a panacea for development nor a cure for all ills in the country. A closer understanding of its benefits, costs and, more importantly, of its limitations will help in formulating better policies for development.

1.2 Objectives and Scope of Study

The two main objectives of this study are:

- To provide an understanding of the privatisation experience in Malaysia of selected environmental services in the urban sector; and
- To share this valuable experience with other developing countries and donor communities

This study examines Malaysia's privatisation experience in the seven environment-related sectors, namely, health, clinical wastes management and non-medical services, hazardous wastes, solid wastes, water supply, sewerage, and environmental monitoring. For each sector, the study reviews the situation prior to privatisation and the privatisation plan for each sector. It then analyses the status after privatisation, the key issues, costs and benefits, and the extent to which the privatisation objectives have been achieved.

In describing the privatisation plan for each sector, the study looks at aspects related to the mode and manner of privatisation in each sector, procedures and transitional process, institutional arrangements, the legislative and regulatory framework, as well as asset and capital investments and human resources.

It is to be noted that these privatisation efforts are still in the early stages of implementation. As such, any assessment or review of these efforts may or may not give the best results. A typical case where a review is only meaningful after a certain period has lapsed is the national sewerage privatisation project. In this BOT project, an assessment of the privatisation effort will yield better results after the privatised agency has had time to implement the project.

On the other hand, for an institution such as the National Heart Institute, the results can be fairly immediate, and an early assessment can point to some useful lessons. Hence, at best, this evaluation can only yield mixed results. Where the review is better carried out at a later stage, the study will still highlight the key issues involved, and leave the assessment of those indicators to other studies.

1.3 Methodology Adopted

This study is an update of the study of privatisation in Malaysia which was conducted for the JICA Malaysia Office in 1995. The number of sectors covered in this study has been increased to include two more sectors, namely, environmental monitoring and clinical waste management. Work on this study commenced in November, 1997 and was completed in March, 1998.

The methodology adopted for this study was as follows:

1. A literature review of Malaysia's privatisation experience. This review identified several evaluations conducted by the World Bank, the UNDP, the Malaysian Government, and academicians on the privatisation experience in Malaysia. The results of these evaluations are summarized in the next section.

2. Interviews with key respondents from government departments and the private sector. These interviews yielded sectoral information, in particular with respect to the privatisation efforts that were undertaken in those sectors.

3. Review of secondary sources of information such as government documents, annual reports, conference papers and newspaper articles.

The interviews with respondents proved to be a difficult task, and this was especially difficult with government agencies. The reception to this study has been rather mixed. In about half of the cases, we were unable to fix interviews with the heads of departments. But for the other half, many key respondents took pains to help the study team to understand the issues, concepts and manner of implementation better than was expected. A list of the key persons who provided information for this study can be found at the end of the report.

1.4 Literature Review

As mentioned above, several evaluations of Malaysia's privatisation experience have been conducted by the World Bank, the United Nations, the Malaysian Government, and local academicians. This section provides a summary of the main findings of these evaluations.

(a) The Government's findings[1]

The Malaysian Government published a short box story on the privatisation experience in the 1993/94 Economic Report. The main theme of this article is to highlight the benefits of the privatisation exercise that Malaysia has experienced since its launch 10 years ago. The government has managed to obtain proceeds from the sale of equity in government

agencies and institutions. In that period, the government earned a total of RM2 billion.

[1] Extracted largely from the Ministry of Finance, Economic Report 1993/94, Kuala Lumpur.

Other objectives that were achieved include increased efficiency, for example, in the case of Kelang Container Terminal (KCT) and the national airlines, Malaysian Airlines System. The Government also reported that its civil service staff has been reduced by between 50,000 and 60,000 employees. Additionally, the report claimed that the economy has been stimulated by the privatisation effort, and national economic and social engineering objectives have been fulfilled.

(b) World Bank's findings[2]

This report was actually based on several case studies initiated by the World Bank in 1991-2. These studies focused more on the firm level and covered the Malaysia Airlines (MAS), Kelang Container Terminal (KCT) and Sports Toto. The main findings indicate that the Malaysian privatisations are likely to be partial equity sales rather than complete sales. The government still holds shares in the privatised firms, and even though they hold only one share, the rights of that "golden" share entitle the government to veto any major decision of the firm.

In all three cases, privatisation has made overall gains, but these gains have been rather uneven to different stakeholders. For instance, in the KCT case, the main gain has been reaped by the Government. The government sold 51 per cent of its equity in KCT to a consortium of firms, principally controlled by Malaysian interests, for RM56 million. The World Bank concluded that the Government (including the KCT) was the principal beneficiary of this privatisation effort. The total gain was of the order of about 50 per cent of sales.

The story is different for MAS. In that privatisation project, the main gainers were foreign competitors. The MAS management and the staffing did not change after the equity sale and public offer. The Government sold 20 per cent of its equity and earned RM350 million from that. The joint flight arrangements with Singapore International Airlines (SIA), however is expected to favour the latter since they are more efficiently run, and would be able to reap greater benefits in any approved route sharing. Total gains for MAS was about 15 per cent to 20 per cent of previous years' sales.

For Sports Toto, the overall gains were slightly more modest, at only about 10 per cent. Competitors lost considerably in the privatisation project, while the gainers were both the Government as well as Toto's clients. The Government sold 70 per cent of its equity and earned RM30 million from this divestiture. As such, there was much more competition in this sector which had been controlled by state agencies.

The overall assessment of the World Bank is that there have been gains in productivity, where there has been a change in the management. In MAS, where there was no

[2] Extracted largely from Ahmad Galal and Mary Shirley (1994, eds). Does Privatisation Deliver? Highlights from a World Bank Conference, Washington, EDI Development Studies, and "The Malaysian Country Overview," a case study report to the Conference.

management change, the productivity indicators did not show up. On the question of efficiency, however there is much less information. Indeed, the main issue in privatisation appeared to be the concern of transferring shares, at below market prices, to bumiputeras. Hence, if the management is improved and the ownership is principally changed to bumiputeras, then this is a formula for successful Malaysian privatisation.

(c) UNDP's findings[3]

The overall conclusion appears to be that the privatisation experience has been favourable for these four sectors, with the point being that professional management has been critical in making that successful privatisation possible.

CIMA was a case of reverse privatisation. It was first a private company, which was then bought into by a State Government, and then subsequently privatised. After selling its stake to a bumiputera firm, which was owned by the United Malay National Organisation (UMNO), the ruling political party, its market credibility improved, and the firm was able to record better market performance.

As for Project Lebuhraya Utara Selatan (PLUS), its management was able to deliver the project 15 months ahead of schedule, principally a result of their assessment of the improved economy translating into demand for road transport. Their foresight, and commencement of work during a recession helped to generate economic growth in the construction industry. The completion of the North-South Highway changed the nature of competition in the transport sector in Peninsular Malaysia.

Telecommunications has been liberalised in Malaysia since the beginning of the 1990s, with the licensing of firms to provide services in this highly regulated sector. It was fortunate that Telekom Malaysia Berhad (TMB) had a large enough stake to fend off the competition, and was able to make productivity and efficiency gains in the process. Although the Government still owns 75 per cent of the stock, its management has been the exception, and that has made a difference in this privatisation experience.

The privatisation of the power sector has taken a toll on Tenaga Nasional Berhad (TNB). With a rise in competition, TNB has had to buy power from the national grid, just like the other Independent Power Producers (IPPs). Energy sales are based on efficiency, and TNB, having the oldest power equipment in the country, ended up having to come in last.

[3] Extracted from UNDP EPU (1995). "A Study on Privatisation in Malaysia: Impact on Competition, Productivity and Efficiency" by Anthony Bennett, Chang Yii Tan and Pun Kai Loon, 15 February 1995.

Besides this, TNB also fell from its pedestal when the country plunged into a series of power crises in 1991 and 1992, just before the major privatisations were announced. The IPPs are now expected to cut into TNB's profits as the power agreements are loaded in terms of efficiency rather than capacity or age.

In all the sectors studied, the nature of competition has remained very limited. Government regulation has been tight, despite privatisation, and this runs counter to the privatisation policy of "promoting competition". A counter example was to be found in the case of telecommunications, where many opined that there has actually been over-liberalisation; too many operators have been licensed in a domestic market that is too small for them to operate. As such, many expect a shakeout of the licensed players in this sector.

(d) "Privatising Malaysia: Rents, Rhetoric, Realities"[4]

Unlike the other reports, this book takes exception to the reported though qualified success of Malaysia's privatisation experience. Situating Malaysia's privatisation as part of a world-wide movement towards privatisation, starting with the Thatcher Government's efforts in the late 1970s, it argues that the privatisation is part of the "changed ideological climate of the eighties" favouring the private sector over the public sector to deliver on development promises.

The interesting parts of the book deal with the historical background of Malaysia, and the manner in which the state agencies have taken control of the development agenda. This has partly to do with its colonial history, the response of the political leaders to an export-oriented commodity-based economy, and the racially charged environment in the 1970s and 1980s. This background information provides the reader with insights into the complex politico-economic environment in Malaysia.

A variety of hypotheses emerges in the different chapters of the book. One of the main themes, however is the myriad of well-connected management of the privatised firms with the main political groupings. One of the main arguments in the book is the undervaluation of the firms' value in the privatisation exercise. Thus ‘friendly’ companies are those state-owned entities that have been bought cheaply in a one-off deal, and in the instances quoted, these are often on a ‘first-come-first-served’ basis, rather than competitively bidded. The claim in the book is that competition is a key component that determines efficiency.

In the many cases examined, however an increase in competition has not taken place. For the cases where there has been a rise in productivity, this has been questioned. The

[4] Summarised from Jomo K. S. (1995, ed). Privatizing Malaysia: Rents, Rhetoric and Realities, Boulder: Westview Press.

efficiency argument is also challenged, as the authors feel that it was associated more with management change and labour motivation rather than to a change in the firm's equity. The authors dispute these gains as superficial.

The problem with equity change is principally due to partial divestiture. Here, the authors argue that privatisation has not liberalised the monopoly status, especially in certain cases. The partial divestiture is something closer to the Japanese model, such as the telecommunications sector, tobacco industry, and Japan National Railway (Jomo, 1995: 51). This is quite unlike the British experience, which has tended to be full divestitures, rather than partial ones.

Having provided some insights into the nature of the criticisms made in the book regarding privatisation in Malaysia, it is important to bear in mind that the book does contain many relevant arguments. It tries to present a serious evaluation of the claims of privatisation. The basis for making some of the arguments are rather weak, with many of the authors appearing to rely on secondary materials, although such reliance does not necessarily render their arguments weak. As the government is in possession of the data, it could address the main issues by publishing a reply to these allegations with facts and figures. The Government, in responding to these points, would have cleared these doubts

Apart from these four major works, there have been a plethora of papers and articles in the press about privatisation. To date, however there has been no evaluation of the sectors that are associated with the environment. In that regard, this study will make a definite contribution to an assessment of privatisation in Malaysia, particularly with respect to the environment-related sectors.

1.5 Structure of the Study Report

This study report contains 10 chapters. Chapter 2 provides an overview of the privatisation experience in Malaysia, focusing on the concept, policy and practice. Chapters 3 to 9 are devoted to a discussion on the privatisation experience in the seven sectors covered in the study. The format for the sectoral chapters is roughly as follows. It begins with a background and pre-privatisation scenario. Next, it discusses the approach and mode of privatisation and this is followed by a discussion of the main issues and achievements of privatisation objectives. An assessment of the costs and benefits of privatisation is also made. A list of key persons who provided information for this study can be found at the end of the report (see Appendix A.4).

A summary of this report is contained in Chapter 10.

CHAPTER 2

Privatisation In Malaysia: Concept, Policy And Practise[1]

2.1 Introduction

The Malaysian privatisation policy was announced by Dr Mahathir Mohamad, Malaysia's Prime Minister, in March 1983. It was influenced and encouraged by the privatisation efforts taking place in many countries, particularly in the United Kingdom (Adam and Cavendish, 1995). Euromoney, a business magazine, claimed that "outside the UK, Malaysia's program of selling off huge chunks of the public estate is probably the most extensive of its kind in the world" (quoted in Adam and Cavendish, 1995).

Malaysia's privatisation policy marks a new approach to development and was intended to complement other national economic policies. The Malaysia Incorporated policy was one such policy which was concomitantly promulgated to increase the role of the private sector in the Malaysian economy.

This development occurred at a time when there was increasing dissatisfaction over the performance of the public enterprises. In that policy framework, the private sector would take on a greater role in Malaysia's development, and become its engine of growth. This emphasis was further strengthened as the Malaysian economy recovered from the impact of the mid-1980s recession. With a corporate businessman as Finance Minister, the role of the private sector was further enhanced since the mid-1980s.

This approach is based on a belief in the superiority of market forces over administrative fiat in achieving economic efficiency. Privatisation essentially entails the liberalisation of the economy, that is, allowing the entry of the private sector into areas where the state had carved out its own market niche.[2] It is, therefore, a strategy which involves the rolling back of government involvement with the aim of encouraging greater freedom, competition, efficiency and productivity.

The privatisation programme hopes to arrive at an optimum public-private sector mix in the economy that would enable the government to fully concentrate on its role as a facilitator and regulator of economic activities rather than the provider of goods and services.

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1 Adapted from PE Research (1995). A Study of Privatisation in Malaysia: Volume I.

2 For a more detailed discussion of the involvement of the public enterprises in the economy, see Adam and Cavendish, 1995 "Background."

2.2 The Concept

The heart of Malaysia's privatisation policy is encapsulated in the Economic Planning Unit's "Guidelines on Privatisation" published in 1985. The book details the objectives, identifies the sectors for privatisation, and outlines the administrative structures to be employed.

In the Malaysian context, privatisation is defined by the Government as "the transfer to the private sector of activities and functions which have traditionally rested with the public sector." This definition includes enterprises owned by the government and to new projects normally implemented by the public sector.

Privatisation involves the transfer of a public enterprise through sale of 100 per cent or less of its assets or shares (equities) to private shareholders as well as the transfer of a departmental entity or statutory body. Each method will involve three organisation-related aspects. They are:
(a) Management responsibility;
(b) Assets (with or without liabilities) or the rights to use assets; and
(c) Personnel.

Privatisation encompasses those methods which involves the transfer of at least components (b) and (c) and those methods which involve "the transfer of management responsibilities only if they have an impact on the economy". Contracting-in of private sector management expertise may or may not involve transfer of personnel. Minor-contracting-out of services by municipalities and other government departments are excluded from this definition.

When the privatisation is finalised, a concession agreement is drawn up and sign between the government and the consortia. The concession agreement is a legal document which specified the contractual agreement between the government and the consortia. It detailed the legal, financial, organisational, guarantees, social obligations, liabilities, and performance standards required of the privatisation.

2.3 The Rationale

Privatisation in Malaysia is formulated to achieve five specific objectives. They are:
(a) Relieve the financial and administrative burden of the government.
(b) Reduce the size and presence of the public sector.
(c) Raise efficiency and productivity and promote competition.
(d) Accelerate growth.
(e) Meet national economic policy targets, that is, reduce poverty, promote greater distribution of wealth to bumiputeras, etc.

Malaysia, with bumiputeras or indigenous Malays accounting for half of its population, launched its 20-year long New Economic Policy (NEP) in 1971 with the twin goals of redistributing wealth to the Malays and reducing poverty. One avenue that the Government has used to achieve the redistribution goal is by awarding privatisation projects to Malays. The privatisation policy stipulated that bumiputeras should hold a minimum of 30 per cent equity in all privatised entities.

Furthermore, efforts to increase direct and active participation of bumiputera were also implemented through the imposition of a condition in the concession agreement requiring at least 30 per cent of contract works to be reserved for bumiputeras. Hence, when a company or project is privatised, a non-Malay bidder often has to team up with a Malay or bumiputera partner in order to be considered for the tender.

2.4 Future Direction

A number of potential projects and services that are privatisable have been identified. The EPU has a rolling plan which has a two year mechanism. In the first year, projects are identified and privatisation may proceed; the second year involves the review of the privatisation effort. This cycle runs every two years, and by the third year, both review as well as identification run concurrently (see Section 2.5.2). The Works Ministry is apparently dissatisfied with the privatisation exercise of the water supply services and want a more comprehensive privatisation to encompass other aspects (BT; Jomo).

2.5 Privatisation Policy and Plan

2.5.1 Privatisation Master Plan (PMP)

The privatisation policy is implemented within the broader national policy framework, supported by other complementary policies, such as employment, capital market and fiscal policies (Privatisation Master Plan or PMP 1991). The aim is to phase out government involvement as much as possible and to allow the greatest amount of freedom in the market for the private sector while confining the government's activities in the economy to a minimum and intervening only to achieve certain national objectives. Where competition is not viable, regulation will be introduced to ensure that consumer interests are protected in terms of price, quality and availability of services (PMP).

Regulations will be constantly reviewed with a view to liberalising them. Intervention in the commercial decision will, however be avoided as this goes against the main objective of privatisation. Regulation will hence be restricted to the control of price increases and aspects of service quality only.

In the first few years the privatisation policy proceeded on an ad hoc basis. Aware of this

problem, the government in 1995 commissioned a study which produced the PMP for Malaysia. The study reviewed a wide range of government-owned enterprises (GOEs) which cut across functions of all levels of government, that is, federal, state, local authorities as well as government companies, to determine both their feasibility and desirability for privatisation. As a result, 246 public enterprises were identified as privatisable.

Selection of government entities to be privatised is determined by feasibility and desirability considerations, such as the economic viability, legal and regulatory amendments required and the priority the government attaches to a particular sector for change and the potential of the private sector in providing greater efficiency in delivering goods and services over the public sector. The PMP is essentially to put forward a coherent and integrated programme covering the entire spectrum of the GOE sector (Adam and Cavendish, 1995).

The main advisory body reporting directly to the Cabinet is the Privatisation (Main) Committee under the chairmanship of the Director-general of the EPU and consisting of the secretary-general of the main ministries (Finance, Energy, Communications and the Implementation and Co-ordination Unit). The executive body is the Privatisation Secretariat established within the EPU. This Secretariat, now called the Privatisation Taskforce, had only about 12 officers at the beginning of 1995. However, in view of the policy's increasing importance, staffing at the officer level has more than doubled. As at September 1995, there were 27 officers working in the Privatisation Taskforce.

Operationally, however, the Taskforce depends on the support of other technical departments to provide insights into issues, technical matters, administrative and legal constraints and even opportunities. In the evaluation process of any privatisation project, the relevant government agencies are coopted into the technical review committee. On the financial side, the Ministry of Finance has a very important voice in the assessment. The final assessment, however lies almost wholly with the EPU as they take the final proposals to the Cabinet.

Occasionally, the EPU relies on merchant banks and other financial and management advisers, especially in the larger privatisation projects. Here their experience will help to reduce learning costs, and enable the government to have a broader spectrum of advice and opinions.

2.5.2 Privatisation Action Plan (PAP)

The PAP represents a “more systematic and organised manner of policy implementation and is in consonance with the macro-economic policies and development strategy” (PMP, 1991). The PAP is guided by a PMP study, which was conducted in the early 1980s.

The PAP consists of a two-year rolling plan, which is reviewed at the end of each year, detailing the entities to be privatised and those to be prepared for privatisation based on a set of criteria. The annual review will take stock of the progress being made so as to determine the entities to be privatised in the next two years.

The size of the programme also takes into account the absorptive capacity of domestic capital market. This is to ensure that demand for capital to finance privatisation will not crowd out demand for capital to finance other purposes.

Potential privatisation entities are included each year of the rolling PAP if they are deemed to have potential to generate changes and benefits to the economy. These candidates can either be existing government entities or they can be new projects initiated by the private sector, for example infrastructural type, where their privatisation can bring about desired economic benefits.

2.5.3 Project Selection Criteria

Of the total of 424 projects reviewed by the consultants of the PMP study, only 246 entities were found to be privatizable. Not all the entities will eventually be privatised, however. A continuous review of the entities is being undertaken to include even those that were not covered by the PMP study.

The entities selected from the review exercises will be added into the rolling PAP after detailed privatisation studies have been conducted on each of them. These projects which have been identified by the government will be considered as government-initiated privatisation projects and thus subjected to competitive biddings. Proposals submitted by the private sector on its own will be considered, but they must contain unique features.

The feasibility and desirability of the GOEs for privatisation are determined by a number of factors. The feasibility criterion is based on factors such as the ease of privatisation (that is the necessary restructuring encompassing legal and regulatory changes required before an entity can be privatised), as well as considerations such as economic viability and growth potential of the candidate.

The desirability factor is determined by: (a)the priority attached by the government to a particular sector for economic development and changes; and (b) the possibility of greater efficiency by the private sector in the provision of goods and services over the public sector. Other considerations also enter into the decision-making process, and the list of objectives outlined in Section 2.3 are the most relevant.

GOE candidates for privatisation are divided into four categories based on the following criteria:

(a) ***Immediate privatisation***
Candidates in this category are ranked high on the feasibility and desirability criteria and are the primary focus of privatisation.

(b) ***Priority restructuring***
Candidates are high on the government priority list but are not so for the private sector or are difficult to privatise because some form of restructuring is needed.

(c) ***Back-burner***
Privatisation is feasible but benefits are less evident compared to candidates in categories (a) and (b) and thus privatisation will be put on hold.

(d) ***Consider future***
This category contains candidates which are ranked low in terms of feasibility and desirability and therefore privatisation will take place after the other candidates have been privatised.

2.5.4 Participating Corporate Criteria

Privatisation proposals submitted by the private sector are determined by its privatisability and uniqueness. They are considered on a 'first-come-first-served' basis and will be rewarded based on 'their innovativeness and ingenuity' and encouragement of entrepreneurship.

The general guidelines to determine the uniqueness of a project as outlined in the PMP are:

(a) The proposal contains a unique solution to an economic problem and offers a cost-effective method of solving the problem or offers to generate potential savings for the
Government (perhaps the case of Indah Water's multi-point sewerage system proposal is one such example).

(b) The private sector party may be in a unique position to effect a successful privatisation in view of its possession of certain patent rights or technical know-how which becomes an essential feature in a privatisation proposal (perhaps the case of Kualiti Alam's toxic and hazardous wastes is a good example); and

(c) The privatisation candidate would not be viable if privatised on its own and its viability is dependent on being linked to another component of which a private sector party is already in possession. In such a case, the privatisation of the project would be granted to the private party who is in possession of the main component.

If the proposal does not meet the above guidelines, however it will be subjected to competitive bidding in which the project will be awarded by the government to the best bidder.

2.6 Methods of Privatisation

Central to the notion of privatisation is the transfer to the private sector of activities and functions generally under the responsibility of the government. There are various forms by which privatisation can take place. The methods being adopted in Malaysia are:

(a) ***Sale of assets or equity***

Sale of equity applies to government companies and result in transfer of all three organisation-related components, that is: management responsibility; assets (with or without liabilities) or the rights to use assets; and personnel. The sale can be either complete (a total transfer of government equity in a company) or partial sale (transfer of less than 100 per cent of equity). Most of the sales registered have been on a partial basis, except for *Syarikat Gula Padang Terap Sdn Bhd* (Padang Terap Sugar factory) and *Cawangan Percetakan Keselamatan* (Security Printing Branch). Where the sale of assets is concerned, it may or may not involve all three organisation-related aspects and apply to assets of any government organisation/company or entity.

(b) ***Lease of assets***

This involves the transfer of rights to use assets for a specified period in return for a fixed payment. The privatisation of the national abattoirs is one such leasing arrangement currently undertaken.

(c) ***Management Contract***

This method involves the transfer of management responsibility to the private sector for a fee and may or may not include transfer of personnel. The Semenyih Dam was given out based on a management contract in 1987.

(d) ***Build-Operate-Transfer (BOT) and Build-Operate (BO)***

These forms of privatisation apply to new projects whose development originally came under the domain of the public sector. Examples include infrastructure and utility sectors, such as roads and water supply projects, including the PLUS case for the North-South Highway and IPCO Sdn Bhd for the Labuan Water Supply project. At the state level, a typical example is Puncak Niaga Sdn Bhd/Taliworks taking over 27 water treatment plants in Selangor.

In cases where the BOT method has been adopted, the private sector constructs the facility using its own funds – thus saving the government investment expenditure – and operates it for a given time span (or concession period) before transfering the facility to the government at the end of the period concerned. During this period, the company or concessionaire collects revenue directly or indirectly, usually through a government institution.

Both methods are usually accompanied by the grant of a licence and/or a concession. While the form employed will depend on a case-by-case basis, the fundamental aim is that it should involve the maximum participation of the private sector.

2.7 Privatisation Process

The process by which a GOE is privatised are divided into three stages as described in the PMP:

(a) ***Commercialisation stage***

The first stage that an entity goes through is the commercialisation stage whereby user charges are introduced, followed by commercial accounting and commercial performance objectives. The principal aim here is to make the entity responsible for their revenues and cost. The user charge principle is aimed at getting rid of any subsidy element within the operations of the corporatised entity.

(b) ***Corporatisation stage***

The second stage is the corporatisation stage in which the necessary changes in the laws are made to facilitate the change in status of the entity as a government body to a company. This is a consequent step, and is necessary if the government wants to dispose and sell off the shares to private parties or to the public.

It is also at this stage that government assets and liabilities are transferred from the government entity to a company still owned by the Government but is operated on a commercial basis. Other changes are also made to enhance productivity and efficiency including the revamping of management, financial, operation and accounting systems and in the area of decision-making.

(c) ***Divestiture stage***

At the final stage of the process which, is the divestiture stage, the entire ownership of the corporation is transferred from the public sector to the private sector by either one or a combination of the following methods: (i) public sale; (ii) private sale; (iii) management buy-out (MBO)/employee share-ownership plan (ESOP).

A public sale is one where the shares are sold to the public at large. So far, the main approach has been to float the shares on the Kuala Lumpur Stock Exchange. The floatation of Kelang Container Terminal (KCT), Syarikat Telekom Malaysia, and TNB are good examples.
A private sale is usually a negotiated deal with one or several institutions or

individuals. The widely-publicised sale of a portion of the national airlines shares to Tajuddin Ramli of TRI Bhd is a good example; another is the sale of a substantial stake in Proton to Mega Corporation which is owned by the late Datuk Yahya Ahmad. MBOs have also been undertaken in the case of Kumpulan FIMA Bhd by Basir Ismail, Mohamed Noor Ismail and Mohd Fauzy Abdullah, and Peremba Bhd by Mohammad Razali, Abu Bakar Noor and Hassan Chik Abas.

2.8 Administrative Systems and Structures

2.8.1 The Administrative Machinery

The main advisory body for privatisation is the Inter-departmental Committee on Privatisation (ICP). Where ICP is the highest decision-making body at the official level regarding privatisation It comes under the chairmanship of the director-general of the EPU, which is responsible for the overall planning, monitoring and evaluation on the progress on the privatisation policy. It consists of the secretary-generals of the key ministries (Finance, Energy, Communications) and agencies such as the EPU, the Implementation Co-ordination Unit (ICU), the Treasury, and the Attorney-General's office.

2.8.2 Administrative System and Structure

The privatisation of GOE – both federal- and state-controlled – could either be initiated by the Government or the private sector. In the case of a government-initiated privatisation candidate, it is generally offered to the general public (via IPOs or initial public offerings) or to `specific target groups' through a closed-bidding system/tender (p\49) and subject to competitive bidding.

At the same the private sector is also encouraged to submit their own proposals for privatisation, and if they fit the criteria outlined in Section 2.5.4, then the government may negotiate with the privatised party on the proposals.

2.8.3 Government-initiated privatisation

Privatisation of federal GOEs is administered by the EPU. This central implementing body of the country's privatisation policy constantly and continuously reviews all government agencies and activities. It then identifies privatizable candidates which will then be included in a programme whereby in-depth study are conducted. Based on these studies, a two-year rolling action plan (in which candidates will be categorised according to the criteria in section 2.5.3) will be drawn up. This plan will then be deliberated by the ICP. The ICP will then put forward its recommendations to the Cabinet.

The responsible ministries will then extend invitations to the private sector to submit their

bids which will then be evaluated. The EPU takes over the evaluation of the bids, taking over the assessment by the technical and financial committees, and then tables the decision to the authorities. It will write out the award to the successful bidder by the appropriate ministry.

At the state level, similar procedures are adopted except that private sector-initiated proposals are submitted to the respective state secretariats. The bids are still evaluated for the technical and financial terms, and then, after due consideration, recommendations are put before the respective state governments.

2.8.4 Private sector-initiated privatisation

Proposals submitted by the private sector for privatisation are submitted to the EPU which will evaluate the proposals on a 'first-come-first-serve' basis and must meet the guidelines of privatisation and uniqueness. If the proposal is successful, a letter of exclusivity will be given to the private sector party concerned to conduct a feasibility study and submit a complete proposal to the EPU. If the proposal is found to be acceptable, the government will negotiate with the private sector party concerned and an award is given if an agreement is reached. A typical case is the toxic waste privatisation project, which will be discussed in this report.

If the negotiations fail, the project will be opened for competitive bidding. Arrangements will be made so that the original private sector party can be compensated accordingly for the cost incurred in conducting the feasibility study by the successful bidder.

2.8.5 Review Mechanism

The PAP is reviewed at the end of each year of the two-year rolling plan. During the review, an assessment is made on the progress of the privatised entities. A detailed plan is also drawn up indicating the entities to be privatised and those to be prepared for privatisation in the next two years. We have, however no understanding of this process. It is assumed that the evaluation will be based on the terms of the privatisation, especially whether the privatised body has complied with the terms of the award, and achieved the government's privatisation objectives.

2.8.6 Public Participation

In general, public participation in the privatisation programmes has been negligible in the formulation stages. During these stages, the Government does not consult the public directly, although it may use some form, often using indirect means to gauge public sentiment. Even if consultation had occurred, not enough details were given, such that

actual sentiments were often not brought to the surface. The prospective bidders for the privatisation tender would likely have used market research methods and techniques to

obtain data for tender preparation, financial analysis, etc. As such, the public's role can be said to be quite passive, in many instances they were not consulted directly.

When some privatisation project encountered objections, the Government had to step in to moderate, and some consultations took place. For instance, in the scheduled waste privatisation project, the Government had consulted the various industry associations, on the payments structure for scheduled wastes.

The Government's rationale for almost complete non-disclosure has been that such negotiation or bids are confidential from a commercial as well as administrative perspective. The Government has a legislation that protects official secrets from being made public.

2.9 Post-privatisation role of the Government

The Government will mainly take on the role of supervisor in the privatisation process (Business Times, 25 July 1995). It will limit its intervention in the economy when consumer interests are at stak, that is, in controlling price and quality of services while at the same time allowing the privatised monopolies the commercial freedom to improve efficiency and productivity, the two hallmarks of the privatisation policy.

The achievements of privatisation can be summarised as follows:

(a) ***Relieving the Government's financial burden***

First, the one-off proceeds from the sale of government interest in companies have helped to reduce government borrowing to finance expenditures. To date, the sale of shares and assets of government-owned companies has generated more than RM23.8 billion in terms of proceeds. Second, recurrent revenue from privatisation comes in the form of lease payments and corporate tax. Third, loan repayments have also been undertaken by some of the privatised companies, thus reducing the Government's debt exposure. This has, to an extent, helped to reduce the quantum of public sector borrowing to finance government expenditures (Zainuddin, 1997).

The Government saved RM7 billion and RM100 billion in operational and capital expenditure after the privatisation of: highways; disposal of solid waste; and electricity and water supply services since 1983 (The Star, 12 October 1997).

(b) ***Efficiency and productivity***

There are indications that privatisation has led to increased efficiency. Institut Jantung Negara (IJN) had shown an improvement in its productivity level after its corporatisation. The number of medical procedures handled per doctor had increased by 8 per cent from 667 procedures in 1992/3 to 721 procedures in 1993/4. Similarly, the number of procedures handled by the staff had also increased from 37 procedures per staff in 1992/3 to 48 procedures in 1993/4 representing an increase of 30 per cent (Zainuddin, 1997).

(c) ***Accelerating growth of the economy***

Privatisation increases the role of the private sector in national development and hence generates more economic activity and contributes towards higher economic growth. It has thus played a role in accelerating economic growth as privatised entities are profit motivated and are more flexible in pursuing corporate expansion goals.

Privatisation has led to economic growth in at least three ways. First, the efficiency gains as a result of privatisation has led to growth as more output is produced using lesser amounts of resources.

Second, resources that are released as a result of efficiency gains are being utilised for further corporate expansion. Third, growth has been generated in a more direct manner through various BOT projects which encouraged private sector entrepreneurs to invest in sectors previously the domain of the public sector. This has led to an enhanced rate of infrastructure project implementation at a time when the public sector is cutting back its development expenditure (Zainuddin, 1997).

(d) ***Reducing the size of the public sector***

As of January 1998, more than 103,000 employees of the public sector have been transferred to the private sector through the privatisation exercise. This does not include personnel of government-owned companies which are already functioning under commercial environment (Zainuddin, 1997).

(e) ***Redistribution of wealth to indigenous Malays (bumiputeras) and eradication of poverty***

In this respect, the privatisation exercise has helped to increase the bumiputeras' participation in the corporate sector. All privatised projects have at least 30 per cent bumiputera participation and Bumiputera promoters have played an important role in the development of new projects (Zainuddin 1997).

When a fully-privatised firm, having a proven record of profits, opts for public listing on the stock exchange, it has to divest part of its shares to stipulated Malay institutions or Malay businessmen, at par, and often below market value. This raises the equity and wealth of the selected Malays. In a public listing exercise, the general population can subscribe to the shares at below-market price. In this way, the public benefits from the successful privatisation of the project.

CHAPTER 3

Overview Of Privatisation In The Health Sector

3.1 Background

In Malaysia, the health and medical systems are changing rapidly. Medical services were traditionally provided by the government alongside a system of private physician clinics. Health care services were mainly provided by government agencies. A system of hospitals and health centres was established, serving both urban and rural areas. The Malaysian Government typically allocates slightly more than 4 per cent of its annual national budget to health care. In the 1997 Budget, the Government proposed an allocation of RM3.4 billion for the health care operating budget or 5.67 per cent of the total operating allocation of RM59.982 billion (Business Times, 30 October 1996).

Health care accounts for about RM2 billion of the development allocation. A total of RM2.6 billion has been allocated to further expand the facilities and improve the efficiency of health services for the Seventh Malaysia Plan period (7MP, 1996-2000). The development allocation and expenditure for health services during the Sixth Malaysia Plan (6MP) period and the allocation for the 7MP are shown in Table 3.1.

Table 3.1
Development Allocation for Health Services, 1991-2000 (RM million)

Programme	6MP		7MP
	Allocation	Expenditure	Allocation
Patient Care Services	2,070.3	1,943.2	1,831.6
Hospitals	1,537.0	1,447.8	1,159.7
Upgrading and Renovation	533.3	465.4	671.9
Public Health Services	293.6	280.2	655.7
Urban Health	66.5	62.2	183.3
Rural Health	131.8	123.2	400.0
Environmental Health	95.3	94.8	72.4
Other Health Services	134.5	128.3	162.7
Total	2,498.4	2,351.7	2,650.0

Source: 7MP, 1996-2000: 551

There has been an increasing involvement of the private sector in health care services. Even in the past, there existed a system of private medical clinics and hospitals complementing the health and medical services programme. Doctors in the private sector have normally outnumbered those in the government service.

Since 1971, the Government regularised the private hospitals through the Private Hospitals

Act. The more lucrative private sector health industry, growing at phenomenal rates in the last 10 years, has pinched valuable staff and skills from the public service. Nonetheless, the investments made in private health care have also been very significant.

Government hospitals have typically had to handle diverse functions besides just providing health care, such as laundry, catering, grounds maintenance, dentistry, pharmacy, medicine distribution, equipment maintenance, among others. For some time, the Government had contracted out some of these services, such as laundry and catering. With the 1985 privatisation push by the federal government, the Ministry of Health (MoH) also examined whether they could privatise other segments of the hospital and medical (both clinical and non-clinical) services.

Areas of privatisation considered by the Government include:

- Privatisation of the Petaling Jaya Medical Stores, a former department within the MoH supplying medicines and supplies to hospitals and clinics;
- Privatisation of the non-medical support services in hospitals, which include management of clinical wastes, maintenance of bio-medical equipment, laundry and linen, building and facilities management, and cleansing services, which includes disinfecting wards and operating theatres;
- Corporatisation of the National Heart Institute or *Institut Jantung Negara*, in 1993;
- Privatisation of health/medical screening and monitoring of migrant workers;
- Proposed privatisation and relocation of the Kuala Lumpur General Hospital;
- Proposed health insurance scheme;
- Proposed ambulance and emergency services.

The early experience of privatisation in the MoH centred around the contracting out of various services, such as laundry cleaning for hospitals. This was essentially the common practice until 1985 when the federal government issued the official guidelines for privatisation.[1] The concept of privatisation in practice within the Ministry appears to be one where the direct impact on the people is very low. Basically, at this stage, the privatisation have been for services to the Ministry, rather than the direct "user pay" approach. As such, the direct impact on the public has been minimised.

The next few subsections discuss the privatisation experiences of the MoH.

[1] Malaysia's privatisation policy was announced in 1983, but only in 1985 were guidelines issued to all government departments.

3.2 Privatisation Experiences

3.2.1 PJ Medical Stores

The Petaling Jaya Medical Store (hereafter referred to as the PJ Store) was formerly under the jurisdiction of the Pharmacy Division of the MoH. Its functions were to serve the various drug needs of the country, namely, to purchase, supply and manufacture medical supplies (such as, medicines, surgical equipment, vehicles) on behalf of the Ministry.

In the 1980s, the PJ Store's function was to source for and acquire medicines, supplies and equipment for the entire Health Ministry. It then had a distribution network to various states and distributed supplies to them, via hospital-based medical stores and hospital-based pharmacies. It also had a manufacturing arm for products, such as tablets, fluids, galenical and sterile preparations, etc. (MoH, Annual Report, 1988:150).

Even before the PJ Store was privatised, several restructuring exercises had been undertaken by the Ministry. The PJ Store once supplied medicine and supplies to the state. The state, in turn, supplied to the state and district hospitals, which would then supply the health centres in that state. This arrangement was subsequently revised to one where regional stores were to be created and the PJ Store would subsequently distribute to these regional stores. While this exercise was still on-going, the Government decided that the medical store was to be privatised.

The basic concept of the privatisation effort was that the core services were to be privatised, namely the PJ Store. The periphery services, namely, the distribution at the regional or state or district levels were not affected by privatisation. With privatisation, there would no longer be any state stores as the privatised distribution would reach the district and health clinics.

In April 1994, the Health Minister announced that the Government had approved the privatisation of the PJ Stores (New Straits Times, 28 April 1994). Southern Task Sdn Bhd, a subsidiary of United Engineers (M) Bhd, was the legal entity awarded the contract. It was estimated that this privatisation was worth RM600 million. Annual revenues of RM50 million were forecast. Remedi Pharmaceuticals (M) Sdn Bhd became the official successful privatised company (The Star, 28 September 1995). The privatisation mode was a sale of assets (The Civil Service of Malaysia, p. 158).

MoH expects, as one of the benefits of the privatisation, the production of certain types of drugs. Remedi outsourced the production of certain drugs to local manufacturing plants. In addition to the manufacturing spin-off, the other benefit is a more efficient logistics operation.

Up until now, the Government appears satisfied with the service by Remedi. It feels Remedi has done its utmost in terms of providing effective and efficient services. An example is the improvement in service via the setting up of a computerised on-line

system in every government hospital. This is linked to Remedi's Klang head office. Remedi spent about RM11 million to RM12 million in one and a half years for this set-up. This enables Remedi to respond faster to its clients' needs.

The initial news of the privatisation was, however somewhat controversial. It was reported that the cost of drugs had escalated several-fold after privatisation.[2] The company justified the price increases on the basis that previously the government subsidised the cost of such medicines.

3.2.2 Non-medical Services

The Health Ministry put out a bid for the privatisation of five non-medical service components in 1993. These components were:

- management of clinical/medical wastes,
- Maintenance of biomedical equipment,
- Laundry and linen,
- Facilities management (which includes disinfecting wards and operation theatres), and
- Cleansing of the hospital premises, including landscaping.

According to newspaper reports, more than 100 firms were originally interested. Eventually 31 firms submitted bids for the privatisation of non-medical services to districts and general hospitals (New Straits Times, 29 October 1993).

The government's rationale for privatisation was as follows: it is dealing with many and different types of equipment suppliers and service providers. Each of these come with all kinds of procedures, service and terms of contract, and standards. Over time, managing these supplier became a major administrative and coordination burden. On top of this, there was the growing problem of increased workload for medical personnel in non-medical areas. To solve such problems as well as to keep the problem at a manageable level, the Government privatised the services to one or a few firms. They would pay only one fee, and expect the privatised management to provide not only the non-medical services but also the management of staff that would undertake the work.

The concession agreements with three consortiums were signed on 28 October 1996 and the take over date of all the services in all hospitals nationwide was 1 January 1997. The 15-year concessions are worth RM7.65 billion. The privatisation project is one of its kind in the world and the biggest ever health care privatisation project undertaken by any country in the world.

The privatisation was awarded to three parties, basically on a regional basis (New Straits Times, 28 July 1994). The BOT is a 15-year concession, on a five-year renewal basis. It

[2] The initial increases were reported to be 60 times their pre-privatisation prices. For instance, Pethidine prices rose from RM137 and RM167 (for 50mg and 100mg) to RM1,000 and RM1,400. Upon appeal, the price was reduced to RM250 and RM350. See Star 28 September 1995 "Bitter Pill." Pethidine is a pain killer.

involves the provision of support services to 123 hospitals and four institutions (Institute of Medical Research, Public Health Institute, National Pharmaceutical Control Bureau and the Health Education and Communication Centre) throughout the country – covering general, district and nucleus hospitals. The concessionaires are as follows:

(a) *Faber Medi-Serve Sdn Bhd* for northern and eastern Malaysia (Perak, Kedah, Perlis, Penang, Sabah and Sarawak) for RM269.8 million annually;
(b) *Tongkah Medivest Sdn Bhd* for the southern region (Johor, Malacca and Negeri Sembilan) for RM79.6 million annually; and
(c) *Radicare (M) Sdn Bhd* for the central region and East Coast of Peninsular Malaysia (Selangor, Federal Territory of Kuala Lumpur, Pahang, Terengganu and Kelantan) for RM149.6 million annually.

According to the terms and conditions of the concession agreement, the following is the requirement of the concessionaires:

- The concession holder will have to abide by the Technical Requirements and Performance Indicators and the Master Agreed Procedures as guidelines for implementation.
- Among the requirements are that the companies will have to achieve the ISO 9002 requirements by 2001, abide by various regulations, such as, Environmental Quality Act (Amendment) 1996, Occupational Safety and Health Act 1994 and Scheduled Waste Regulations 1989.
- The concession holder will also buy over existing facilities in the health institutions and provide infrastructure, such as clinical waste plants.

All concessionaires are supposed to link up electronically with the appointed monitoring agency, Kawal Selia, a private firm of the MoH. Performance standards and criteria for a whole range of parameters are on-line, and they are periodically reviewed at various levels within the MoH. The interviews conducted for this study indicated that the firms are still in the formative period of privatisation and are still ironing out the details and logistics of the service provisions.

Similar to other types of MoH privatisation, the MoH is contracting out services to these three firms. The MoH will pay these firms for services, and in turn, they will charge the public according to approved government (legislated) rates.

A more detailed discussion of the privatisation of non-medical services, particularly clinical wastes management is found in Chapter 4.

3.2.3 Corporatisation of the National Heart Institute (IJN)

The National Heart Institute (IJN) was built to replace the Cardio Thoracic Unit of the General Hospital. Currently, it is governed by a board of directors headed by the former director-general of the MoH, Tan Sri Datuk Khalid Sahan. The corporatisation brought about the formation of a new entity solely responsible for the management and administration of IJN. Thus, it is no longer under the purview of the General Hospital. It was operational in 1993. With this change, IJN is able to provide a more efficient service, and to retain specialist, medical, paramedical and support staff.

The basic problem with the IJN is similar to those that plague all institutions during periods of high growth: rapidly rising salaries of specialists from the private sector versus a stable salary structure in the civil service, thus leading to an exodus of specialists from the latter. The IJN corporatisation

was expected to address this issue by allowing specialist salaries to be paid as supposed to those provided for under the government scales.[3] In addition to more money, specialists also enjoy a higher prestige. Thus, via the corporatisation move, specialists are retained at IJN.

At the moment, the IJN is operating on a commercial basis, but with a welfare component, as subsidies are provided to the poor who need their services. The commercial consideration is the primary objective of the IJN. The IJN is 100 per cent owned by the Government, through the Ministry of Finance (MoF).

The IJN is supposed to follow a referral system, but gives priority to fee-paying patients, allowing queue cutting only in emergency cases for those who cannot afford full payment. Government hospital referrals are still accepted. The IJN started in 1990, costing about RM155 million in construction (6MP, 1991-1995: 349).

For the period 1992-5, IJN treated 120,188 outpatients and 18,904 inpatients, of whom 10 per cent and 25 per cent, respectively, were from the low-income group. In this regard, the Government contributed RM140.4 million as a subsidy for the low-income group and public sector employees. Of the total number of inpatients, 3,665 underwent open heart surgery. The Institute was also equipped with advanced equipment, such as gamma cameras and cardiac ultrasound machines, to assist in the diagnosis and treatment of patients (7MP, 1996-2000). Moreover, IJN will be encouraged to develop into a centre of excellence with a view to enhancing expertise in all aspects of cardiothoracic medicine. It will also be earmarked as a service for export to meet the rise in demand from neighbouring countries.

The Government realises that IJN in KL has reached its full capacity and the number of heart disease patients are increasing. Hence, plans are being made to set up branches in

[3] For instance, specialists in government hospitals earn about RM5,000-RM6,000 per month (basic and without perks), but can earn up to RM15,000 per month at the IJN.

Penang and Johor Bahru. At present, only the branch in Johor Bahru is in operation. To accommodate the needs of the increasing number of heart patients, MoH plans to set up more branches.

3.2.4 FOMEMA (privatisation of health monitoring system for migrant workers)

The Government has privatised the monitoring of medical reports and examinations of foreign workers to Fomema Sdn Bhd. Fomema, a consortium formed between Koperasi Doktor Malaysia (KDM) and Anjur Dinamik Sdn Bhd, was awarded a 15-year concession.

Under the existing mechanism, medical reports are submitted directly to the Immigration Department, not to the MoH. Hence, the health records are filed away without scrutiny and monitoring. It is, thus, possible that certain diseases could spread quickly without detection. Under the existing system, the MoH is required by law to detect foreign workers infected with certain diseases. There were 1.7 million foreign workers in the country as at the end of 1997

(New Straits Times, 25 November 1997). Even though Malaysia is trying to reduce the number of illegals, the problem is still a very big one. Weaknesses in the existing mechanism should be rectified to curb the spread of communicable diseases.

Fomema does not conduct any medical examinations but handles the process of collecting medical reports and sending them to relevant authorities, such as the Immigration Department. Thus, Fomema is the monitoring and administration agency for the medical examinations of foreign workers. Therefore, private doctors who are conducting the medical examinations will have to register with Fomema. These services are charged according to the breakdown shown in Table 3.2. Under this scheme, employers of foreign workers will have to pay RM180 and RM190 to conduct medical examinations for male and female workers, respectively.

Table 3.2
Fees Breakdown

Service	Fees (RM)
Doctors' fees	60.00
Laboratory examinations	65.00
X-Ray	25.00
Computerised medical certificate	5.00
Pregnancy tests for female workers	10.00
Service fee for Fomema	25.00

Source: Sunday Mail, 30 November 1997

Several elected Members of Parliament felt that the fees to be imposed by Fomema for carrying out the medical examinations and laboratory tests were exorbitant compared to charges of private medical practitioners. As an example, Fomema charged RM65 for each laboratory test but other privately-owned laboratories charged only RM23 to RM35 per

test (New Straits Times, 25 November 1997).

Due to complaints over the excessive fee structure, the Cabinet had agreed to a reduced charge for the examination of foreign workers from RM220 to RM190 for females and from RM205 to RM180 for males (Business Times, 1 December 1997).

The Malaysian Medical Association (MMA) also expressed concern that the decision to allow employers to choose their own doctors to conduct medical examinations might lead to abuse, as in the past, and might adversely affect the system of monitoring. (Business Times, 1 December 1997).

Up till 17 November 1997, Fomema has registered 935 doctors, 28 radiologists and 117 laboratories (Business Times, 1 December 1997). Some 350 doctors have also signed up bringing the total to 1,435. Fomema currently has 12 branches in Peninsular Malaysia. Branches in Sabah and Sarawak are expected to be opened in January 1998 (Sunday Mail, 7 December 1997).

Again, this privatisation is one where the costs are passed directly to the consumer, as the sponsors have to pay for these costs. The issue appears to be one where there are perceptions that the charge is above market rates, and that Fomema is taking advantage of its monopoly position.

3.3 Other Proposed Privatisation Plans

One of the key issues for the MoH is how to pay for the high health costs. Contrasting the huge costs of health care (see Section 3.1), the revenues earned by government clinics and hospitals comes to RM60-RM70 million annually, or about 2 per cent of the annual budget.[4] With a population that has been increasing at about 2.5 per cent annually for the past 25 years, budgetary allocations have not kept up. Hence, there is likely to be a strain on the Health Ministry's budget. Along with this is also the perennial problem of staff shortages.

As such, the Health Ministry has examined various options of providing health and medical services to the public. It has examined various models, such as those in Canada, Japan, the UK and the US, since 1984 and commissioned a health insurance study in the 1980s. Health financing issues are, however rather complex because of the people's expectations (resulting from low charges since the 1950s), and income and affordability levels.

The Government has already instituted a number of supply-side policies, such as liberalising and stimulating the development of the medical services, to cater to those who can afford it. At the same time, it has also tried to bring higher standards of professionalism in the health care services. This cannot, however continue unless there is a demand shift as well.

[4] Earlier, the government earned about 5 per cent of total expenditures. Because of the rapid rise in health allocations, especially since 1993, the proportion has dropped to around 2 per cent.

The subsidised portion of the health care services would have to change. One of the key areas for that to happen is in health care financing, in particular, health insurance. Health insurance is being studied as a possible privatisation option. The Malaysian situation and conditions would have, however to be incorporated into any privatisation plans.

It was reported recently that the Government is considering the privatisation of ambulance services. There is no documentation of this in the official documents available to the study team. The rationale appears to be that ambulance services could be improved further if it were adequately financed. It is not at the moment. No decision has been made yet. The issues and rationale for this privatisation option are not clear.

3.4 Key Issues

Several issues loom large in the privatisation of health and medical services. First, the issue of subsidised health care. Providing quality health care requires resources and adequate finance. Currently, the Government is recouping only 4 per cent of the costs through charges.[5] The present health care system is heavily subsidised. As such, privatisation must address the issue of subsidised health care. The Ministry is considering various financing options, including raising health care charges and health insurance, among others.

Second, escalating health care costs is one of the principal issues in the health care industry. Even in the United States, there is a problem with cost containment because of the involvement of the insurance industry. Although the scale of costs is still relatively small in Malaysia, this issue has already become a problem, relative to incomes earned. Much of the privatisation efforts has been to moderate the cost increases. That has meant that the Government has been the middling agent absorbing costs while providing quality services. At some point, all this will have to be paid for, and it can only come out of higher taxes or passing the cost onto consumers.

With escalating costs, the issue is whether the poor can afford to pay for adequate health care. Although Malaysians have become wealthier over the past few years, there are still significant numbers of poor families and households. How would these people pay for health care in the future, especially if privatisation takes a larger share of the health care industry? In an attempt to reassure the people of the Government's good intentions the Health Minister has said that the Government would be studying all aspects of privatisation, and has indicated that the hospitals would not all be privatised, if privatisation were associated with an increase in the cost of health care. As such, health care affordability is

[5] The national health budget for 1988 was recorded at about RM1.26 billion, and has remained within such range for several years (MoH, Annual Report 1988: 19). Whereas, the revenue that has been collected by the MoH was estimated to be RM49 million in 1992 (*Kerajaan Persekutuan, Laporan Ketua Audit Negara 1992*: 87). Although not strictly comparable, the order of magnitude for revenue over budget is estimated to remain the same, and is estimated at 4 per cent. The Minister of Health reported that the Government bore 95 per cent of medical costs (New Straits Times, 16 June 1994).

another critical issue for privatisation.

Another issue is brain drain from government service. The IJN privatisation was crafted to stem the outflow of specialised skills and personnel into the private sector. Government surgeons are paid between RM5,000-RM6,000 per month, compared to RM20,000-RM40,000 per month for surgeons in the private sector. IJN pays about RM15,000 per month for surgeons. Even adjusting for certain perks that the civil service offers to specialists, there is still a wide gap between the private and public sectors.

Given the economic situation, the shortage of doctors and medical personnel in the public sector will become even more acute. As is evident from recent trends, doctors are leaving the medical service to join private hospitals or open up private clinics. Specialists are also leaving the public service, and these are real issues in the Government's ability to provide adequate health care.

Another issue relates to managing a service that is increasing in complexity. Given government rules and procedures, managing logistics and pharmaceutical supplies, for instance, has become not only costly but also administratively cumbersome. Hence, privatisation could address such management matters more efficiently, and probably more cost-effectively.

3.5 Costs and Benefits

The privatisation efforts at the MoH have been rather recent. A serious assessment of performance must await a reasonable period of time before the exercise can be properly judged on its merits. At the same time, proper indicators are needed to measure productivity and efficiency, economic growth stimulus, achieving national economic policy objectives, and providing health care at reasonable cost. In its absence, we provide general impressions of the privatisation efforts that have taken place in the health and medical sectors.

As for the PJ Store, this former federal institution was quite well established at the time of privatisation. Its operations were being revamped to improve its service. The privatisation exercise was intended to improve on its service to get the drugs to hospitals in an efficient

and cost-effective manner, as well as to stimulate the manufacturing of pharmaceuticals. Efficiency has to do with a smooth logistics operation supplying the required drugs in right amounts at the specified locations and in the time that they needed them. It appears that the MoH does not have any problems with this aspect of the operations. Cost effectiveness has to do with doing away with government procurement procedures, which require a tedious process of calling for quotations. The alternative for the MoH, thus, has been to keep high levels of stock. Hence, the Government viewed privatisation mainly as a way to get around these problems.

Despite the above advantages, this privatisation exercise is not without its limitations. First,

it is not clear whether privatisation would dampen competition in this industry, since the Government would not purchase any more drugs from other suppliers. Second, the issue of the impact of privatisation on the cost of drugs and the benefits to Government is still controversial. Already there are some signs of cost increases for drugs and medicines. Third, there have been complaints from doctors in rural hospitals and clinics that the supply of medicines has been poorer than before privatisation. We must admit, however that these are isolated instances, and in very remote places. These are very difficult issues to deal with, as there are no universal indicators to assess the performance of the privatised entity. At this early stage, it is difficult to say whether this is a general trend.

In so far as the IJN is concerned, initial reactions are that the corporatisation has been well received. The Government is in a better position to offer medical specialists a better salary and remuneration, and thus retain specialists in public service. Heart transplants will cost more but there are subsidy schemes in place for the poor. It is possible to argue that with this kind of subsidy, the service has become more efficient, although such a conclusion would need to be assessed a little more carefully.

As for the non-medical services, the main benefits would appear to be to move towards a more professional medical and health service, where the medical staff can concentrate on their jobs and function, and leave the non-medical aspects to experienced managers. In addition, a cradle to grave system is being developed for clinical wastes, and in terms of health and safety concerns, a major achievement has been made in terms of gaining the recognition of the World Health Organisation (WHO). It would be a world class system, if the kinds of standards set to date are attained.

As for the privatisation of the P.J. Store, the main benefit appears to be the creation of a more efficient distribution system. Distribution of drugs is a logistics issue, and maintaining reasonable inventory levels will save on costs and cut down on wastes. These are areas where the public sector is weak in. Hence, on paper, this appears to be a good exercise in privatisation.

One of the objectives that the Ministry was concerned about is the direct impact of privatisation on the public. For the moment, the four privatisations to date are moderated by the Ministry. Hence, the Ministry has to pay the concessionaires, as it appears to be

contracting out those services, rather than charging patients directly. The Government will, however have to consider raising charges to more realistic levels, if it is to follow the "user pays" principle. During times of high economic growth, raising charges may not attract as much protest as when the economy is stagnating or contracting.

Nonetheless, the Government will have to contend with the issue of low recovery of health costs through charges levied by hospitals and health centres. Current revenues amounting to only 4 per cent of costs is not sustainable on a long-term basis. A more equitable level must be found, without exacerbating the economic slowdown.

The other issue is the monopolistic or near-monopolistic position of concessionaires in the various health sectors, such as Remedi in pharmaceuticals distribution to government

hospitals (monopoly) or the three concessionaires in non-medical support services. A situation of that nature has little incentive to reform. Creating more competitive conditions would enhance the service of such firms in the health care industry.

3.6 Lessons for Other Countries

The Health Ministry's privatisation efforts is supervised by a privatisation committee. It comprises a few divisions, viz. medical, finance, pharmaceutical, and engineering. The secretary-general of the MoH heads this committee, which screens all privatisation possibilities and examines how the services offered by the Ministry can be made more effective.

There is, however a general absence of information about the committee's work: the criteria or standards that are used to identify services for privatisation; how privatisation is being monitored; and what roles are played by which institutions in the process. Details of privatisation concessions are seldom made public. It is, however of some comfort to know that there is a framework for regulation, even if the information and assessment is not in the public domain. Many other countries

would require a higher level of transparency, but Malaysia is quite happy with this kind of internal review and assessment. Our recommendation is that it should fit in with each country's context, but greater transparency would likely yield higher accountability. That is a desirable goal in itself.

A detailed implementation plan and a vision of health care service objectives and goals would be important ingredients for privatisation. The performance and standards should be clearly specified and the regulatory institutions ought to be able to carry out their work well. While privatisation can improve on the quality and performance of the health care industry, there is a need to ensure that these improvements, and even the existing service, could be properly paid for. This is perhaps the next step – to devise privatisation plans such that they

meet demand expectations and are capable of being financed on a sustainable basis. The Malaysian Government is thinking of a financing plan for health care. That kind of approach needs careful design so that the people can enjoy the full benefits within a reasonable cost framework.

Privatisation programmes, if properly designed, can yield benefits. One good example is the clinical waste management system. The private sector can develop world class standard incinerators and put in place a cradle to grave system. It will raise the finance and operate the system. The private sector can also be more effective in areas such as logistics and facilities management, and in maintaining reasonable levels of inventory and cut down on costs. The IJN corporatisation, which tries to stop brain drain, is another good example of using privatisation to good effect and to ensure that skills are still retained by the public sector.

The examples in Malaysia appear to address key issues in public service provision of health care. Nonetheless, it is important to bear in mind that privatisation is costly. The Government should not have to bear the full costs, but costs should be able to be distributed to those who can afford them; a "user pays" principle would be best to apply wherever it can be done. Private sector monopolies should preferably not be the end result of privatisation as greater competition usually goes in the direction of better service, and better value for money. Developing a regulatory institution should be a priority action as well as providing it with adequate resources and finance, and putting in place the legislative instruments to enable it to do its work well.

CHAPTER 4

Clinical Wastes Management And Non-Medical Services Privatisation

4.1 Background

Hospitals and other health care institutions and facilities are an important part of modern society. In many ways, a hospital is a small human settlement. While the primary function of a hospital is to provide medical care and services, there are also a range of non-medical services that need to be provided to ensure that hospitals are run efficiently and hygienic standards maintained. Non-medical services, such as cleansing and laundry services are a crucial component of hospital administration. Another critical element in hospital administration is the management of clinical wastes, which has increased in complexity with the emergence of deadly diseases and the introduction of more advanced medical technologies. The rapid advancement of health care technology and practices also require good engineering maintenance support.

Non-medical services in Malaysia include the following:

- *Clinical waste management*, which involves the collection, storage, transportation, incineration and disposal of clinical waste in an environmentally-friendly manner;
- *Facility engineering maintenance* services, which cover the maintenance of mechanical and electrical engineering systems and plants, civil engineering works, including building of roads, drains, water supply, sanitary plumbing and sewerage systems, as well as grounds maintenance, landscaping and pest control;
- *Bio-medical engineering maintenance* services, which include engineering maintenance services of the operating theatre and all medical diagnostic, therapeutic, laboratory, radiology and electronic equipment, together with spare parts;
- *Cleansing* services, which cover janitorial services, such as cleansing of wards, clinics, operating theatres, laboratories, pharmacies and other areas; and
- *Linen and laundry* services, which include collection, laundering, finishing treatment, repairs, distribution, linen supplies and management of linen items.

Among the non-medical services, clinical waste management has become an area of increasing concern, particularly with the emergence of deadly diseases, such as AIDS and Hepatitis B. The World Health Organization (WHO) has initiated a number of activities to improve hospital waste management, particularly in developing countries.

In Malaysia, the Government has been considering the possibility of setting up a clinical waste management system to ensure that clinical wastes are properly treated and disposed of. As clinical wastes have a major impact on environmental quality and health, some attention will be given to this issue in this chapter.

Clinical Wastes

Clinical wastes are defined by MoH as: (a) any waste which consists wholly or partly of human tissue, blood or other body fluids, excretions, drugs or other pharmaceutical products, swabs or dressing, syringes, needles or other sharp instruments, being waste which unless rendered safe may prove **hazardous** to any person coming into contact with it; and (b) any other waste arising from medical, nursing, dental, veterinary, pharmaceutical or similar practice, investigation, treatment, care, teaching or research, or the collection of blood for transfusion, being waste which may cause **infection** to any person coming into contact with it. Because of the hazardous nature of such wastes, clinical wastes have been classified as scheduled wastes under the Environmental Quality (Scheduled Wastes) Regulations, 1989 (M. S. Pillay, 1997).

Clinical Waste Generation

The quantity of clinical wastes generated per occupied bed per day varies with the type of health care being provided. A survey was conducted by the MoH in 1992 on the generation of clinical wastes in public hospitals. The survey showed that that the generation rate of clinical wastes was about 0.75 kg per occupied bed per day in a general hospital, and 0.37 kg per occupied bed per day in a small district hospital. The survey also revealed that the average occupancy rate for general hospitals was about 70.6 per cent, while in a district hospital it was about 52 per cent. The Kuala Lumpur Hospital, being the national referral hospital, has a relatively high bed occupancy rate of 81.6 per cent With the total number of beds for general hospitals and district hospitals at approximately 13,359 beds and 22,790 beds, respectively, the total amount of clinical wastes generated from public hospitals is estimated to be 11,550 kg per day or 4,220 tons per year (M. S. Pillay, 1997).

Policy and Legislation on Clinical Waste Management

Clinical wastes, being hazardous, if not handled and disposed of in a satisfactory manner, will pose a health risk to patients, personnel, and the general public. Cognizant of this fact, the MoH has formulated a clinical waste management policy and guidelines to assist clinical waste generators to develop a proper waste management system. The policy and guidelines cover not only technical requirements but also define managerial responsibilities at all levels to ensure an efficient clinical waste management system.

The clinical waste management policy has been formulated based on the requirements of the Environmental Quality (Scheduled Wastes) Regulations, 1989.[1] According to these regulations, clinical waste is classified as scheduled waste under the first schedule of the regulations together with other wastes, such as pathogenic and quarantined materials, discarded drugs, except living vaccines and euphoric compounds.

[1] See Chapter 5: Hazardous Waste Privatisation for a discussion on regulations.

The regulations require the waste generator to ensure proper storage, treatment and disposal of such wastes. If the treatment or disposal facilities are located off-site, the Regulations require the wastes to be treated or disposed of at prescribed premises only. Transportation of such wastes for disposal at off-site disposal facilities requires proper documentation for tracking and source identification purposes.

The underlying objective of the Scheduled Wastes Regulations is to protect the environment in general and public health in particular. For this purpose, a "cradle to grave" control principle has been incorporated into the regulations. In developing a clinical waste management system for Malaysia, however, it was decided that while it is important to develop a technologically appropriate and financially viable clinical waste management (CWM) system to meet the objectives set out in the Scheduled Wastes Regulations, the nosocomial and occupational health needs as well as the socio-religious requirements should not be overlooked (M. S. Pillay, 1997).

Clinical Waste Handling Procedures

In general, clinical waste management involves various components such as segregation, storage, collection, transport, treatment, and disposal. Handling procedures and choice of equipment and facilities used have to be carefully considered to minimise and contain potential risk. The handling procedures are incorporated in the MoH's policy and guidelines on clinical waste management, which will be discussed in the following paragraphs.

- Segregation and storage

Waste segregation is the key to the overall efficiency of a clinical waste management system. Clinical waste should be segregated at the point of generation and placed in easily recognisable colour coded containers or bags. The recommended colour coding system is as follows:

* Black: General waste – collected by the municipal waste collector
* Yellow: Clinical waste for incineration only
* Light blue: Waste for autoclaving or equivalent treatment before disposal.

The bags/containers should be labelled to identify its source, and should conform to standards appropriate for the proper storage and handling. Internationally-accepted biohazard symbols should also be printed on the bags and containers to indicate biohazard characteristics of the content. Wastes from laboratories and post-mortem rooms or any other infectious wastes should be treated by autoclaving or chemical disinfection at the first available opportunity. After that it should be deposited in yellow bags or containers and then managed as clinical wastes. All yellow bags should be sealed with suitable plastic ties after the waste bag is about three-quarters full.

Sharp wastes, such as hypodermic syringes, needles, scalpel blades, and broken glass, should be segregated into containers. The containers should be puncture proof, and be able to meet technical requirements. Once it is three quarters full, the containers,

together with its contents, should, then be deposited into yellow clinical waste bags.

- Collection and transport

Collection should be carried out once daily or as frequently as circumstances demand, especially for high generation sources, such as labour rooms and operating theatres. The collector should ensure that all plastic bags are adequately labelled, and securely tied before collection and then deposited into specially-designed wheeled containers.

Waste collectors should be trained in all aspects of clinical waste handling. As part of written procedures, clean-up procedures should always be made available and understood by all waste collectors in case of accidental spillage. Waste collectors should always wear proper safety gear, and use appropriate equipment for the cleaning-up.

The transportation route within the hospital should be carefully designed to avoid health risks and disturbance. All routing for internal transport, wherever possible, should avoid passage through patient care areas, food preparation areas, and other clean areas as designated by the health care authorities. Collection time must also be carefully considered and collection during treatment rounds and or visit times should be avoided. Dedicated wheeled containers, trolleys or carts should be used to transport the bagged clinical wastes to the main storage area. These vehicles should be reserved solely for the transport of clinical waste. They should be thoroughly cleaned and disinfected immediately following each usage.

- Central storage

Clinical wastes collected from various departments in a health care facility should be stored in a central storage area prior to incineration. The storage facility should be equipped with a proper ventilation system, and be well lit. Such a store should at least be able to accommodate waste generated for two days. The facility should be covered and sited away from public access routes, and should be on well drained impervious hardstanding. All equipment for cleaning and disinfection should be made available and the facility should always be locked to prevent entry by unauthorised persons. under no circumstances, should such facility be allowed to store general waste or any other materials. The store should be cleaned and disinfected every day or following any spillage of clinical waste. Waste water generated from the central store should be directed to the sewage treatment plant.

- Transportation

Clinical waste to be incinerated at an off-site facility should be transported using suitable transportation vehicles. A safe system of transportation should be established to eliminate potential health risk and injury. Apart from the technical aspects of the

vehicles, the drivers should be well-trained in all aspects of clinical waste management, including contingency plans to deal with accidental spillage during transportation or when the vehicles are involved in an accident resulting in spillage on public roads.

The vehicles used to transport clinical waste should be fitted with a fully enclosed body lined internally with stainless steel or aluminium to provide a smooth impervious finish

for easy cleaning; all corners and angles should be covered to prevent lodgement of waste matter. The driver's compartment shall be separated from the load compartment. The load compartment should be provided with a ventilating system such as roof vents.

The vehicles should be thoroughly cleaned and disinfected immediately following any usage or spillage. Supply of a spill kit which should include plastic bags, protective clothing, cleaning tools and disinfectant should be available at all times in the vehicle to facilitate spillage management. The biological hazard label and the name of the haulier, together with the contact number, must be shown on the sides and rear of the vehicles to enable emergency notification. In addition, the waste transporter should obtain the necessary licence and permit from the Road Transport Department (RTD) and the DoE for the transportation of clinical waste as required under the law.

- Clinical waste incineration and disposal
  Incineration is the process by which combustible materials are burned, producing combustion gases and noncombustible residue and ash. The combustion gases are vented directly to the atmosphere after treatment in an air pollution control device. The noncombustible ash residue is removed from the incinerator system and is disposed of in a landfill. The landfill is managed by Kualiti Alam in Bukit Nanas. The landfill should comply with standards set by the DoE.

  For infectious clinical wastes, another major objective of the incineration process is the destruction of infectious organisms (pathogens) that may exist in the wastes. The destruction of the pathogen is caused by their exposure to the high temperatures of at least $1,000^{0}$C. Modern incinerators are equipped with a secondary combustion chamber where a temperature exceeding $1,000^{0}$C is maintained with a flue gas retention time of one second to two seconds to enable the destruction of any toxic gases.

  The hospital waste incineration process can be separated into the following steps:
  (a) Waste preparation;
  (b) Waste charging;
  (c) Waste combustion;
  (d) Treatment of the combustion gases, (that is, add-on air pollution control); and
  (e) Residue ash handling.

Waste heat recovery also may be included as a part of the incinerator system. An incinerator operates as a system in which all of the process steps mentioned above are inter-related.

4.2 Status before Privatisation

Before privatisation, non-medical services were managed by the hospital directors of general hospitals and district hospitals. Due to under-staffing and low budget allocations, many of these services, such as equipment maintenance, were contracted out. Many medical staff were also required to handle the non-medical support services. Without the assistance of the private sector, the Government could only cope with 15 per cent of clinical waste management, 45 per cent of cleaning services, 35 per cent of linen and laundry services, 45 per cent of facility engineering and maintenance services and 40 per cent of

bio-medical engineering maintenance services (New Straits Times, 23 April 1996).

Clinical waste management practices, in particular, have been found to be inadequate and not conducive for public health protection in general and nosocomial infection control in particular. A 1992 study by the MoH showed that 20 per cent of clinical wastes, including body tissue, was hazardous if not managed properly. Other materials –such as drugs and pharmaceuticals, hypodermics and other sharp objects – which were not properly managed also posed a danger to hospital staff, patients, visitors and the public. The study identified several shortcomings in clinical waste management practices which required urgent attention and redressal. They included the following:

- Lack of effective segregation of clinical and non-clinical wastes at source;
- Inadequate and inappropriate primary containment of clinical waste;
- Lack of any labelling of clinical waste to enable source identification;
- Use of inappropriate secondary containment devices (for example trolleys with sharp edges, opened-sided trolleys, etc.) for the movement of clinical waste;
- Inadequate cleaning of secondary containment devices used for carrying clinical wastes;
- No provision of appropriate protective gear and equipment for staff involved in the handling of clinical wastes;
- Lack of secure areas for the storage of clinical wastes prior to disposal;
- Inappropriate disposal of clinical wastes;
- Use of out-dated inefficient on-site incinerators with inadequate pollution control devices;
- Lack of training for all clinical and non-clinical staff in the field of clinical waste management (M. S. Pillay, 1997).

The need to provide efficient non-medical services, including clinical waste management services, thus resulted in the privatisation of these hospitals services nationwide in 1996. The privatisation of these services is seen as part of the overall effort to improve health care administration in the country. Furthermore, the privatisation effort would enable all

medical personnel to focus on what they do best. Privatisation would also reduce the administrative burden of the Government in having to manage and deal with the many suppliers and contractors of various non-medical services.

4.3 Privatisation Plan for the Sector

In October 1996, the Government signed concession agreements with three consortia selected to take over the management and provision of non-medical services to 123 public hospitals and four medical and health institutions (namely, Institute of Medical Research, Public Health Institute, National Pharmaceutical Control Bureau and the Health Education and Communication Centre) throughout the country. The mode of privatisation is the BOT concept, with a concession period of 15 years. This privatisation project is one of its kind in the world and the biggest ever healthcare privatisation project undertaken by any country in the world.

This RM7.65 billion project covers purchases of equipment, including incinerators, to

comply with the DoE's standards, and additional infrastructure for the setting up of national hospital support services that are at par with the world's best (Business Times, 23 March 1996).

The three companies which won concessions to manage all the five non-medical services by region are as follows:

- *Faber Medi-Serve Sdn Bhd* to manage northern and eastern Malaysia (Perak, Kedah, Perlis, Penang, Sabah and Sarawak)
  Faber Medi-Serve (FMS) is a newly set-up company, which is 51 per cent owned by Faber Healthcare Management Services Sdn Bhd, and is a wholly-owned subsidiary of Faber Group Berhad (FGB). FMS was awarded the largest share of contracts worth RM269.8 million a year, covering the states of Penang, Perlis, Perak, Kedah, Sabah and Sarawak. FMS has to service a total number of 71 hospitals, comprising 18,935 hospital beds and over half of the existing government hospitals in the country (Business Times, 29 October 1996). Under the agreement, FMS is to build and manage 14 incinerators to dispose clinical wastes. The scheduled date of completion of these incinerators is the end of 1998.

- *Tongkah Medivest Sdn Bhd* to manage the southern region (Johor, Malacca and Negeri Sembilan)
  Tongkah Medivest Sdn Bhd is a subsidiary of Tongkah Holdings Berhad, which holds 51 per cent. Tongkah Medivest was awarded contracts worth RM79.6 million a year, and to provide non-medical services to a total of 19 hospitals in the three states. Tongkah Medivest will be responsible for building and managing an incinerator for clinical wastes disposal that to service hospitals in the three states.

- *Radicare (M) Sdn Bhd* to manage the central region and East Coast of Peninsular Malaysia (Selangor, Federal Territory of Kuala Lumpur, Pahang, Terengganu and Kelantan)
  Radicare is a joint venture company between Asia Lab (M) Sdn Bhd which holds 51 per cent, and Realmild (M) Sdn Bhd with 49 per cent. Radicare was awarded a concession worth RM149.6 million a year (or an undiscounted value of RM2.2 billion). Radicare provides services to 37 hospitals in the central region.

Scope of Privatised Services

For each of the services to be provided, the three consortia are required to fulfil certain criteria.

Clinical Waste Management

The scope of services for clinical waste management includes the supply of consumables such as waste bins, containers for sharp wastes, and specially labelled collection bags by the concessionaires to the government hospitals. The management of clinical waste is designed as a whole package, from collection to transportation, right up to final disposal.

The concessionaires have to collect the segregated waste placed in the dedicated bins and containers in accordance with the agreed schedule. Segregation of clinical waste from general waste must be strictly implemented by the hospital staff. Collection and transportation of waste from the source of generation to the incineration plant is the responsibility of the concessionaires. The waste has to be incinerated and disposed of in accordance with all legal requirements. Any trolleys and vehicles provided and maintained by the companies to be used for such activities have to adhere to the MoH requirements and specifications as well as all other relevant legislative requirements.

Based on the implementation strategy adopted by the companies, a number of large regional incinerators and smaller on-site incinerators are being built throughout the country for the disposal of clinical wastes not only from MoH hospitals and institutions, but also from private hospitals and clinics. The incinerators are required to meet the emission standards set by the DoE. Details of the regional and hospital-based incinerators are shown in Table 4.1.

Handling of general waste (non-clinical waste) is at the segregation point only as the concessionaires will not be responsible for the collection and disposal. It will be collected by the municipal waste collector.

It is to be noted that the Bukit Nanas plant of Kualiti Alam Sdn Bhd[2] is not designed to handle clinical wastes, such as human tissue, blood, body fluids and other excretions, drugs or other pharmaceutical products, swabs or dressing, syringes, needles or sharp instruments which may be hazardous. As such, separate facilities will need to be set up
to treat and dispose of clinical wastes.
Besides providing clinical waste management to the government hospitals and institutions,

[2] See Chapter 5: Hazardous Waste Privatisation.

the concessionaires are unrestrained to market this service to private hospitals and clinics.

Biomedical Engineering Maintenance

Biomedical engineering maintenance servicing covers the preventive maintenance of hospital equipment on a regular basis and attendance to any breakdown within a specified response time. The uptime target set by the MoH, at 98 per cent for the first five years, must be met. Recommendations are to be made to the hospital directors and MoH on any equipment which needs to be replaced, while the decision to purchase is to be taken by the hospital directors and MoH.

Facility Engineering Maintenance

This service covers mechanical, electrical and civil engineering support vital for the smooth-running of operating theatres, blood and drugs storage units, intensive care units, haemodialysis centres and other critical areas of the hospital. The concessionaires are required to carry out routine inspections, and provide preventive and corrective maintenance services. A Quality Assurance Programme report is also to be submitted periodically to the MoH for monitoring purposes. Besides that, the consortia will maintain other hospital equipment such as trolleys, wheelchairs, office equipment, (including computer hardware), signage boards and furniture.

Cleansing

The concessionaires are to see to the general cleaning of the hospitals under their responsibility. It is done in accordance with the MoH's guidelines. In addition, other areas to be serviced by the respective concessionaires are corridors, staircases, lifts, public toilets, administration offices, stores, kitchens, dining areas, hostels, staff quarters and prayer rooms.

Linen and Laundry

The concessionaires are responsible for managing and supplying hospital linen items, such as bed sheets, patients' garments, operating theatre linen and other materials requiring laundry services. Apart from being washed, the linen is to be thermally-disinfected according to the United Kingdom Fabric Care Research Association standards and routinely tested for whiteness, chemical residue, tensile strength and bacteria count.

Asset and Capital Investment

In this privatisation exercise, the concessionaires do not take over any assets of the Government. Instead, they are required to manage and provide the non-medical services of the hospitals. The concessionaires have to raise the capital to finance the management of these services. Other assets, such as medical equipment, still belong to the Government.

Table 4.1
Location and Capacity of New Regional- and Hospital- Based Incinerators (new and existing) to be Operated by the Concession Companies

ZONE	INCINERATORS		
	Location	**Capacity**	**Area Served**
Southern	Bukit Rambai Industrial Area, Malacca	250 kg/hr with one other unit of same capacity as standby	All states of Negeri Sembilan, Malacca and Johor
Central and Eastern	Teluk Panglima Garang, Selangor	500 kg/hr	All states of Selangor, Pahang, Kelantan, Terengganu and Kuala Lumpur
Northern	Kamunting Raya Industrial Park, Taiping Langkawi Hospital	350 kg/hr 50kg/hr	All states of Perlis, Kedah, Penang and Perak, except Langkawi Hospital
Sabah	Kota Kinabalu Sipitang (existing) Tawau (existing) Labuan (existing) Hospital-based Sandakan Hospital (existing)	200 kg/hr 50 kg/hr 100 kg/hr 50 kg/hr 50 kg/hr	Kota Kinabalu (Mental & General Hospital), Kudat, Kota Marudu, Kota Belud, Tuaran, Ranau, Tambunan, Keningau, Tenom Sipitang, Lawas and Papar Tawau, Lahad Datu and Semporna Labuan Sandakan, Beluran, Kota Kinabatangan
Sarawak	Kuching Mental Hospital Sibu Hospital Daro (Hospital-based) Kapit (Hospital-based) Miri (Hospital-based) Marudi (Hospital-based) Limbang (Hospital-based)	200 kg/hr 25 kg/hr 25 kg/hr 25 kg/hr 100 kg/hr 25 kg/hr 25 kg/hr	Kuching Hospital, Kuching Mental Hospital, Leprosy Hospital, Lundu, Bau, Serian, Simunjan, Sri Aman Sibu, Betong, Saratok, Sarikei, Kanowit, Bintulu, Mukah Daro Kapit Miri Marudi Limbang

Source: Ministry of Health Policy for Clinical Waste Management, Seminar Towards A Cleaner Environment in Malaysia, 20 March 1997

Main Features of Concession Agreement

The general terms and conditions of the concession agreements include the following:

- The concession holder will have to abide by the Technical Requirements and Performance Indicators and the Master Agreed Procedures as guidelines for implementation.

- The companies will have to achieve the ISO 9002 requirements by 2001, abide by various regulations, such as Environmental Quality Act (Amendment) 1996, Occupational Safety and Health Act 1994 and Scheduled Waste Regulations 1989.
- The concessionaire will be required to take over existing facilities in the health institutions and provide new infrastructure, such as clinical waste plants (Business Times, 29 October 1996).

Regulatory Body

The regulatory agency for these privatised services is the Engineering Division of the MoH. The Ministry has, however, appointed a private consultant firm, Sihat Sdn Bhd, to monitor the performance of the three companies and provide feedback on the progress of the project. This is because the Ministry does not have adequate engineering manpower to handle such a massive project.

The Government is expected to spend RM10 million a year on a computer networking system to monitor the three concession holders (Business Times, 29 October 1996). The on-line information system will connect the Engineering Services Department of the MoH, the respective regional supervising officers and hospital administrators to Sihat Sdn Bhd and the three concession holders.

The MoH is also working together with the DoE to manage hazardous wastes generated by hospitals and clinics. The DoE regulates discharge and emission standards while the MoH will monitor the operations of the clinical waste disposal facilities set up by the three concessionaires. All clinical wastes will be destroyed in incinerators using a computerised system designed to meet the (DoE) standard for smoke emission.

Private Health Care Facilities Bill

To ensure that all hospitals establish a comprehensive and systematic clinical waste management service, the Private Health Care Facilities Bill has been formulated and will be tabled in Parliament in 1998. The bill will empower MoH to monitor whether hospitals design a systematic clinical waste management service.

Charges

The Government has agreed to pay for clinical waste management services, and linen and laundry services based on weight, and subject to certain performance standards. Fees have been agreed on for three of the five services for the first three years, after which they will be reviewed. The rate for clinical waste management, for instance, is RM5.20

per kg of clinical wastes for government hospitals. Private hospitals will be charged different rates. The payment of fees are, however, conditional upon the delivery of services that meet the standards set in the agreement. If the services do not conform with the standards set, a deduction formula would be applied.

Take-over Process

The consortia were given about two months to take over the services from all the government hospitals. They officially took over on 1 January 1997.

In the process of taking over, they had to deal with paperwork concerning the updating of the current status of the staff. Then they had offered to the staff the option to join, and provide training to these staff. In addition to these, they also had to review the condition of the assets that they were supposed to manage.

The take-over period was probably too short. The reason for the concessionaires agreeing to this shortened period was that they would not be paid during this period. Hence, they agreed to the two-months period. As a result of the shortened takeover period, the concessionaires had to learn quickly. In this case of privatisation, there was no interim period given to the consortia as in solid waste privatisation. The three consortia were expected to take over the full services.

4.4 Status after Privatisation

As mentioned above, three concessionaires have been awarded the privatisation contracts. The status of the privatisation efforts are as follows:

Faber Medi-Serve Sdn Bhd (FMS)

Thus far, FMS has taken over the management of four incinerators located in hospitals in Langkawi, Labuan, Sandakan and Sipitang. It has also built six incinerators in Kamunting, Sibu, Kapit, Daro, Limbang and Marudi. Two other incinerators located in Kuching and Kota Kinabalu are scheduled to be ready in early 1998. The cost of building these incinerators is RM16.5 million (Business Times, 14 November 1997). FMS's entire investment to date is RM30 million.

Human Resource

A total of 1,200 government staff, or about 90 per cent of the original staff, opted to join the FMS. The short privatisation period created some problems in the recruitment process. Standard compensation packages were given, comprising a small increase in salary, and guaranteed employment for at least five years. Their current staff strength is 4,000, the majority of whom were recruited outside of the MoH services. Engineers from India were hired to make up for the shortage of skilled labour. As with any transitional situation, operational and management problems are prevalent, but the FMS indicated that they are well beyond the learning curve.

Tongkah Medivest Sdn Bhd

Tongkah Medivest Sdn Bhd's incinerator plant is located at the Bukit Rambai Industrial Estate in Malacca. The RM13 million Bukit Rambai plant, located on a 0.8 hectare land, is equipped with state-of-the-art anti-pollution equipment and is claimed to be the first of its

kind in the country (New Straits Times, 21 March 1997).

The technology used in the incineration plant is from the UK and Australia. Its 250 kg/hour incinerator is equipped with a high temperature secondary combustion chamber and an air pollution control plant. It is capable of handling a bigger capacity if another air pollution control system costing RM3 million to RM4 million is built next to the plant. The plant started operations in December 1996, and already incinerates four tonnes to five tonnes of clinical waste a day (Business Times, 21 March 1997).

Besides government hospitals, Tongkah Medivest is currently also servicing 12 private hospitals in Klang Valley. It intends to market this service to other private hospitals in Ipoh and Penang. FMS and Radicare also send clinical wastes to this incineration plant. The private sector is charged at rates set by the concessionaires, and these are not bound by the concession agreement. A total of 490 staff from the government sector joined the company under the option scheme. In total, about 2,000 staff are now deployed to implement the service (Tongkah Holdings Berhad's Annual Report, 1997).

Radicare (M) Sdn Bhd

Radicare has set up its first incineration plant in Telok Panglima Garang, which is now in operation. Two additional incinerators are being built in Banting, Selangor. These two plants should start operations by September, 1998 (New Straits Times, 21 March 1997). The cost of setting up the incineration plant in Telok Panglima Garang is estimated at about RM20 million.

4.5 Key Issues

The key issues pertaining to the privatisation of non-medical services are as follows:

Clinical Waste Management

As mentioned earlier, incineration is the combustion of waste material at high temperatures to produce an inert ash, carbon dioxide, water and trace levels of pollution. It involves the total destruction of organic materials and pathogens present within the clinical and infectious waste materials that may be harmful. Incineration is not the only option for the disposal of clinical waste, but it has by far the greatest effect on minimising residues requiring landfill. In a UK study, it was estimated that 20 tonnes of waste (six to eight 40 ft trailers) will be reduced to 3 cubic metres of ash (Business Times, 21 March 1997). The cost of setting up an incineration plant is, however high.

Apart from incineration, landfill is the other alternative. Traditionally, this is the cheapest cost option. Rising health and safety standards have, however discounted cost considerations in such matters. Another method, autoclaving, involves the use of steam to kill bacteria present in clinical waste. It results in the generation of offensive odourous gases but, since the waste is not physically destroyed, there is a volume disposal problem.

The irradiation process, while odourless and effective, does not result in an effective volume reduction. Furthermore, the high capital cost and a negative public perception discounts such a process from being considered.

In 1997, a total of 3,000 tonnes of clinical waste was collected from 127 government hospitals and institutions by the consortia (New Straits Times, 19 March 1998).

Hospital Charges

The Government has announced that it will not raise hospital charges for the time being but the fees may increase later as the Ministry is reviewing its structure. (New Straits Times, 29 October 1996). In effect, as far as the clinical wastes portion is concerned, this is still the responsibility of the MoH and private hospitals. As such, the public would only feel the charges indirectly, as the hospitals would be paying directly for the disposal of such wastes.

There are, however, other larger issues at stake. The Health Ministry has fixed a budgetary allocation, and it must spend the tax payers' money in a way which maximises the services to the public. It is clear from the privatisation exercise that the concessionaires are providing a higher standard of health care, via agreed standards of performance. But this must also mean costs that are higher than previously incurred. The Ministry's plan is still to provide a health safety net for the less advantaged in society, in particular the poor and those in rural areas. For those who can afford, however the Government has approved a whole range of health and medical services that are provided by the private sector and, hopefully, the demand for better medical services will be met by the supply of better equipped and managed firms.

Affordability and Willingness to Pay

Needless to say, such a policy is premised on a willingness to pay and the affordability of the public. During times of high economic growth, such a public health strategy may be acceptable. In an economic slowdown, however the public, in particular the middle class, would come back to public hospitals if the cost of private sector health care is too high. If that were to be the case, then a situation of overcrowding in the public hospitals might emerge. This is to be expected if there is a high differential in pricing between public and private health care costs. Currently, there is such a differential because of the highly-subsidised nature of public health care.

4.6 Costs and Benefits

Cost to the Government

In strictly financial terms, the cost of the privatisation of the five non-medical services to the Government is RM7.65 billion, spread over the 15-year concession period. Annually, the Government will have to pay almost RM500 million annually to the three companies. This is about 15.4 per cent of the Government's operating budget for 1997 (calculated from

Economic Report 1997/98).

Overall Benefits

In terms of benefits, there are currently no measures at this stage. The World Health Organization (WHO) has commended the clinical wastes management system and, at the technical level, this is an achievement for the Malaysian health service.

Economically speaking, the real benefit is whether the investments that have been made are put into optimal use, and not left to lie idle. At this stage, it is too early to say. But there are indications that the MoH is keeping a close watch on the developments of this privatisation exercise, and that is likely to ensure that this privatisation is at least on the right track.

Competition

There is a certain amount of competitiveness built into the privatisation exercise to provide effective and efficient clinical waste management services, as their costs are known but additional benefits are for them to work for. They have to compete with each other to 'sell' their services to other private hospitals, and, hence, the level of charges will be competitive.

Tongkah Medivest Sdn Bhd is currently providing clinical waste management to 12 private hospitals in the Klang Valley and plans to market its service to other regions as well. A cartelised situation could, however emerge as there are only three operators. The regulatory agency will have to ensure that unhealthy collusion do not emerge. At the moment, the distinctiveness of the clinical waste programme is their high standards of performance and facility.

Reducing the Size of the Public Sector

With privatisation, the Government has seen a downsizing of 3,844 positions, with 2,681 staff transferred to these three companies. (New Straits Times, 29 October 1996). Many have opted to join the privatised firms because of higher salaries, and an assurance that they could keep their jobs for at least five years.

4.7 Summary Remarks

The privatisation of the clinical waste management system and the non-medical services is still at a very early stage. As such, a more detailed assessment should be made only after it has been allowed to run for a few years. Nonetheless, some important issues deserve to be highlighted.

For clinical wastes management, the concept of "cradle to grave" management system is worthy of emphasis. The privatised agency and the Government concerned should put in place a training programme at the front end to ensure that all staff, patients, visitors, and paramedics that come into contact with such wastes know how to handle them, as they are the generators. It is important that there be adequate documentation to ensure that the wastes are separated, packaged, stored, and transported to their designated sites. At the treatment and disposal site, it should be environmentally secure, with human health as a prime consideration for designing the system. For Malaysia, this level of consideration is already important. One has to, however bear in mind whether other countries attach greater or less value to such matters. The design of the system will have to be tailored accordingly.

A strong regulatory institution, supported by clear legislation and adequate resources, is necessary to protect public interest. This is because, traditionally, health care is a public good, and many consider this too important to be handled by the private sector. To ensure that the private sector provides a sufficiently high level of service, a strong regulatory framework is required. Performance standards must be developed at the start of the negotiations, and flexibility to make them higher over time must be built in.

Governments have an important role here to support both the regulator as well as the concessionaire(s). They should provide the requisite resources to the regulatory agency, and at the same time, not treat the successful concession with suspicion. A certain amount of trust and distance should be maintained. The Government may also want to employ the services of experienced consultants to assist in evaluating the privatisation programme.

Concessionaires, to be successful, should have the right mix of resources and skills. They should have access to adequate funds for operating and capital expenditures. They should have the right kinds of management that would be able to manage resources to achieve productive outcomes in a more efficient manner than previously done. Also, the management must be able to aid in making the transition smooth, from a public sector operation to a corporate organisation.

The public, who will eventually have to bear much of the cost, should also be taken into account at the outset. They are the main users and beneficiaries of such services. Their affordability levels, willingness to pay, and attitudes towards health and environment, are important factors to take into consideration in designing any privatisation programme. As most public health services are highly-subsidised, there is a need to think through how to match the demand with a range of supply services.

As for the mode of privatisation, a BOT concept implies that the Government will take over

all the services at the end of the concession period or at some later point in time. Adequate preparatory measures will have to be factored into the process. The Malaysian case did split the country into regions, with a fair distribution of regions that could afford from those that might need subsidies. It is important that the poor, disadvantaged, rural and remote regions are also served in such privatisation programmes. This may imply some cross-subsidisation, but in important matters, such as health care, the Government's responsibility is to ensure adequate access to such services.

CHAPTER 5

Hazardous Wastes Privatisation

5.1 Background

The generation of hazardous wastes is a matter of grave concern from an environmental and health perspective. The rapid growth of industrial production, particularly in the technology-intensive industries in recent years, has led to an increase in the importation and use of chemicals and other chemical-related products, many of which are toxic in nature. The need to properly manage and dispose hazardous wastes has, thus, become a pressing issue for the Government and for industry, the main generator of such wastes.

The definition of toxic and hazardous waste has been a difficult one. In general, toxic wastes are regarded as injurious to health if consumed and imbibed in certain quantities. Hazardous wastes, on the other hand, are wastes that become dangerous if they exist in a certain concentration and quantities, such as grease and oils. Hazardous wastes can also be toxic in nature. In Malaysia, the Government has chosen to side-step this problem of definition by classifying such wastes as "scheduled wastes". Scheduled wastes refer to the wastes that are specified in the schedule of the Environmental Quality (Scheduled Wastes) Regulations, 1989. Wastes under this category must be disposed of in special ways. Scheduled wastes include wastes that are toxic in nature, as well as other kinds of wastes – such as medical and clinical wastes, nuclear wastes and various kinds of chemicals. The bulk of these wastes are, of course, industrial wastes.

Table 5.1 shows the quantity of scheduled waste generated in Malaysia for the years 1994 to 1996. The estimated hazardous waste generation in 1994 was 417,413 metric tonnes. By 1996, this had increased to 632,521 metric tonnes. More than 50 per cent of this waste generated was dross, slag and clinker, 13 per cent was mineral sludge and another 10 per cent was heavy metal sludge (Refer to Table 5.2). The nine major industrial sources of pollution were metal finishing, electrical and electronics, textiles, food processing, chemicals, palm oil, rubber, wood, and iron and steel manufacturing. These industries are concentrated in Selangor, Perak, Johor, Penang and the Federal Territory of Kuala Lumpur (7MP, 1996-2000).

Environmental Concerns

Hazardous wastes have serious environmental consequences if they are not properly handled or disposed of. The environmental pollution caused by hazardous wastes remains years or even decades after the wastes were first generated and disposed of. In the United States, for instance, a Superfund has had to be set up to clean up hundreds of toxic waste

dumps, with costs running into billions of dollars.

Table 5.1
Quantity of Scheduled Wastes Generated in Malaysia, 1994-6

Year	Quantity (MT/Year)
1994	417,413
1995	487,100
1996	632,521

Source: The Department of Environment Annual Report, 1994-7

Table 5.2
Quantity of Scheduled Wastes Generated According to Waste Category, 1996

Waste Category	Percentage (%)
Dross/Slag/Clinker	51.66
Others	15.11
Mineral sludge	13.21
Heavy metal sludge	10.56
Paint/ink/solvent	5.48
Oil and hydrocarbon	1.97
Asbestos	0.62
Oily sludge	0.35
Catalyst	0.34
Halogenated solvent	0.17
Rubber/Latex	0.14
Phenol/adhesive/resin	0.1
Paper/plastics	0.07
Paint/dye sludge	0.08
Acid (heavy metal)	0.05
Containers	0.04
Paint/ink/solvent	0.03
Non-halogenated solvent	0.03
Alkalis (heavy metal)	0.004
Pharmaceutical	0.001
Photographic	0.0004

Source: The Department of Environment Annual Report, 1997

5.2 Status before Privatisation

Prior to the launching of the scheduled wastes regulations, there was no regulation of hazardous or toxic wastes. Firms were left to deal with this problem on their own. The Government did not have, nor did it provide for, any facility to deal with this problem then. The DoE, however has been concerned with hazardous wastes since its inception in 1975. It commissioned a study of this problem in 1981.

The lack of proper hazardous waste disposal facilities was an issue for multinational companies. The experience in advanced countries has shown that the clean-up cost could be astronomical. Hence, the more responsible firms adopted various approaches to manage their own industrial wastes. A common approach was to store their wastes on site. After several years, however many of these warehouses were filled to the brim with industrial wastes.

Another common approach adopted by factory managers was to recover economically-useful components of their wastes. The more environmentally-conscious manufacturing companies went as far as to institute changes to their manufacturing processes in order to minimise usage of or reduce the chemical inputs that eventually become waste. Whatever individual action taken, however a more comprehensive solution was needed.

In 1986, the American Business Council, representing the American multinational companies, commissioned a study to see if it was economically feasible to set up an integrated industrial waste disposal facility. After having established its economical feasibility, the industrial community approached the Government with a plan to solve the hazardous waste problem, particularly with respect to the setting up of an integrated industrial waste disposal facility.

Legislation

The Government, through the DoE, eventually drafted a set of regulations dealing with hazardous wastes management to regulate, store, transport, treat and dispose of hazardous wastes. These Regulations and an Order, enforced on 1 May 1989, are as follows:

(a) Environmental Quality (Scheduled Wastes) Regulations, 1989.
(b) Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Order, 1989.
(c) Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Regulations, 1989.

The provisions of the Environmental Quality (Scheduled Wastes) Regulations, 1989 include the following:

- Scheduled wastes should, as far as practicable, before disposal, be rendered innocuous;
- The generation of scheduled wastes should be reduced using the best practicable means;
- Waste generators are mandated to notify the DoE and keep an up-to-date inventory of scheduled wastes generated, treated and disposed of;
- Land farming, incineration, disposal and off-site recovery, storage and treatment should be carried out in prescribed premises licensed by the DoE;
- Waste containers should be properly labelled; proper containers and proper storage areas should be used and the storage of incompatible wastes prohibited;
- Any transport of scheduled wastes away from the generator's premises should conform to the requirements of the manifest (consignment note) system by which the movement of waste is monitored until it reaches the approved destination. Transporters of scheduled wastes should also obtain a licence to transport toxic and hazardous waste from the DoE;
- The waste generator is responsible for informing the transporter regarding the nature of the waste transported and action to be taken in case of accidents.

Under the Environmental Quality (Prescribed Premises) (Scheduled Waste Treatment and Disposal Facilities) Order 1989, six types of premises are prescribed for which their occupation and use will require a written permission and a licence from the DoE. The premises are waste treatment facilities, such as: sludge farms; off-site recovery facilities; off-site treatment facilities (such as centralised physical/chemical wastewater treatment plants); scheduled waste incinerators; off-site storage facilities (including the transport vehicles); and secure landfills designated for the disposal of scheduled wastes. The above premises (except land farming facilities) must also comply with the requirements of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987 that requires an Environmental Impact Assessment (EIA) be conducted and a report submitted to the director general of the DoE before construction activities of these projects are carried out.

Under the Environmental Quality (Prescribed Premises) (Scheduled Waste Treatment and Disposal Facilities) Regulations 1989, procedures for licence application, renewal and ownership transfer, requirements for record keeping and submissions to the DoE are specified (Ibrahim Shafi, 1997).

Treatment and Disposal Options

A legislative framework to manage scheduled wastes is only effective when complemented by the availability of licensed facilities. Under the legislation, waste generators are required to be responsible for their wastes. They can only legally pass on
wastes to licensed operators for disposal in a licensed site. When the scheduled wastes

legislation first came into force, no sites were licensed at that time, making it difficult for industries to comply with the regulations. The legislation had preceded the availability of licensed facilities. The DoE, thus, came under pressure to rectify the situation, and by the end of 1996, there were a total of two off-site treatment facilities, 24 off-site recovery facilities, 12 off-site storage facilities, two secure landfills, seven land farming facilities, and 26 on-site incinerators in operation (Ibrahim Shafi, 1997).

In compliance with the scheduled waste regulations, many industries have also been storing their wastes, both partially treated or fully treated, at their factory compounds, at warehouses or temporary storage sites. Some scheduled wastes are also recycled, recovered or exported to overseas facilities for disposal or recovery.

5.3 Integrated Waste Management Plan[1]

In 1987, the Government commissioned a full-scale survey of hazardous wastes in Malaysia, examining, among other things, the location, size, and land requirements for a toxic waste treatment, storage and disposal facility. Based on this study, the Government commissioned EIA study on several potential sites for the location of this integrated facility. It also decided that this project would be managed by a private firm. The Government, through the DoE, will play the regulatory and monitoring role with respect to the management of hazardous wastes.

In 1989, the Government, after considering two bids, agreed to award a 15-year exclusive right to a Malaysian-Danish Consortium, now known as Kualiti Alam Sdn Bhd,[2] to establish and operate the nation's first integrated Scheduled Waste Management Centre at Bukit Nanas, Negeri Sembilan on a build, operate and maintain basis. On 18 December 1995, the consortium signed an agreement with the Government of Malaysia to collect, transport, treat and dispose scheduled wastes generated by industries.

Why the Government chose a closed integrated management system over a less elaborate system has not been disclosed publicly. Of course, the key question would be the cost, in terms of operating and maintaining such a system, and the price that firms would be charged for it. A well-designed system would entail a centralised system where transport and treatment is run by one firm; in that case, very high standards can be set and the operator can be monitored rather easily. Such a system would likely be expensive because of the high standards and only one firm is involved. Alternatively, several firms could be licensed to transport, handle, and treat the wastes. Such a system would likely be cheaper because of greater competition, but it would cost more to supervise, and the possibility of

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1 In Malaysia, this is an exclusive case of privatisation.

2 The consortium comprises United Engineers Malaysia Berhad, a large local conglomerate; Arab-Malaysia Development Berhad; and Danish Waste Treatment Services, a Danish group comprising I. Kruger Engineering, Chemcontrol and Enviroplan.

undesirable outcomes is necessarily higher. The Government chose to implement a centralised system and with one operator licensed to set up the treatment and disposal facility and also a centralised collection system using transfer stations. The concession is an exclusive right for 15 years to the concessionaire (Kualiti Alam) to transport, treat and dispose of all scheduled wastes.

Despite the 1989 legislative framework, the government still did not have a treatment or disposal site. Thus, the problem was one where there is a law but no facility to handle the wastes. Hence, firms had to be licensed to handle, store or transport wastes. Many firms were left in a quandry.

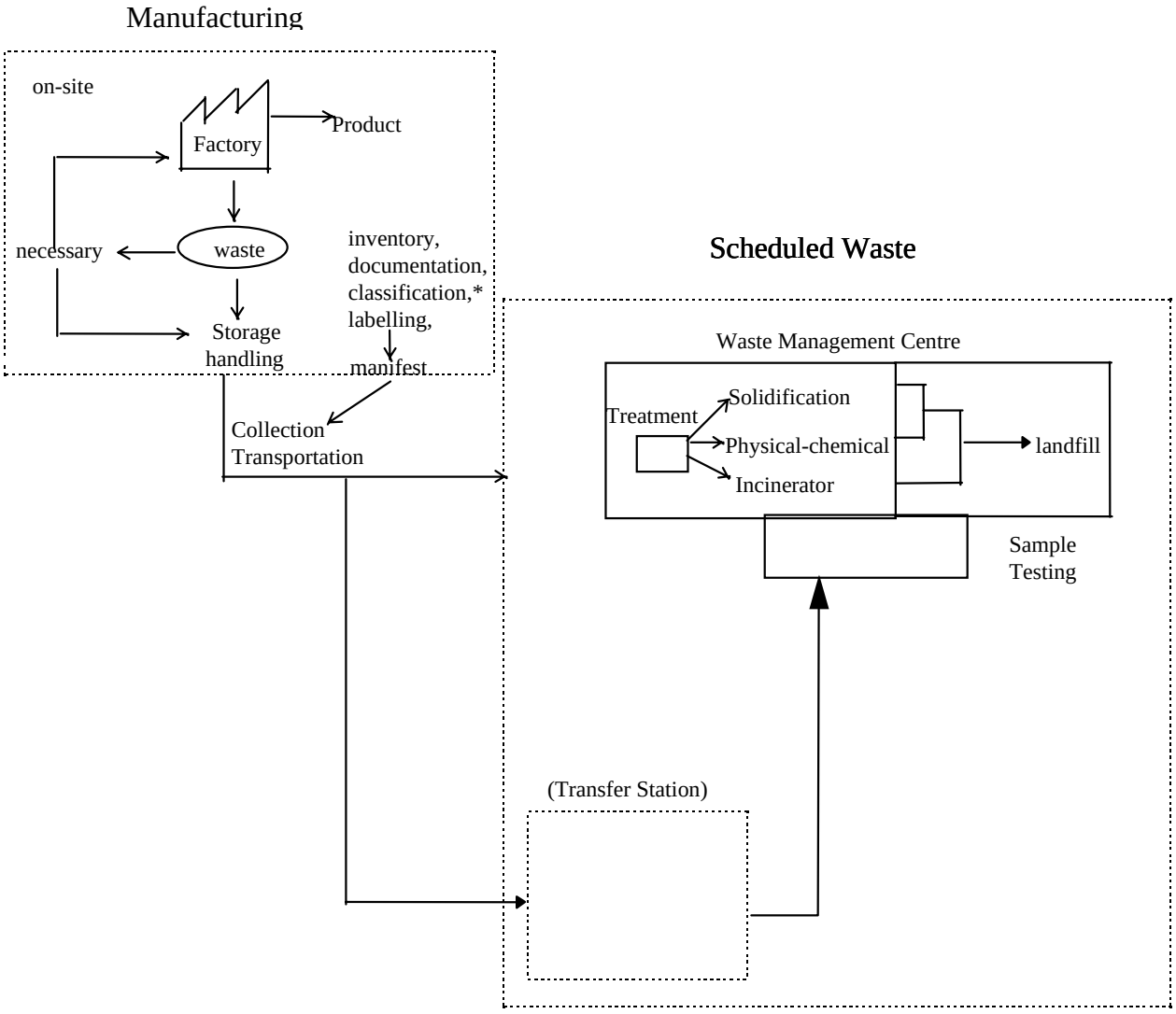
The Malaysian Integrated Scheduled Wastes Collection, Treatment and Disposal Facility was eventually set up. When fully established, it will have the following major components:

- Incineration facility containing a rotary kiln incinerator, secondary combustion chamber, associated waste storage and handling facility, and air pollution control equipment;
- Waste water treatment facility containing equipment for the oxidising of cyanide wastes, reducing hexavalent chromium, precipitating and removing heavy metals, and removing organic contaminants and solids;
- Stabilisation facility containing concrete-lined pit and associated silos and hoppers; and
- Secure landfill and leachate collection facility (Ibrahim Shafi, 1997).

Figure 5.1 shows the Integrated Scheduled Wastes Collection, Treatment and Disposal System that will be set up by Kualiti Alam. The Integrated Facility, once completed, will be a comprehensive one in that it will be able to accept, treat and dispose of all types of scheduled wastes listed in the First Schedule of the Environmental Quality (Scheduled Wastes) Regulations 1989 and other chemical wastes, except for radioactive wastes, hospital wastes (infectious waste, pathological waste), and explosives (Kualiti Alam Sdn Bhd, 1997). It will have a capacity to handle 400,000 tonnes of hazardous waste, constituting about 90 per cent of the expected discharge from industrial activities. To support and facilitate the collection and storage of waste, transfer stations will be built in Penang, Johor and Terengganu (7MP, 1996-2000).

In the initial phase, only one residual repository to be used as a secure landfill will be established as part of the integrated facility at Bukit Nanas, Negeri Sembilan. When the system has been fully implemented, however it might be more feasible, both economically and in terms of safety, to establish secure landfills in other states.

Figure 5.1
Integrated Scheduled Waste Treatment and Disposal System



* Waste classification is shown in Appendix A.1

For the collection of wastes from areas further away from the integrated facility, transfer stations will be established. The transfer stations will be located in the states of Johor, Penang, Selangor and Terengganu. It is hoped that by siting the transfer stations in the major hazardous waste-producing areas, the transport distance from the waste generators to these stations will be reduced. Specialised and safe transport vehicles will be used as part of the integrated toxic and hazardous waste management system (Ibrahim Shafi, 1997).

Several committees have been set up to ensure that the implementation of the scheduled wastes management project proceeds smoothly as scheduled. They are the:

- Task Force on the Bukit Nanas Integrated Hazardous Waste Treatment Facility, chaired by the deputy secretary general I of the Ministry of Science, Technology and Environment.

- Working Group on Bukit Nanas Integrated Hazardous Waste Treatment Facility, chaired by the director of the DoE of Negeri Sembilan; and

- Inspection Team on Bukit Nanas Integrated Hazardous Waste Treatment Facility, chaired by the deputy director general of the DoE. The Inspection Team, in the course of its work, is to be assisted by a team from the US Environmental Protection Agency, especially with respect to design requirements and quality assurance (DoE, 1997).

5.4 Status after Privatisation

Kualiti Alam began operations in October 1996. Thus far, it has been collecting scheduled waste from factories for temporary storage purposes, pending the completion of the landfill, incineration and treatment facilities. A total of 300 factories have signed up with Kualiti Alam and the total declared amount of waste from these factories was 43,300 tonnes as at October 1997. Of the 300 factories, more than 60 have sent their waste to Bukit Nanas plant (New Straits Times, 12 January 1998).

The treatment centre in Bukit Nanas, comprising the solidification facility, incinerator, and physical and chemical treatment facility, costs about RM363 million (Business Times, 15 January 1997). Kualiti Alam has also set up five open and 12 underground water monitoring stations to check pollution. Water quality in these stations is checked at least twice a month. Kualiti Alam will also set up air monitoring stations to check emissions once the incinerator starts operations in 1998 (New Straits Times, 16 April 1997). The solidification plant commenced operations in December 1997. The physical and chemical treatment plant which was undergoing commissioning tests in April 1998,

is expected to start operation in the first half of 1998. The incineration plant is scheduled to

launch trail burn in April 1998 and to begin operation in the middle of the year. Once the incineration plant is in operation, the Integrated Scheduled Waste Management Centre will be fully operational (Kualiti Alam Hompage, 1998).

As with the other privatised entities, Kualiti Alam has been facing several teething problems. First, there is the issue of fees charged for services provided. In its original proposal submitted early in 1997, Kualiti Alam proposed to charge between RM2,000 and RM2,200 per tonne for the treatment of chromate and cyanide waste, and between RM1,600 and RM1,700 for acid and alkaline waste. For incineration, the proposed charge was RM1,500 for waste solvents without halogen and sulphur, and between RM3,500 and RM4,000 for waste solvents with halogen and sulphur.

The rates varied according to waste types and the services to be provided. These rates were, however, felt to be on the high side and, following complaints from industry representatives, the Government stepped in to review the rates (New Straits Times, 16 April 1997). The temporary revised scheduled waste treatment fees (effective until 31 December 1997) are shown in Appendix A.1.

Transportation cost is also charged in addition to the treatment fees as Kualiti Alam exclusively provides transportation from the factory to the Bukit Nanas plant. Despite the downward revision in fees, industries are still reluctant to use the facility on the grounds that the fees are still too expensive. At the time of writing this report, the fee or cost structure has not yet been agreed upon between Kualiti Alam and its clients.

Second, is the matter of how some wastes should be treated. An arbitration panel is being set up to resolve this matter.

Third, is the issue of liability with respect to the handling of hazardous wastes. The industries are of the view that Kualiti Alam should be the party liable from the time the wastes are collected. Kualiti Alam, however, feels that it can only be liable if an accident happens as a result of its own actions.

Legislative Review

With the privatisation of the management and disposal of hazardous wastes, existing environmental protection measures, laws, regulations, and guidelines have come under review to improve their effectiveness in controlling hazardous wastes. A review of the Environmental Quality (Scheduled Wastes) Regulations, 1989 began in mid-1995. The review included the following aspects:

- A revision of the waste list to include discarded chemicals and wastes not covered by the present regulations. Also under review are 107 types of hazardous wastes which stem from the proliferation of new chemicals in the market.
- The setting a time limit for the storage of scheduled wastes in factory premises. Ideally, scheduled wastes can be stored in-house for a period of three months, after which they are to be treated and disposed of.

Besides the legislative review, steps were also taken to tighten the enforcement of these regulations. Effective from 1 August 1996, for instance, offences under these regulations can be compounded up to a maximum of RM2,000 or offenders can be prosecuted in court and, if found guilty, the maximum penalty is RM100,000 or five years' imprisonment, or both. Furthermore, a fine of RM1,000 per day for each day the offence is committed is also prescribed. For "prescribed premises" [that is, licensed premises under Section 18 (3) of the EQA] the maximum fine is RM50,000, or 2 years jail, or both (Ibrahim Shafi, 1997).

5.5 Key Issues

The key issues confronting the Government and the concessionaire in managing scheduled wastes are as follows:

Waste Treatment and Disposal Charges

As mentioned earlier, the industrial community has expressed dissatisfaction over the high waste treatment charges of Kualiti Alam. While acknowledging the fact that industry should pay for the disposal of wastes that they generate, industry representatives argue that the rates imposed are much higher than those imposed in other countries. Kualiti Alam, in turn, has pointed out that the integrated facility is different from those found in other countries in that it has comprehensive treatment processes, thereby making the cost high.

In defending its fee structure, Kualiti Alam maintains that it had worked out its fees based on its capital investment, running and maintenance cost, as well as the waste volume. Kualiti Alam is reported to have spent more than RM318 million as at October 1997 (New Straits Times, 1 October 1997). It would, thus, consider a review of the fee structure, if the waste volume sent to the integrated facility is increased and maintained at a certain level. Industry representatives, on their part, have not been willing to make this commitment.

To ascertain whether the fee structure is reasonable and realistic, some analysis of the costs and benefits would need to be made. This means that the costs to industry, namely the treatment and disposal of hazardous wastes, would have to be matched against its benefits, namely, the avoidance of damages caused by hazardous wastes to the environment or public health. Such an analysis has yet to be done, as the costs of damage to the environment and to health have yet to be determined and quantified.

This problem has arisen partly because of the monopolistic situation in scheduled wastes. It may not have occured if there had been more operators offering a more competitive service. The government has, however chosen to work with one operator for a variety of reasons: the firm may have proposed greater efficiency in capital investments; it is financially strong; it possesses the right experience and management capability, and has the track record to complete work on time. These could all be valid reasons, but as far as the industry is concerned, the price for wastes and the liability for wastes are not right.

Currently, the operator, Kualiti Alam, is facing problems with getting a steady waste stream into the treatment and disposal facilities. Based on its earlier study, there should be a fairly large amount of scheduled wastes, but firms are holding back their wastes because they feel that they are being overcharged for this service. This scenario has probably affected the company's financial expectations. Of the estimated 2,700 generators of scheduled waste, only a total of more than 300 companies have signed up with Kualiti Alam as at January 1998. Only a total of more than 60 companies are sending waste for direct landfill and solidification (New Straits Times, 12 January 1998).

Regulatory Effectiveness

As mentioned above, the regulatory body for the management of hazardous wastes is the DoE. A major issue with respect to regulation is to ensure that all hazardous wastes generated by industry is directed to the approved integrated waste management facility, and not illegally disposed of. It is not clear whether the DoE has all the resources that is required to be an effective monitoring and enforcement agency, given the large number of small firms. Currently the legislation has a waste registration system at firm level, and a licensing system for operators, waste handlers and storage sites. Having a registration system is the first step in any monitoring system. An equally important component is to ensure that the enforcement arm of the DoE is effective.

Issue of Liability

The issue of present and future liability is a matter of critical concern to waste generating firms. Firms want to be protected against liability for damages caused by hazardous wastes, while the public would want to be protected against, and compensated for, sickness and death caused by toxic and hazardous waste poisoning. With the setting up of the integrated waste disposal facility, firms have been lobbying for Kualiti Alam to be

liable for any damages caused by hazardous wastes from the time the waste is transported away from the factory. Kualiti Alam, on the other hand, is willing only to take responsibility if an accident occurs as a result of its own actions. The issue of liability still remains unresolved.

Illegal Dumping of Hazardous Wastes

The illegal dumping of hazardous wastes has been a major concern in Malaysia. In 1995 alone, six illegal dumping incidents were reported. The most serious incident was the dumping of 41 drums of potassium cyanide in a solid waste landfill site on Pangkor Island. The offender was charged a maximum penalty of RM100,000. Other infringements include the illegal storage of hydraulic oil, formaldehyde, ammonia, and heavy metal effluents (PE Research, 1995).

Many industries also fail to keep a waste inventory or inform the DoE of wastes generated by them. With the setting up of this integrated facility, industries are expected to channel their wastes to Kualiti Alam. The high fees charged by Kualiti Alam, however, may discourage small and medium industries from utilising the facility, opting instead for alternative ways of managing their wastes, including that of illegally dumping them.

A related issue is the existence of illegal factories which produce industrial wastes. It is highly likely that such factories would indiscriminately dispose their hazardous wastes in any dump site. Authorities such as the local authorities and the DoE, are thus confronted with the difficult task of locating these factories to monitor their wastes. The need to monitor illegal factories and instances of illegal dumping is an added burden and would undoubtedly stretch the limited capacity and resources of the DoE's enforcement team.

Waste Minimization and Cleaner Technologies

The establishment of an integrated scheduled waste facility does not totally solve the problem of scheduled wastes. Waste generators, such as industries and hospitals, should consider other options such as waste minimisation programmes and cleaner technologies. Since the cost of managing waste is quite significant, waste avoidance programmes need to be adopted by industries. For instance, some of the more responsible firms have instituted changes in their manufacturing processes in order to eliminate or reduce the use of chemical inputs that result in the production of hazardous wastes.

Industries must be cognizant of the fact that as long as they continue to generate large quantities of hazardous wastes, they would remain uncompetitive in the world market due to the increasing disposal costs and liabilities, and the fact that waste is a manifestation of inefficiency. There is a need for industrial waste generators to commit themselves to waste reduction. The DoE has, since early 1996, launched a new programme, MAWAR

(Malaysian Agenda for Waste Reduction), to encourage industries and waste generators to adopt waste reduction strategies (Ibrahim Shafi, 1997). This programme is complemented by the provision of incentives for the proper management of hazardous waste and the promotion of cleaner technology and processes.

5.6 Costs and Benefits

At this early stage of the privatisation effort, it is not possible to make a meaningful assessment of the benefits and costs, except at a theoretical level. We shall outline some costs and benefits issues in order to understand how best to assess the performance of the privatisation.

Costs

The normal starting point of any analysis is to maximise the benefits of the project (avoidance of damage), while minimising the costs of the project. An optimal solution can be found when the marginal benefits are equal to marginal costs. As our knowledge of the damage costs are far from complete, it is not possible to quantify such costs at the moment. Nonetheless, the nature of the marginal cost and benefit curves are generally in the right direction. The following are other major costs involved:

Investments

Major project costs include the capital cost of investment, maintenance and operations, such as transport, storage, handling, treatment, and disposal over the long term. Added to this is the cost of enforcement and monitoring. This would be roughly equivalent to the cost of the privatisation effort. Full disclosure of the costs have not been made public. The only information on cost is the RM318 million waste treatment and disposal facility (NST, 12 January 1998). This is down from the RM363 million that was earlier proposed. No other cost estimate has been provided.

Cost for Users

The companies generating toxic and hazardous wastes consider the charge and levy by Kualiti Alam to be too high compared to international charges. And, hence, there is some resistance to shipping their wastes to the integrated waste facility. This remains an outstanding issue, with the DoE having to decide whether to implement additional measures to get firms to send their wastes to Kualiti Alam.

Benefits to the Government

The Government has certainly relieved itself of the financial burden of having to build and operate the waste management facility, the transfer stations, and the entire scheduled wastes operation. Through the "polluter pays" principle, Kualiti Alam will levy charges and fees to recover its capital investment.

Administratively, the Government has also relieved itself of the day-to-day responsibility of operating and managing the integrated facility. Nevertheless, its regulatory role remains important, if not more. The Government, through its regulatory body, the DoE, has to closely monitor and ensure that the facility is operating according to the technical and safety specifications and that the anticipated risks are maintained and not increased.

Another important aspect of the Government's regulatory function is to ensure that all scheduled wastes generated by industry are sent to the waste management facility in the prescribed manner. The DoE's enforcement role, thus, becomes important and critical to Kualiti Alam's viability. If its enforcement efforts are inadequate, hazardous wastes may continue to be illegally dumped, leading to costly clean-up operations and wasting valuable human and other resources. Furthermore, the economic viability of Kualiti Alam would be affected, if insufficient wastes were channelled to Kualiti Alam for treatment and disposal.

The success of the privatisation effort is, to a great extent, contingent upon the DoE and the Government's regulatory role. While the Government may not have to invest in the actual capital works and operational mechanisms, it will still have to play a very important regulatory role to ensure that the privatisation objectives are fulfilled.

Benefits to the Environment

The major benefits of the project include the cost of avoiding health problems resulting from indiscriminate toxic and hazardous waste disposal. One could also define that as the opportunity costs of not having a proper waste treatment and disposal centre. Such considerations are, however, still ambiguous, as one would have to get into details about damages and what it would take to avoid the legal problems of toxic and hazardous wastes, in case of accidents and long-term liabilities.

5.7 Summary Remarks

The major lessons that the Malaysian experience can offer are as follows:

- The Government should take the lead in breaking the deadlock between the industrial community and the concessionaire regarding the costs involved in utilising the waste disposal facility.
- The cost of waste treatment and disposal is not commensurate with the willingness to pay (price of waste treatment and disposal is too high). Industry should, thus, be consulted before fixing the price for waste treatment. This is to ensure that the cost of waste treatment does not jeopardise the industrialisation programme.
- All liabilities arising from hazardous wastes should be worked out first.
- Legal issues are important and must be clearly set out right from the beginning. In particular, the legislative framework should establish rights and obligations. Perhaps examples from more developed countries could be studied and applied.

CHAPTER 6

Solid Wastes Privatisation

6.1 Background

Solid wastes is an environmental hazard, particularly in urban areas, where large volumes are accumulated from day to day. With urbanisation and industrialisation, and the concomitant rise in living standards, the volume of solid waste has increased markedly over recent years. Finding a solution to the volumes of solid waste has also become more complex, as residential areas expand and compete for space with landfill disposal sites. This has posed a challenge to the management of the solid wastes problem.

In Malaysia, solid wastes are classified under domestic waste, also called municipal solid waste, and scheduled waste. Municipal wastes[1] are mainly generated by households and are collected by workers from local authorities. Wastes generated by industries and commercial establishments are usually collected by private contractors and are generally dumped into ordinary landfills, unless they are scheduled wastes.

Scheduled wastes are wastes that fall within the schedule of the Environmental Quality (Scheduled Wastes) Regulations, 1989. Wastes under this category must be disposed of in special ways. In Malaysia, the term toxic wastes has also been used loosely. Scheduled wastes also cover wastes that are toxic in nature. However, scheduled wastes also include other kinds of wastes, such as, medical and clinical wastes, nuclear wastes, and various kinds of chemicals. Chapter 5 deals with the issue of scheduled wastes in greater detail.

Solid waste management is the responsibility of local governments. They are responsible for the collection, transport and disposal of solid wastes, usually at designated landfill sites, which should be gazetted. A government survey conducted in 1994 showed that only 2 per cent of the total solid wastes generated by Malaysians were recycled, while most of it were sent to landfills or were illegally dumped. The survey also showed that, on average, each Malaysian generated about 250 kilos of solid wastes a year.

According to estimates made in 1995, some 5.5 million tonnes of domestic and commercial wastes (which also include non-toxic or non-hazardous wastes produced by industries) were generated in Malaysia, an equivalent of 13,500 tonnes per day. In the Klang Valley alone, the estimated solid waste load was 3,500 tonnes per day (A. Wahid,

[1] A government survey conducted in 1994 showed that a high proportion of municipal solid wastes comprised paper and plastic, vegetables and other putrescibles. The other components were textiles, leather, and rubber waste, garden and timber waste, metals and glass. Half of these waste materials could be recycled.

M. Nasir and A. Muda, 1996). Table 6.1 shows the estimated solid waste generation in selected local authority areas up to the year 2010. Recent figures for Kuala Lumpur indicate, however that these rates have already been exceeded. Kuala Lumpur is generating about 2,000 tonnes per day. Wastes grow because of an increase in population and an increase in waste generation per capita. In the urban areas of Malaysia, both factors have contributed to an escalation in the solid waste problem.

Table 6.1
Solid Waste Generation in Selected Local Authority Area, 1990-2010
(`000 Metric Tonnes)

Towns	1990	1995	2000	2005	2010
Kangar	43	57	68	82	139
Kota Bharu	66	85	132	146	175
Kuala Terengganu	58	85	119	172	211
Kuantan	36	44	67	85	107
Seremban	65	95	120	160	224
Malacca	94	115	168	215	236
Alor Setar	98	128	142	182	229
Johor Bahru	107	140	180	236	304
Ipoh	105	121	164	218	324
Penang	155	192	273	355	386
Kuala Lumpur	766	913	1,022	1,058	1,095

Source: 7MP, 1996-2000: 638

It is a truism that if the wastes stream is not interrupted through reuse, recycle or reduce strategies, then the space requirement to dispose of it would increase. This is the first aspect of the solid waste problem today – to find adequate areas for proper waste disposal. Local authorities have difficulties in securing suitable waste disposal sites and in managing solid waste disposal. Existing 'dump' sites are already filled to capacity, and there is over-dumping in many sites. Urban areas are running out of land to store wastes. In 1990, out of 230 waste disposal sites available, 80 per cent of them have less than two years of economic life span (M. Nasir Hassan, A. Wahid, M. Kamil and W. Norazmin, 1996).

The situation is more pressing in cities such as Kuala Lumpur and Petaling Jaya, its satellite town, where solid waste generation rates are higher than in the rest of the country. Landfills in these two places had already exceeded their capacity by the mid-1990s.

Increasing urbanisation has led to an expansion of the service coverage areas of local authorities. Herein lies the second aspect of the solid waste problem. Local authorities are faced with the challenge of having to expand their waste collection services to cover more areas. A Universiti Putra Malaysia (UPM) study found that, with increasing urbanisation, only 70 per cent of the Kuala Lumpur and Petaling Jaya municipalities

currently have access to waste collection services. In the less urban districts, the collection rate is now only about 50 per cent. Squatter areas are not served by local authorities, but some local authorities have had to provide collection bins to stem the tide of increasing rubbish in water bodies, streets, and excessive open burning.

With the increase in solid wastes, particularly in urban areas, local authorities face difficulties in managing this service of waste collection and disposal from an administrative standpoint. This is the third aspect of the solid waste management problem. Most local authorities are inadequately financed.

Their revenue base is usually fixed. Hence, with a service that requires increasing resources to manage, the service quality is bound to drop. There have been very frequent complaints in the press about the unsatisfactory state of solid waste collection services in urban areas.

Some Environmental Concerns

With the increase in solid waste generation, and the inability of local authorities to provide adequate services and facilities for solid waste collection and disposal, several environmental concerns have arisen with regards to solid wastes.

First, there is the problem of pollution. Many of the waste disposal sites managed by local authorities are open dumps, where waste dumping is often indiscriminately done. No attempt is made to control leachate movement in these dump sites. This means that the toxic leachate would seep through and infect ground water systems and find their way into the surface water systems.

Second, the poor system of garbage collection, including illegal dumping and the common practice of open dumping, has brought with it adverse impacts on the health and quality of life of people affected by it. Some of the inconveniences that these people have to bear include the problem of bad odour, flies, and poor hygienic conditions. The cost of indiscriminate waste dumping has been estimated to be RM178.3 per ton and, at current levels, the costs are RM1.72 million per day. The health impact has, however, not been fully estimated.

The need for an efficient solid waste management and disposal system has thus been considered to be crucial. Various measures have been considered by several local authorities to improve the delivery of solid waste collection and disposal services, such as the contracting out and, more recently, the privatisation of such services.

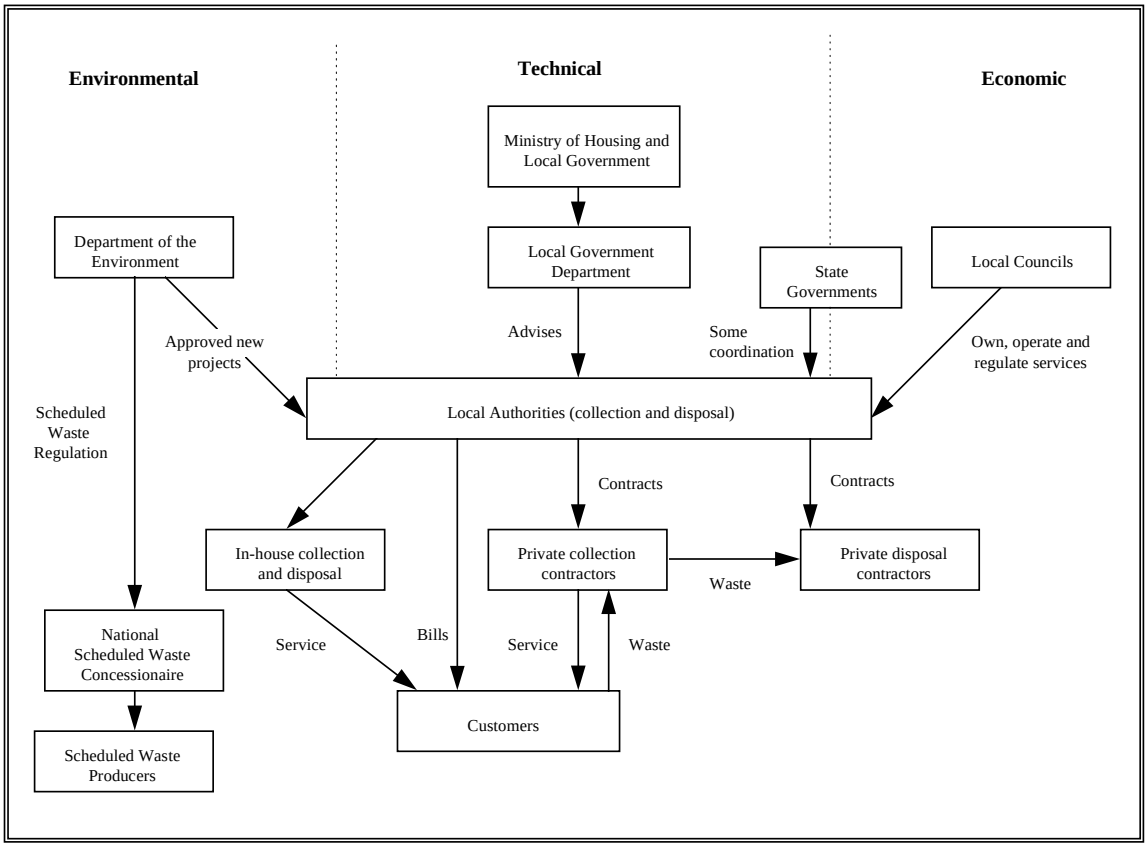
6.2 Status before Privatisation

Solid waste collection and disposal in urban areas have traditionally been the responsibility of the respective local authorities, which comprise municipal councils, district councils, and city halls (with the exception of the Kuala Lumpur City Hall). This

is specified in Section 71(1)(a) of the Local Government Act, 1976 (for West Malaysia) and the corresponding provisions of the Local Government Ordinance 1948 of Sarawak, and the Local Government Ordinance 1961 of Sabah. This responsibility is in the process of being transferred to the federal government to facilitate the privatisation of all non-hazardous waste management services (Nera, 1996).

The structure of the present system of solid waste regulation in Malaysia is summarised in Figure 6.1 below.

Figure 6.1
Solid Waste Regulation: Existing Arrangements



Source: NERA, 1996

Non-industrial wastes is collected by local authorities. This constitutes one of the main urban services provided by the local authorities and accounts for 30 per cent to 50 per cent of the annual budget of local authorities, and 50 per cent to 80 per cent of the manpower employed.[2] There is no specific solid waste charge for households. Households pay annual or semi-annual rates for this service, through their local authority assessments. Solid waste services are, thus, financed from general local tax revenue (Nera, 1996).

Currently, about 20 per cent to 40 per cent of assessment rate collections of local authorities are used to fund garbage collections and management (New Straits Times, 21 February 1998). For example, (for the portion spent on solid waste management by local authorities) for a typical double-storey house with five inhabitants, such a household would have to pay about RM315 annually in assessment (based on RM1,500 in annual value, and a rate of 21 per cent). As local authorities typically spend one-third of their budget on urban services, a total of RM94 per annum or RM7.88 per month is allocated to urban services, upon further assumption that the entire sum is allocated to solid waste management (which is a very conservative estimate) (PE Research, 1997).

UPM researchers had conducted a study of the cost on landfill disposal. They estimated the social costs (direct costs plus environmental damage costs) of proper sanitary landfill to be around RM35 per tonne compared to RM500 per tonne for incineration and RM216 per tonne for composting (Nasir, Rakmi, Kamil and Wan Nor, 1995).

Disposal of industrial non-scheduled solid waste is the responsibility of individual firms. These firms generally contract the disposal out to private contractors for the transport of their waste either to local authority or to privately-owned disposal sites. These commercial waste transport and disposal operations are run on a competitive basis. Solid waste collection from business premises is generally charged on the basis of weight or volume. Special notification, handling, collection and disposal arrangements, however, exist for scheduled waste, that is, specified wastes which are hazardous or toxic [(as specified in the First Schedule of the Environmental Quality (Scheduled Wastes) Regulations 1989)]. Scheduled waste disposal has been privatised and is carried out under a separate national concession.[3]

The modes of solid waste disposal provided by local authorities are extremely varied, and range from modern collection systems feeding into large sanitary landfills, to small-scaled operations with unprotected, unlined landfills. There is thought to be a significant amount of illegal tipping, and the local authorities in some areas lack the capacity to enforce environmental laws. The director-general of the DoE has powers under the Environmental Quality Act 1974, Section 24 to take legal action against anyone illegally dumping waste, while individual local authorities have the power to adopt and enforce their own solid waste by-laws. Advice on the content of by-laws is given by the National Council of Local Government, and by the Department of Local Government (Nera, 1996).

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2 JICA Study, 1989.

3 See Chapter 5.

While solid waste collection and disposal has traditionally constituted one of the main urban services provided by the local authorities, its delivery has often been fraught with problems. Due to shortages of funds, equipment and trained staff, the service provided by most local authorities has not been satisfactory. The most common public complaints include: infrequent collection of garbage, spillage during collection, non-collection of big items, illegal dumping, and overloaded and unhygienic dumpsites. In recent years, it has also become increasingly difficult to find available and suitable land for use as landfills.

According to a recent JICA study on solid waste in Malaysia, the landfill sites of municipal councils were mostly located within a range of 10 km to15 km from the collection areas and had an area of 10 hectares to 20 hectares. The new sites are now located, on average, about 20 km from the collection zones and the landfill areas are generally small. The most common sites for landfills are areas close to rivers, swamps and flat ground. Generally, low and wet sites are characteristics of present day landfills (PE Research, 1995).

Since the 1980s, several local authorities have taken steps to address some of their operational constraints, such as efficiency and improvement in the delivery of this service. One of these initiatives has been the contracting out of part of their solid waste collection service to the private sector. The Kuala Lumpur City Hall, for instance, has contracted out 60 per cent of its garbage collection service to the private sector, while the remaining 40 per cent is carried out by its own workers (PE Research, 1995). In some cases where the local authority areas are small, the state government has intervened to co-ordinate the activities of the local authorities. These are examples of regional and state-level concession contracts for the disposal of non-toxic municipal solid waste. An example of this can be found in Selangor.

6.3 Privatisation Plan for the Sector

In light of problems associated with the inadequate monitoring and enforcement capacity of the local authorities, and difficulties in locating suitable disposal sites within individual local authority areas, various privatisation initiatives were taken at the federal and state levels to reform the solid waste sector. These privatisation initiatives are described below.

6.3.1 Privatisation Plan for the Ayer Hitam Landfill Project in Selangor

In 1994, the Selangor state government privatised a sanitary landfill project, independent of the national privatisation exercise that was being undertaken by the federal government. The Ayer Hitam landfill project in the district of Petaling was awarded to Worldwide-SITA Environmental Management Sdn Bhd, a joint venture between a local public listed company Worldwide Holdings Bhd. and the SITA group of France. The mode of privatisation was the BOT method, with a concession period of 20 years. The

landfill, with a capacity to collect 2,000 tonnes of garbage daily, 6 million tonnes in total, began operations in November 1995. The wastes collected comprised 75 per cent to 80 per cent from the local authority and 20 per cent to 25 per cent from private firms.

Under this privatisation plan, the concessionaire is solely responsible for the financing and construction of the landfill. The state government[4] provides the land free of charge, and the company is to invest a total of RM30 million to finance the construction of the landfill which is to have a capacity to handle 2,000 tonnes of waste a day. During the 20-year concession period, the company operates and maintains the landfill. It has to treat leachate and ensure that the environment is not polluted.

As there is an undertaking from the state government to direct seven local authorities in the Klang Valley to send their rubbish to the landfill, Worldwide-SITA bears little risk of not collecting enough solid waste for the landfill. At the end of the concession period, the company will be responsible for covering the landfill and returning the site to the state government. The site will then be rehabilitated for other uses, such as a golf course or a recreational park (PE Research, 1995).

The chargeable fee is RM25 per tonne for the local authority and RM34 per tonne for private firms.

6.3.2 Privatisation of the National Solid Waste Management System

In 1994, the Privatisation Taskforce of the EPU invited private firms to submit tenders for the privatisation of solid waste collection and disposal for all 144 local authorities in Malaysia. A total of 28 bids were received when the tender was closed at the end of 1994 (PE Research, 1995). In December 1995, letters of intent were issued to four consortia, which gave them the exclusive right to negotiate with the Government over the possible structure of regulation, and over tariff structures and levels (Nera, 1996).

The four consortia were selected to manage the privatisation of the national solid waste management system for the four regions, namely the northern region (covering the states of Kedah, Penang, Perak and Perlis); the central region (covering the states of Selangor, Federal Territory of Kuala Lumpur, Pahang, Terengganu and Kelantan); the southern region (covering the states of Johor, Malacca and Negeri Sembilan); and Sabah and Sarawak.

[4] Malaysia has a three-tier government system. At the top is the federal government that has national-level responsibilities, such as taxation, defence, administration and the setting of policies. The state government is concerned with affairs at the state level. And then there is the local government, a tier that is supposed to provide municipal services and other planning approval functions.

According to the terms and conditions of the letter of offer, the following is the scope of work that is required of the concessionaires:

- Store, collect, transport, treat, and dispose of wastes of all local government areas;
- Manage all cleaning operations of local governments – cleaning of public roads and drains as well as cleaning of markets and night market grounds; cleaning of illegally dumped solid waste on public roads and public places; and grass-cutting activities;
- Take over management and operation of designated landfill sites that would be used for an interim period;
- Manage all gazetted landfill sites in an environmental-friendly manner;
- Plan, develop and operate new waste treatment plants and sanitary landfill sites;

The concession is exclusive for 20 years and the concessionaire will take over the solid waste management services of all local authorities in their region. The definition of wastes includes all household, commercial, institutional, construction, community, and acceptable industrial wastes.

Northern Region

Northern Wastes Industries Sdn Bhd (NWI) was given the concession for the northern region. The four states had about 800,000 households with more than five million people generated about 1.5 million tonnes of garbage in 1996 (New Straits Times, 23 October 1997). The four largest towns in this region, namely, Alor Setar, Penang, Kangar and Ipoh, generated about 0.5 million tonnes of solid wastes in 1995 (7MP, 1996-2000:596). The main features of the NWI concession are as follows:

- An integrated solid waste management framework is to be adopted. It is not to be a cradle to grave approach, but rather a post-consumer solid waste management approach. There is a 20-year concession period under a BOT scheme.
- NWI is to take over from all local governments in the northern region their entire solid waste management responsibility, namely, collection, transport and disposal via sanitary landfill (Level 4). It will take over the local government staff as well as all assets and liabilities. Altogether, NWI is expected to have over 1,600 staff.
- NWI is to invest in new assets (level 4 sanitary landfill, transfer stations) and equipment. A total of RM2 billion is expected to be invested in the privatised system, 10 per cent of which will come from equity investments. Another 30 per cent is to come from loans, while the balance will be financed from operating cashflows.
- Environmental clean up will be NWI's responsibility. About 60 dump sites would be closed down. But it is still not clear who will pay for those clean-ups.
- The same service is to be provided to urban (90 per cent coverage) and rural (70 per cent coverage) residents (PE Research, 1997).
- A technical master plan on the management of solid waste has been drawn up by NWI. The plan will span 20 years, revolving around an eight-pronged strategy (New Straits Times, 23 October 1997).

At the moment, NWI has yet to take over the collection of landfill management services of any local government. Thus, NWI is behind in its implementation schedule. The interim take-over of solid waste management and maintenance of cleanliness in Ipoh is still under planning. In comparison, Alam Flora and Southern Wastes have taken over the solid waste management services for KL-PJ, and Johor Bahru, respectively. It is understood that NWI is still in the midst of planning its strategy of operations.

Central Region

For the central region, Alam Flora Sdn Bhd, a consortium of seven companies,[5] received approval to manage the privatisation of the national solid waste system for Selangor, Kuala Lumpur, Pahang, Terengganu and Kelantan. About RM4.7 billion will be invested in new landfills, transfer stations, incinerators and thermal fuel generators over the next 20 years (New Straits Times, 19 July 1997).

Kuala Lumpur City Hall

In January 1997, Alam Flora Sdn Bhd took over the municipal solid waste management in Kuala Lumpur (KL) for an interim period of one year. This arrangement has been extended for another year. Under the concession agreement with Kuala Lumpur City Hall (DBKL), Alam Flora undertakes to manage the following (on an annual basis):

- Garbage collection and cleaning services,
- Hawker centres, wet markets and night markets,
- The Taman Beringin solid waste disposal site.

Alam Flora also took over 538 former City Hall workers, 232 vehicles and 29 private contractors still under contract with City Hall (New Straits Times, 8 October 1997).

Technical and quality regulation is undertaken by DBKL. No tariff is charged at present; pending the tabling of the national solid waste privatisation bill. Instead, DBKL pays Alam Flora for services rendered. For 1998, DBKL is expected to pay Alam Flora RM65 million for rubbish collection, cleaning of roads, drains and markets in the city (The Star, 15 December 1997).

Petaling Jaya Municipal Council

Alam Flora will conduct a three-month trial run for solid waste collection in Petaling Jaya (neighbouring KL), starting May 1998. Alam Flora will take over the task of cleaning and collecting rubbish from drains, roads and markets, including grass-cutting, once it is officially in charge. Thus, the Petaling Jaya Municipal Council (MPPJ) will pay Alam Flora

[5] The consortium consists of : HICOM which holds 40 per cent shares in Alam Flora; Kumpulan Jetson Berhad (20 per cent); Pembinaan Dayabumi Sarawak Berhad (20 per cent) and the state governments of Pahang, Kelantan, Selangor and Terengganu (each 5 per cent share). Kumpulan Jackson is an civil engineering company.

on a monthly basis for solid waste collection.

Alam Flora will absorb more than 100 staff from the council's Urban Services Department and most of the staff have opted to join the private company. The 10 waste disposal contractors appointed by MPPJ will continue providing service in the areas as detailed in their contract with the council. Alam Flora has already briefed the contractors on the takeover and will also educate them and set standards and procedures for the contractors to follow (New Straits Times, 19 March 1998).

Concession agreements with the other states in the central region, however, have yet to be worked out.

Southern Region

Southern Waste Management Sdn Bhd (SWM), a consortium of five local companies and two foreign partners,[6] was established in March 1996, after receiving approval from the federal government to manage the collection, transportation and disposal of solid wastes in the southern region over the next 20 years. The states covered are Negeri Sembilan, Johor and Malacca, with a total of 25 local councils.

In November 1997, SWM took over the solid waste management of the Johor Bahru Town Council, otherwise known as Majlis Bandaran Johor Bahru (MBJB) and the District Council of Johor Bahru Tengah (MDJBT). SWM has been given an interim period of one year to manage the solid waste disposal service of these two areas.

The terms of the concession agreement with MBJB and MDJBT include the following:

- SWM will be responsible for the management and maintenance of garbage disposal sites, dumping grounds, cleanliness of main roads and clearing of drains, and maintaining wet markets and night markets.
- SWM will collect and dispose of solid wastes from 150,000 households and industries under the jurisdiction of MBJB and MDJBT.
- MBJB will pay the consortium RM2.5 million, while MBJBT will pay RM970,000 per month over a period of one year.
- SWM will also make an initial payment of RM100,000 for the acquisition of equipment and machinery from the council, namely for garbage collection trucks and bulldozers. The remaining amount will be settled once the council has completed a comprehensive audit of its equipment and machinery.
- SWM absorbed 713 city council workers and will manage the sub-contractors engaged by the council earlier for solid waste disposal, lawn mowing and the clearing of drains.
- SWM will build a new "smoke-less incinerator" to better manage solid waste disposal. The incinerator, which is based on French technology, was part of the requirements of

[6] The consortium consists of Consec Gali Sdn Bhd, Kembangan Restu Sdn Bhd, TNB Engineering and Consultancy Sdn Bhd, AWS Jaya Sdn Bhd, Engineering and Environment Consultants Sdn Bhd and foreign partners, ESYS-Montenay S.A. (France) and Black and Veatch International (United States).

the concession agreement with the federal government. The

technology is expected to be operational in five years' time and is expected to provide cost-effective and efficient management and disposal of solid waste.

- Under an interim agreement between the state and the company, members of the public will not be required to pay for services for one year (New Straits Times, 1 October 1997).

Once the interim period expires, the federal government, state government and MBJB will conduct a review. Depending on the outcome, a concession agreement will be signed between the state and the consortium for the privatisation of solid waste management for the whole of Johor for the next 20 years.

To date, concession agreements with the states of Negeri Sembilan and Malacca are still under negotiation between the concessionaire and the two state governments.

Eastern Region

Eastern Waste Industries Sdn Bhd has been awarded the concession to privatize the solid waste management of the eastern region, comprising Sabah and Sarawak.

Tariff Arrangements

At the time of writing, the privatised tariff structure has not yet been finalised. The Government and the concessionaires are, however expecting some opposition to a new tariff. This is because of IWK's experience with the privatised sewerage services. They will either be phased in gradually or will be introduced only after five years in order to minimise opposition. It is not certain yet whether there will be any reductions in house assessments after privatisation.

In the case of garbage collection in the DBKL area, the Federation of Malaysian Consumer Affairs Associations (Fomca) had already requested City Hall to reduce the assessment rates when the garbage collection is fully privatised (The Star, 1 October 1997). The Government has also given the assurance that the assessment rates charged by local authorities will be reduced when the solid waste management in Peninsular Malaysia is privatised (New Straits Times, 21 February 1998). But some measures are necessary to reduce the risk of non-payment, such as was faced by IWK.

Current levels of house assessments are too low to cover the costs of operating a proper waste management system that includes collection, transport, storage, treatment and sanitary disposal. The costs of new sanitary landfills represent a large new cost component. The federal government is of the view that substantial increases in household tariffs to reflect the new level of costs in full would be politically and socially unacceptable. The Government is, therefore considering a combination of phasing-in new tariffs and ongoing cross-subsidies from commercial to domestic customers.

6.4 Status under Privatisation Process

The privatisation efforts are recent initiatives. The concessionaires, particularly those involved in the national solid waste management system, have been in operation for only one year or less. In this initial period, some of the concessionaires are faced with teething problems in human resource management. Some of the DBKL and MBJB staff are dissatisfied with the new terms and conditions of employment offered to them. In isolated instances, there have been minor disruptions in garbage collection services for a variety of reasons.

The current situation appears to be unclear. The Government has allowed only a few areas to be taken over by the concessionaires, and they have put up appropriate notices of their undertaking. Most of the areas are still managed by their respective local governments. Besides the above teething problems, several major issues have yet to be resolved.

First, the regulatory framework has to be finalised, particularly with respect to the institutional arrangements, legal authority and powers.

Second, several operational issues still need to be ironed out. They are tariff rates (how much would households be required to pay); service levels (should all households in the whole country get the same services); manner of disposal (for example, incineration costs much more than sanitary landfills); squatters (whether such communities would be provided with waste collection services); clean-up of existing dump sites (who should bear the cost); educating the public (who should bear this cost); and recycling measures.

It is too early to be able to say whether this would be a successful case of privatisation. Clearly, the education of the public needs to be undertaken, and it is not clear who will bear this cost, as this will be a long-term commitment. Also, successful implementation of privatisation would probably mean reduced cases of default and greater satisfaction with the services provided.

6.5 Key Issues

The key issues currently facing the Government, the concessionaires, and the public are detailed below.

Costs and User Charges

Another issue of concern is with respect to how the privatised party is to be paid for their services. Currently, property owners, the generators of wastes, pay house assessments. For that, they get access to various municipal services, of which solid waste collection

and disposal is one of them. After privatisation, it would be prudent to say that these assessment rates will not be sufficient to pay for the solid waste system. A new system for rate collection will thus have to be devised. In this regard, the Government will be carrying out a study on the method of payment for garbage collecting services being provided by Alam Flora Sdn Bhd on a one-year interim basis. The study will look into the possibility of the company collecting fees directly from households instead of receiving a lump sum payment from local authorities. Another option could be the continuation of the existing payment system, where local authorities will collect assessment fees from households, including garbage collection charges and pay a lump sum to Alam Flora.

In the long term, the Government may have to think of more innovative ways to collect moneys to pay for anticipated hefty sums to deal with solid wastes. Options include taxing consumption and passing such taxes to waste disposal. A consumption tax is the market means to discourage consumption, and in this case, to lower the solid waste streams that would be building up in the consumer side. Some current ideas in this regard are described in the JICA Study of Solid Waste Recycling in Malaysia (1995).

One obvious consequence of privatisation is the rise in cost of the service provided. With the introduction of more advanced methods of waste disposal, the Government and the concessionaire will have to consider the level of charges that should be imposed on the consumer. The system prior to privatisation was heavily subsidised in that the diseconomies from solid waste dumping were borne by residents living close to solid waste dump sites. They had to suffer the nuisance of the smell of mercaptons, and other noxious gases emanating from the dump sites. To ensure that this situation does not persist, the privatised party would have to develop sanitary landfills. The cost of such landfills are a quantum leap from the current costs of maintaining dump sites. For instance, the cost of tipping solid wastes at Kelana Jaya is estimated to be RM1 per tonne. At the Air Hitam sanitary landfill site, the tipping fee is RM25 per tonne; this does not yet take into account the cost of transport from various parts of the Klang Valley to Air Hitam/Puchong. The issue of who is to bear the costs and to what extent these costs can be passed on to the public will have to be considered carefully.

Regulation

It is recognised all over the world that the privatisation of utilities requires a proper regulatory framework. The Government will have to promulgate means to protect public interest, namely, to monitor the privatisation process, ensure that the terms of the concession are abided, regulate the price of services and ensure that the ordinary people are not over-burdened with its cost. The Government will also have to ensure and that the concessionaire is implementing the most cost-effective solutions and not exploiting its monopolistic position, as well as that the environment is becoming healthier.

The principal issue will be whether the regulators are to handle the privatised parties, that is, given sufficient resources, manpower and training to deal with emerging issues. It must be emphasised that regulating privatisation is not merely a technical matter of

making sure that the system works. It is also how to make use of existing institutional resources in the most efficient manner to supervise the privatised parties in their job performance. It needs no reminding that once privatisation takes place, the regulators are depending on the private party to deliver the services. Whether they perform well, especially in a monopoly-type environment, will depend on how well the regulatory framework is devised and implemented. There can be a clear distinction between the profit motive of the privatised party, and the supervisory system of the regulator.

Clean-Ups of Old and Illegal Dumps

It has been mentioned that the concessionaire, NWI is to clean-up and then close those dumps that are more than 60 years old. This is really the Government's problem, since these dump sites were created and used by the Government when they had the mandate to collect rates and provide disposal services. If these services were poorly performed, then the responsible party should pay for it. It could very well be the case that the Government did not charge enough for doing a proper job. But that is a different issue. Also, technically, the Government does not have guidelines on the clean-ups and closure of dumps and there is also no such experience in Malaysia.

A Standardized Service for the Whole Country

The implication of having one system for solid waste must mean that all consumers pay the same price. If the social angle is to be taken into consideration, in that the rural and presumably less affordable consumers should pay less, then, other segments of the Malaysian society will have to end up subsidising the rural areas. This will go against the philosophy of the solid waste privatisation exercise in the sense of a "user pay" system. The principle of a standardised environment system for the whole country had been implemented for sewerage services, and the implication of that has been to load the industrial and commercial users, with a subsidy for rural consumers who can less afford these services. It is already a year into the privatisation project and the public and industry are still complaining about high tariffs and charges of the privatised sewerage services.

The key point must then be whether a standardised system is essential. Economically, this does not make sense, unless of course the entire population is relatively homogenous in their ability to pay, and demand the same environmental quality. This can hardly be so, since rural areas face far less problems than highly urbanised areas. The argument against a national privatisation effort relates to its social, environmental and economic costs. With respect to the environment, the demands for solid waste disposal systems for rural and less urbanised areas may be very different from those of urban areas. As such, there can be different and more cost effective solutions for rural areas, whereas in the urban areas the

cost and environmental dimensions of solid waste solutions are vastly different.

Choice of Technology

Before deciding on the process of waste treatment, factors needed to be taken into consideration include: the economic aspect, suitability of technology and pollution to the environment. A comprehensive technological-economic evaluation which had been carried out by Mohd Nasir Hassan (1992) concluded that landfill was the most cost-effective and appropriate method of waste disposal in Malaysia. The social costs (direct costs plus environmental damage costs) of proper sanitary landfill was estimated to be around RM35 per tonne compared to RM500 per tonnes for incineration and RM216 per tonne for composting (joint paper by Nasir, Rakmi, Kamil and Wan Nor, October 1995).

Although landfills require a large area of land, and this is difficult to find in fast developing areas, such as Kuala Lumpur and Petaling Jaya, the limitation can be overcome by locating landfills away from waste-generation areas and by setting up transfer stations near collection points. However, as landfill capacity in Malaysia becomes exhausted in the future, and replacement of landfills becomes difficult, other disposal alternatives will need to be considered. These alternatives include incineration and composting.

Studies have shown that both incineration and composting are highly capital intensive and expensive to maintain. For example, an incinerator with a daily burning capacity of 2,500 tonnes could cost RM1 billion with yearly operating cost at around RM14 million, while a landfill to tackle a similar capacity will cost three to five times less in capital investment (Malaysian Business, 30 January 1995).

Besides that, both incineration and composting are not pollution free. Incineration brings with it the emission of toxic gases such as, dioxins and furans, and ash. With large-scaled mechanical composting, there is the issue of high cost and unreliable markets for compost products.

The Government has insisted that the concessionaires provide incineration. This disposal method, while being the most efficient in terms of disposal, will be the most costly. At a time when the economy is faced with prospects of an economic slowdown, there is a possibility of defaults in payment. The concessionaires are resisting the Government's proposal, and this is one area of the privatisation exercise that had its full implementation delayed.

Affordability and Willingness to Pay

The simultaneous privatisation of major utility services and the concomitant increase in costs and user charges raise the issue of whether another increase in service costs is tolerable. It should be borne in mind that average household incomes have increased in the past 10 years. Using the national per capita GDP incomes (proxy for incomes), average incomes have increased from RM3,586 in 1986 to RM5,889 in 1995 (real terms, based on 1978 prices), or 5 per cent real annual growth in incomes over the past 10 years. This is averaged over the entire country, assuming no widening disparities of income.

Under situations where incomes are rising, it stands to reason that the public would be able to tolerate rising prices of utility services. This is only if their incomes are rising faster than the cost of services. Thus, wages have to keep on rising if discontent is not to express itself.

Industrial Non-scheduled Wastes

Besides domestic and commercial solid waste previously collected by the local authorities, it is proposed that the concessions will also include an effective monopoly over the collection and disposal of industrial and construction non-scheduled waste. Another possibility is that private collection companies will be issued licences, provided they meet specified minimum standards, allowing them to operate in specific areas under contract either to the Government or to the consortia.

It may be necessary to provide the consortia with a regional monopoly over the disposal of municipal wastes in order to ensure that they earn an adequate return on the investments required to meet sanitary standards at new and existing landfills. The case for including industrial solid waste in this monopoly is weaker if industries have already established satisfactory low-cost and environmentally-sound disposal routes through open competition. Environmental regulation of solid waste flows needs to be strengthened to ensure that industrial solid waste management is of an acceptable standard.

In line with the objective that the Government should provide little or no financial support to privatised companies,[7] an argument for the inclusion of industrial solid waste in the monopoly is that business customers will cross-subsidise households. This will allow household tariffs to be held down as costs rise. However, cross-subsidies are not an ideal way of financing the gap between service costs and tariff revenues for a group of customers. They distort economic behaviour in the following ways:

- Add to the costs of industrial output, making final products less competitive;
- Increase the risk that some companies will seek to avoid high charges by tipping waste

[7] The objective that financial support for a sector should be withdrawn on privatisation can be counter-productive. Complete withdrawal of subsidies available to public-sector service providers can increase customer resistance to privatisation because tariffs rise, even though the privatised entity provides a service at lower cost. This could jeorpadise the success of privatisation schemes.

illegally; and

- Potentially encourage less efficient production methods which produce a smaller amount of waste than is economical.

An alternative approach would be for the Government to provide subsidies for household waste collection and disposal from general tax revenue, and for private companies to bid competitively to provide services to industrial companies.

Environmental Institutions

Environmental regulation of the sector appears to be inadequate at present. Section 34A of the Environmental Quality Act gives the DOE powers to require and to EIA [(under the Environmental Quality (Prescribed Activities)(Environmental Impact Assessment) Order 1987, DOE (1995): Environmental Impact Assessment Guidelines for Municipal Solid Waste and Sewage Treatment and Disposal Projects, Kuala Lumpur] when new and expanded waste disposal sites are proposed. They also have the power to act against illegal dumping at unauthorised sites. Local authorities can also take action against illegal dumping under the Local Government Act 1976. These powers are, however not enforced effectively.

Moreover, there are no independent systems for monitoring the environmental integrity of waste collection or disposal systems. The local authorities are self-regulating at present, but most do not have the resources to inspect their sites effectively, let alone finance upgrading to sanitary standards. The DoE estimates that about 80 per cent of solid waste is dumped by local authorities or their sub-contractors in open sites (Nera, 1996).

Public Cooperation in Solid Waste Management

At present, there is hardly any sorting of waste at source by house owners. Sorting is mainly carried out at the collection and dumping stages by the collection staff and private parties, including scavengers. Waste is a resource at a wrong place and can be recycled. Government initiative may be necessary to increase the extent of recycling. A 1993 study in the Petaling Jaya Municipal Council area indicated that 85.8 per cent of respondents agreed to cooperate in voluntarily separating waste if there is a clear policy imposed by the council (MPPJ, 1993). Hence, public education of the people is important if the Government is interested in promoting recycling of solid wastes.

6.6 Cost and Benefits

Costs to the Users

With national privatisation on the cards and the huge investment planned by the bidders, it is natural to expect that the real cost of garbage disposal, collection and treatment will surface in due course. Kuala Lumpur City Hall had warned its residents that they must be prepared to pay when the city switches to solid waste disposal via incineration, as it will cost RM1.2 billion to build the incinerator (The Star, 12 May 1995). The Minister for Housing and Local Government, Ting Chew Peh, had said the federal government would ensure that any solid waste management system implemented would not burden the people (New Straits Times, 17 May 1995).

If the latter were true, it can only be inferred that the Government would ensure that the concessionaire does not impose high tariff rates. This does not, however, mean that the cost to the household would not increase, since the current management practice falls far short of the performance standards required of the privatised service.

It appears that while people may be prepared to pay extra tariffs for improved services, cleaner and healthier environment, they certainly do not wish to pay unacceptably high rates. This involves value for money and users' recognition of value based on the polluter pays principle.

Benefits to the Government

Solid waste management and facilities in Malaysia need urgent attention and huge investments. Local authorities are short of financial resources and there is an urgent need to reorganise and improve waste management, which requires a significant capital outlay.

As in other environmental-related services, this area has been suffering from gross under-investment by the state and federal governments. It is not possible to assess how low the under-investment has been as data is lacking. Nevertheless, some of the bids for the national privatisation plan would provide some idea of the magnitude of under-investment thus far. For example, Alam Jernih Sdn Bhd, one of the major bidders, was reported to plan an investment of US$5 billion to provide waste management services in Malaysia for 25 years (The Star, 6 July 1995). The other bidders, proposing to provide regional waste management service, had submitted proposals worth RM1 billion to RM2 billion.

Based on the investment figures of the bidders, it means the federal government will save billions of ringgit in development costs if the solid waste management service were privatised. It should also be able to bring about a more uniform system of waste management in Malaysia. At local levels, the local authorities will be relieved of the burden of having to cope with shortage of funds and untrained staff.

Benefits to the Environment

The current practice of open and illegal dumping, and open burning is causing environmental and health hazards. Thus, the environment may be the main beneficiary of the privatised solid waste management. The degree of benefit to the environment, however, depends on the effort of the privatised firms, and the capability of the regulatory agency.

The main intention of the privatisation is not only to improve collection services, but also to prevent wastes from straying into the environment (for example the rubbish collection service to squatter communities, and clean-up of rivers).

6.7 Summary Remarks

The solid waste management system is currently under-financed, under-staffed and is causing serious environmental problems. The people are also not paying their full share of the cost for the proper management of solid wastes. Therefore, the environmental conditions at disposal sites and its transport, storage and treatment has degraded. Over time, the problem has become worse as urban population grows exponentially. If nothing is done about the current practice, it is possible that environmental disasters might emerge in the near future.

With this in mind, the privatisation of solid waste management is an attempt by the Government to redress a social as well as an environmental problem. The Government invited the private sector to bid for improving services to this municipal function. Since early 1997, the Government has awarded contracts to four consortia to manage solid wastes for all 144 local authorities in the whole country.

In the last year or so, the privatised concessionaires have undertaken preparatory works. Two of the four concessionaires have taken over the larger municipal areas (KL, PJ and JB) in the country. These take-overs, however, have involved direct negotiation between the concessionaires and the respective local authorities. In terms of the overall situation, it is known that the solid waste privatisation has stalled. The reason for the delay in implementation has been a disagreement between the concessionaires and the Government over the proposed use of incineration, and the likely impact of the tariff on households if that disposal system were implemented. It is also expected that there may be public resistance to the proposed privatisation, similar to the sewerage privatisation experience.

CHAPTER 7

Water Supply Privatisation

7.1 Background

The provision of safe water for domestic and industrial users remains an important thrust of the Government's strategy for the water sector. Emphasis has been given to the protection and conservation of potential sources of fresh water to improve water quality as well as to improve the efficiency and long-term sustainability of the water supply system.

While the management and maintenance of the water supply systems has traditionally been the responsibility of the Government, the private sector has, in recent years, been called upon to participate in the development and management of some of the water supply systems in the country.

Water demand in Malaysia has increased markedly in tandem not only with population growth but also with the fast pace of economic development and industrialisation. Malaysia's liberal policy on investments introduced in October 1986 had attracted many foreign industries to set up factories in the country.

In 1996, the water supply capacity in Malaysia was approximately 9,633 million litres per day (MLD) as compared to the demand of about 7,572 MLD (Refer to Table 7.1). The domestic and industrial water demand is expected to increase by 3.5 per cent per annum during 1996-2000, while demand for irrigation is expected to rise marginally. Urban coverage is expected to reach 100 per cent in most states, while rural coverage is expected to reach 83 per cent by the end of 2000 (Table 7.2).

However, despite these plans, various shortages have appeared to be critical, especially in the Klang Valley. News articles in late March and early April 1998 highlighted that various areas in the Klang Valley have been without water supply for several weeks. Emergency water supply tanker service had to be provided in these areas. Kuala Lumpur started water rationing in late March 1998. [1]

[1] All these crises point to problems at various levels of government institutions, infrastructure financing and investment, resource conservation, consumer education, and also pricing of water. Some of these issues especially those relevant to water supply privatisation will be discussed later on.

Table 7.1
Production Capacity and Average Demand in Malaysia, 1980-1996 (MLD)

State	1980		1985		1990		1996	
	Production Capacity	Demand	Production Capacity	Demand	Production Capacity	Demand	Production Capacity	Demand
Johor	209.7	234.0	431.0	431.0	983.0	529.0	1184.0	926.0
Kedah	141.39	161.1	237.0	237.0	434.0	374.0	858.0	597.0
Kelantan	51.12	51.12	135.0	104.0	216.0	116.0	210.0	184.0
Malacca	78.3	78.84	134.0	114.0	175.0	170.0	268.0	256.0
Negeri Sembilan	116.82	96.84	208.0	182.0	530.0	230.0	433.0	386.0
Pahang	112.5	112.5	276.0	201.0	528.0	369.0	651.0	352.0
Perak	436.5	315	552.0	468.0	644.0	564.0	995.0	817.0
Perlis	14.85	6.52	24.0	24.0	58.0	43.0	92.0	83.0
Penang	342	265.5	418.0	343.0	494.0	452.0	856.0	653.0
Sabah[1]	124.6	106.9	318.0	188.0	556.8	362.8	640.0	536.0
Sarawak	157.0	101.5	324.0	188.0	532.2	334.0	713.0	466.0
Selangor[2]	854.64	707.8	1037.0	1098.4	1895.1	1768.0	2389.0	2076.0
Terengganu	38.92	28.39	158.0	71.0	291	114.0	344.0	240.0
Malaysia	2678.34	2266.01	4252.0	3649.4	7337.1	5425.8	9633.0	7572.0

Notes:
[1] Includes the Federal Territory of Labuan
[2] Includes Federal Territory of Kuala Lumpur
Source: Water Supply Division, Public Works Department

Table 7.2
Water Supply Situation in Malaysia
(Actual coverage of population served with piped water)

Year	Total (%)	Urban (%)	Rural (%)	Overall Target (%)
1980	58.7	89.0	42.9	-
1985	70.9	93.1	57.6	72.9
1990	78.3	{96.5}	72.8	82.4
1995	89.0	99.0	79.0	79.0
2000	(95.0)	(99.0)	(83.0)	(95.0)

Note: Figures in parentheses() are targeted coverage of population served with piped water
Source: Fifth Malaysia Plan: 473, Sixth Malaysia Plan: 332, and Seventh Malaysia Plan: 361

Rapid industrialisation, high population growth and rural-urban migration have, however, contributed to serious water pollution. River water quality has deteriorated as a result of organic pollution (resulting in higher Biological Oxygen Demand), higher soil content and sedimentation, sewage and animal waste, as well as the presence of heavy metals, such as cadmium, lead, mercury and copper. Of the 116 rivers monitored by the DoE in 1996, 13 were heavily polluted. Another 61 rivers were moderately polluted, and 42 were clean. Coastal and marine water quality has also been affected by the presence of faecal coliform, total suspended solids, oil and grease (DoE, 1997).

Besides the problem of pollution, water loss is also a problem. The country has not been very successful in combatting inefficiency in water supply. One major factor is the gross under-investment in this sector. According to the 7MP, the unaccounted-for water losses or the non-revenue water (NRW) rate averaged 43 per cent for the whole country in 1990. In some states, the efficiency of water supply was even lower, with unaccounted-for water losses as high as 61 per cent for the same year (Table 7.3).

Table 7.3
Non-Revenue Water Rate, 1990-2000

State	**1990**	**1995**	**2000**
	NRW (%)	**NRW (%)**	**NRW (%)**
Johor	47	36	20
Kedah	61	48	35
Kelantan	42	40	25
Malacca	38	35	25
Negeri Sembilan	52	42	25
Pahang	49	48	30
Perak	39	37	25
Perlis	51	38	26
Penang	20	20	18
Sabah[1]	46	58	30
Sarawak	30	36	23
Selangor	45	40	25
Terengganu	33	36	20
W.P. Kuala Lumpur	45	40	25
Malaysia	**43**	**38**	**28**

Note: [1] Including Wilayah Persekutuan Labuan
Source: 7MP, 1996-2000: 361

The high level of water losses is attributed to meter under-registration, system leakages and other losses. To reduce such losses, measures have been taken to improve the efficiency of the water supply system through upgrading and rehabilitation of the existing treatment plants and distribution system. These measures undoubtedly require massive capital investment. For instance, the Public Works Ministry estimated in 1995 that a sum of RM2 billion (US$816

million) would be needed to lay new pipes all over the country to

minimise water losses through leakage (New Straits Times, 5 May 1995). The privatisation of water supply projects is thus aimed at reducing the financial burden of the Government and, at the same time, increasing the efficiency of the water supply systems.

7.2 Status before Privatisation

Legislation and Policy

The jurisdiction and legislative powers with respect to all aspects of water are distributed between the federal government and the state governments in accordance with the Legislative Lists of the Federal Constitution. The items enumerated in the Federal List are: Hydropower; Navigation; Maritime Fisheries; Estuarine Fisheries (in the Concurrent List in the case of Sabah and Sarawak); Federal Works and Power, including water supplies, rivers and canals except those wholly within one state or regulated by an agreement between the states concerned.

The items enumerated in the State List are: Rivers; Public Nuisances; Riverine Fisheries and Water (including water supplies, rivers and canals if they are wholly within one state or regulated by an agreement among the States concerned); control of silt and riparian rights. Certain items are listed in the Concurrent List, which fall within the jurisdiction of both the federal government and the state governments. These items are: Drainage and Irrigation; Town and Country Planning (except in the federal capital); Public Health and Sanitation (excluding sanitation in the federal capital) and the rehabilitation of land which has suffered soil erosion.

Various legislations have been promulgated with respect to water sources and public water supply. The legislation relevant to water sources are described below.

(a) Waters Act, 1920 (Revised 1989)

Under this Act, the entire property in and control of all rivers in any state is vested solely in the Ruler of such state. No person may in any manner obstruct or interfere with any river except under and in accordance with the terms of a licence under this Act. A licence to divert water from a river in any district may be granted by the district officer with the approval of the state authority for private or domestic purposes, for use in the cultivation of rice, and for industrial and other purposes. This Act only applies to the states of Negeri Sembilan, Pahang, Perak, Selangor, Malacca, Penang and the Federal Territory. For the other states, there are similar provisions in the State enactments.

(b) Geological Survey Act, 1974
The legislation governing the abstraction of groundwater in the Geological Survey Act, 1974 requires that any person who develops a well for the purpose of extracting water has

to notify the director general of the Geological Survey Department. This requirement does not apply to any well which is less than 30 ft (9.15 metres) in depth without reaching bedrock or yield less than 500 gallons (2,273 litres) of water per day and is used only for domestic purposes.

(c) Environmental Quality Act, 1974

The Environmental Quality (Prescribed Activities)(Environmental Impact Assessment) Order, 1987 enforced under the Environmental Quality Act, 1974 governs the environmental impacts arising from the prescribed activities, one of which is the extraction of groundwater. The order requires an EIA to be carried out for groundwater development for industrial, agricultural or urban water supply for quantities greater than 4,500 m^3 per day.

The legislation related to public water supply are listed below.

(a) Water Supply Enactment, 1955

The Water Supply Enactment, 1955 empowers the State Water Supply Authorities (SWSAs) to supply water to domestic and trade consumers. This enactment also empowers the SWSAs to lay water mains and distribution pipes across or under any street and through or under any enclosed land making reasonable compensation for any damage done. This Enactment, however, only applies to the states of Negeri Sembilan, Pahang, Perlis and Selangor. For the other states, there are similar provisions in the state enactments.

In the state of Johor, however, the responsibility for public water supply has been handed over by the state government to a private limited company. The equity of the company is wholly owned by the state government. Syarikat Air Johor Sdn Bhd, formerly the Johor Water Supply Department, was established under the provision of the Water Supply (Successor Company) Enactment, 1993.

Concurrently, under provisions of the Johor Water Supply Enactment, 1993, a regulatory body, that is, the Johor Water Regulatory Body, was established with the responsibility of enforcing provisions of this enactment. Under this enactment, Syarikat Air Johor Sdn Bhd has to obtain a licence to carry out the activities of public water supply.

(b) The Proposed Safe Drinking Water Act

At present, the SWSAs supply water using WHO quality standards as a basis. The MoH is in the process of drafting the Safe Drinking Water Act to control the quality of drinking water supplied to the public. Under this proposed Act, the supply of drinking water that does not meet specific standards would constitute an offence.

Institutional Set-up

Each of the 13 Malaysian states operates, manages and develops its own water supply system. Each State has its own Water Supply Enactment Act that governs the development, protection of water resources and catchment areas. Water endowments are, however, unequally distributed amongst the various states, some of which (for example, Penang and Malacca) are somewhat dependent on other states to meet some of their water needs. Every State thus has a powerful role in water conservation, regulation and use.

Each state is also responsible for water distribution and tariffs are collected from users. Water rates, however, differ from state to state, depending on the abundance of water supply, the quality of water and the pattern of human settlement, and efficiency of the water supply system. For example, consumers in Penang are charged 22 sen or US 6 cents per cubic metre, but Selangor charges 42 sen or US 11 cents (see Table 7.4). Penang, in terms of efficiency of supply, is the most efficient. But Selangor has the greatest need.

The federal government, nevertheless, has a role to play over water matters. The EPU in the Prime Minister's Department evaluates project proposals, while the MoF provides the funds. Under the 7MP, 1996-2000, the federal government allocated a total of RM3,575.3 million for water source works, reticulation, upgrading and rehabilitation. Allocations for the 1990-5 period totalled RM2,749.5 million and out of this amount, a total of RM2,671.9 million was spent. It has been estimated that the investment value of privatised water supply projects is RM2,571.7 million (7MP, 1996-2000: 405).

The Federal Public Works Department (PWD) provides technical advice and consultation to states, including guidelines on water resource use. It is also responsible for coordinating all water supply projects funded by the federal government, both in the form of loans and grants. Other functions include the implementation of water supply schemes for certain federal or state agencies, such as the Federal Land Development Authority (FELDA), South-east Johor Development Authority (KEJORA), Central Terengganu Development Authority (KETENGAH) and the Development Authority of Pahang Tenggara (DARA).

Water resource management is thus carried out on a largely piece-meal basis under various legislations, and by many authorities. Water supply in Malaysia's 13 states is currently managed by five types of water Organisations, each enjoying varying degrees of autonomy. Table 7.5 shows the various types of water Organisations. They are: the State Water Board, State Water Supply Department, State PWD, Federal PWD and a private Water Corporation. The Water Boards of Malacca, Penang and the Sarawakian cities of Kuching and Sibu are state-formed Organisations and function like autonomous state bodies. They collect water tariffs and plan their own budgets.

Table 7.4 Water Rates in Malaysia, 1997 (as of 1 July 1997)

Type of Charge	Johor	Negeri Sembilan	Selangor and Federal Territory of Kuala Lumpur	Penang	Pahang	Kedah
DOMESTIC SUPPLIES						
Residential	0-15m^3@RM0.30/ m^3 16-34m^3@RM0.70/ m^3 31-45m^3@RM0.95/ m^3 >45m^3@RM1.15/ m^3	0-9 m^3@RM0.40/ m^3 10-20m^3@RM0.55/ m^3 >20 m^3@RM0.65/ m^3	0-15m^3@RM0.42/ m^3 16-40m^3@RM0.65/ m^3 >41m^3@RM1.05/ m^3	0-20m^3@RM0.22/ m^3 20-60m^3@RM0.42/ m^3 >60m^3@RM0-70/ m^3 Bulk Supply 0-90m^3@RM26/month >90m^3@RM0.35/ m^3	0-18m^3@RM0.37/ m^3 18-45m^3@RM0.79/ m^3 >45m^3@RM0.99/ m^3 Military Camp@RM1.15/ m^3	0-20m^3@RM0.40/ m^3 21-40m^3@RM0.70/ m^3 41-60m^3@RM0.90/ m^3 >60m^3@RM1.10/ m^3
Religious Institutions	-do-	in excess of free supply RM0.20/ m^3	RM0.33/ m^3 min. charge - RM3.00	-do-	RM0.44/ m^3	-do-
Charitable Organisations	-do-	in excess of free supply RM0.20/ m^3	RM0.42/ m^3 min. charge - RM3.00	-do-	-do-	-do-
Government Buildings and Statutory Bodies	RM1.15/ m^3 min. charge - RM5.00	RM0.50/ m^3 min. charge - RM5.00	RM0.80/ m^3 min. charge - RM10.00	as for industrial	-do-	-do-
Min. Charge per month	RM3.00	RM3.00	RM3.00	RM2.50	RM3.00	RM3.00
COMMERCIAL SUPPLIES						
Industrial/Commercial	0-20m^3@RM1.20/ m^3 >20m^3@RM1.60/ m^3 min. charge - RM10.00	0-100m^3@RM1.00/ m^3 100-500m^3@RM0.90/ m^3 >500m^3@RM0.85/ m^3 min. charge - RM10.00	RM1.20/ m^3 min. charge - RM20.00 (inc. private swimming pool)	0-20m^3@RM0.52/ m^3 >20m^3@RM0.70/ m^3 min. charge - RM6.00	Gazetted Area 0-227m^3@RM0.92/ m^3 >227m^3@RM0.84/ m^3 min. charge - RM30.00 Trade@RM1.45/ m^3 min. charge - RM20.00 Part-Trade@ RM0.99/ m^3 min. charge - RM10.00	0-10000 m^3@RM1.20/ m^3 10000-50000 m^3@RM1.20/ m^3 >50000 m^3@RM1.80/ m^3 min. charge - RM10.00
Construction	-do-	do-	-do-	RM0.90/ m^3 min. charge - RM10.00	as for trade	-do-
Swimming Pool	-do-	RM1.00/ m^3 min. charge - RM5.00	-do-	as for industrial	@RM1.32/ m^3 min. charge - RM15.00	-do-
SPECIAL RATE						
Shipping	@RM3.70/ m^3	@RM1.00/ m^3	@RM2.10/ m^3	RM1.50/ m^3	Commercial@RM4.00/ m^3 min. charge - RM30.00 Fishing Boat@RM4.00/ m^3 min. charge - RM30.00	
Special Rate			as for construction		Bulk rate (untreated)	
Bulk Supply Educational Institutes/ Army Camp/Estate		Ladang/ Estate@RM0.70/ m^3 min. charge - RM5.00	@RM0.65/ m^3 min. charge - RM100.00		@RM0.52/ m^3 min. charge - RM30.00	
Pig-rearing Area in Mukim Bt. Pelandak Port Dickson		0-70 m^3@RM0.90/ m^3 >70m^3@RM0.80/ m^3 min.charge - RM5.00				
Condominium			@RM0.75/ m^3 min.charge - RM100.00			
Residential Flats (Government/Semi-government)			@RM0.50/ m^3 min.charge - RM20.00			
Current rate w.e.f.	1/4/91	1/2/93	1/1/91	1/5/93	1/2/83	1/3/93

Type of Charge	Malacca	Terengganu	Sarawak	Bintulu	Perak	Perlis
DOMESTIC SUPPLIES						
Residential	0-15m^3@RM0.42/ m^3 15-40m^3@RM0.70/ m^3 >40 m^3@RM1.10./ m^3 min.charge-RM3.00	0-20m^3@RM0.42/ m^3 20-40m^3@RM0.65/ m^3 40-60m^3@RM0.90/ m^3 >60m^3@RM1.00/ m^3 min. charge-RM4.00	0-15m^3@RM0.44/ m^3 15-50m^3@RM0.65/ m^3 >50m^3@RM0.69/ m^3	0-14m^3@min. charge-RM6.60 14-45m^3@RM0.61/ m^3 >45m^3@RM0.66/ m^3	0-10m^3@RM0.30/ m^3 10-20m^3@RM0.70/ m^3 >20m^3@RM0.90/ m^3	0-15m^3@RM0.40/ m^3 15.1-40m^3@RM0.70/ m^3 >40.1 m^3@RM1.10./ m^3
Religious Institutions	RM0.45/ m^3 min. charge-RM3.00	<50 m^3 - Free 50-70 m^3 @RM0.95/ m^3 >70m^3@RM1.15/ m^3 min. charge - RM3.00 Free if constructed under the approval of the Pesuruhjaya Hal Ehwal Agama, Terengganu	-do-	-do-	@RM0.30/ m^3	-do-
Charitable Organisations	-do-	as for residential	-do-	-do- -do-	-do-	-do-
Government Buildings and Statutory Bodies	RM1.05/ m^3 min. charge - RM15.00	<70m^3@RM0.95/ m^3 >70m^3@RM1.15/ m^3 min. charge- RM15.00	-do-	@RM0.66/ m^3	as for residential	-do-
Schools		do as for state/federal schools private schools as for commercial	@RM0.60/ m^3			
Min. Charge per month	RM3.00	RM4.00	RM4.00	RM6.60	RM3.00	RM4.00
COMMERCIAL SUPPLIES						
Industrial/Commercial	RM1.40/ m^3 min. charge - RM15.00	Industrial-RM1.15/ m^3 min. charge - RM50.00 Commercial <70m^3@RM0.95/ m^3 >70m^3@RM1.15/ m^3 min. charge- RM15.00	Industrial 0-25m^3@RM0.95/ m^3 >25m^3@RM1.20/ m^3 min. charge - RM22.00 Commercial 0-25m^3@RM0.88/ m^3 >25m^3@RM0.96/ m^3 min. charge - RM20.00	Industrial 0-23m^3, min. charge-RM24.20 >23m^3@RM1.21/ m^3 Commercial 0-23m^3, min. charge-RM20.90 >23m^3@RM0.99/ m^3	Industrial/Commercial 0-10 m^3@RM1.20/ m^3 >10 m^3@RM1.40/ m^3 min. charge - RM12.00	Part-Trade RM1.10/ m^3 min. charge - RM5.00 Trade RM1.30/ m^3 min. charge - RM8.00
Construction	as for industrial	house 1 no. - as for commercial house>2 nos. as for industrial	as for commercial	as for commercial	-do-	as for trade
Swimming Pool	as for industrial	private premise as for residential hotel as for commercial	as for commercial residential/1	as for commercial/I residential/1	-do-	as for trade
Bulk Supply					@RM0.60/ m^3 min. charge -RM100.00	
Public Standpipes	RM0.80/ m^3 min. charge -RM20.00	not applicable	@RM0.39/ m^3	@RM0.36/ m^3		RM0.77/ m^3
SPECIAL RATE						
Shipping	Bulk Supply @RM3.00/ m^3 min. charge - RM15.00 Raw Water @RM0.70/ m^3 min. charge - RM20.00 Estate as for government buildings	Commercial ship/boat @RM3.00/ m^3 min. charge - RM30.00 Estate (Bulk Meter) <500m^3@RM0.65/ m^3 >500m^3@RM1.00/ m^3 min. charge - RM300.00	@RM1.50/ m^3 Special Commercial Rates 0-25m^3@RM1.10/ m^3 >25m^3@RM1.21/ m^3 min. charge - RM25.00 Domestic/Commercial Rates 0-25m^3@RM0.75/ m^3 >25m^3@RM0.86/ m^3 min. charge - RM17.00	@RM1.70/ m^3 Special Commercial Rates 0-25m^3@RM1.21/ m^3 >25m^3@RM1.33/ m^3 min. charge - RM27.50 Domestic/Commercial Rates 0-25m^3@RM0.83/ m^3 >25m^3@RM0.96/ m^3 min. charge - RM18.70	as for bulk supply	as for trade
Current rate w.e.f.	1/8/92	1/3/97	17/8/95	1/9/82	1/9/91	1/1/96

Type of Charge	Kelantan	Sabah/1	Federal Territory of Labuan	Kuching	Sibu	Sri Aman, Miri, Limbang, Sarikei, Kapit
DOMESTIC SUPPLIES						
Residential	0-20m^3@RM0.25/ m^3 21-50m^3@RM0.40/ m^3 >51m^3@RM0.60/ m^3	RM0.90/ m^3	RM0.90/ m^3	1-15m^3@RM0.48/ m^3 15-50m^3@RM0.72/ m^3 >51m^3@RM0.76/ m^3	1-15m^3@RM0.48/ m^3 15-50m^3@RM0.72/ m^3 >51m^3@RM0.76/ m^3	1-15m^3@RM0.48/ m^3 15-50m^3@RM0.72/ m^3 >51m^3@RM0.76/ m^3
Religious Institutions	-do-	Free	Free	-do-	-do-	-do-
Charitable Organisations	-do-	@RM0.90/ m^3	@RM0.90/ m^3	-do-	-do-	-do-
Government Buildings and Statutory Bodies	RM1.40/ m^3 min. charge- RM10.00	-do-	@RM0.90/ m^3	as for commercial	as for commercial	-do-
Schools		@RM0.45/ m^3	@RM0.45/ m^3			@RM0.66/ m^3
Min. Charge per month	RM2.50	RM4.00	RM4.00	RM4.40	RM4.40	RM4.40
COMMERCIAL SUPPLIES						
Industrial/Commercial	RM0.70/ m^3 min. charge - RM7.00 Water Pipes/Fountain RM0.50/ m^3 min. charge- RM3.00 Peniaga kecil RM1.40/ m^3 min. charge- RM3.00	Commercial RM0.90/ m^3 min. charge-RM4.00	RM0.90/ m^3 min. charge-RM4.00	Commercial 1-25 m^3@RM0.97/ m^3 >25 m^3@RM1.06/ m^3 min. charge - RM22.00 Domestic/Commercial 1-25 m^3@RM0.83/ m^3 >25 m^3@RM0.95/ m^3 min. charge - RM18.70	Commercial 1-25 m^3@RM0.97/ m^3 >25 m^3@RM1.06/ m^3 min. charge - RM22.00 Domestic/Commercial 1-25 m^3@RM0.97/ m^3 >25 m^3@RM1.06/ m^3 min. charge - RM18.70	Commercial 1-25 m^3@RM0.97/ m^3 >25 m^3@RM1.06/ m^3 min. charge - RM22.00 Domestic/Commercial 1-25 m^3@RM0.83/ m^3 >25 m^3@RM0.95/ m^3 min. charge - RM18.70
Construction	RM1.45/ m^3 min. charge- RM10.00		-do-	Commercial Rates 1-25 m^3@RM1.21/ m^3 >25 m^3@RM1.33/ m^3 min. charge - RM27.50	Commercial Rates for water processed for sale 1-25 m^3@RM1.21/ m^3 >25 m^3@RM1.33/ m^3 min. charge - RM27.50	Commercial Rates 1-25 m^3@RM1.21/ m^3 >25 m^3@RM1.33/ m^3 min. charge - RM27.50
Swimming Pool	RM1.00/ m^3 min. charge- RM10.00	as for commercial residential/2		-do-	as for commercial	-do-
Bulk Supply				@RM0.43/ m^3		
Public Standpipes				@RM0.43/ m^3	@RM0.43/ m^3	@RM0.43/ m^3
SPECIAL RATE						
Shipping	@RM2.00/ m^3 min. charge - RM20.00	@RM2.70/ m^3	@RM2.70/ m^3	@RM1.70/ m^3	@RM1.70/ m^3	@RM1.70/ m^3
Current rate w.e.f.	12/9/96	1/1/82	17/8/95	1/9/82	17/8/95	17/8/95

1/ -except for Kota Belud District where rates are half of those shown for Sabah
2/ - industrial rate for hotels and residential rate for domestic pools
w.e.f. - with effective from

Source: Malaysia Water Report, 1996/9

On the other hand, the Water Supply Departments of Selangor, Negeri Sembilan, Terengganu, Sabah and Pahang function like any state department. Water tariffs collected enter the state coffers and the water departments receive their funding from the state government. This funding may be less than the total water tariff collections.

Table 7.5
Types of Water Supply Organisations

Type	Water Supply Area
State Public Works Department	Kedah, Perlis, Sarawak (excluding Kuching, Sibu, Miri, Bintulu and Limbang in Sarawak)
State Water Supply Department	Selangor (including Kuala Lumpur), Negeri Sembilan, Terengganu, Sabah, Pahang
State Water Supply Board	Malacca, Penang, Perak, Kuching, Sibu
Corporatised Company	Johor, LAKU (Miri, Bintulu and Limbang in Sarawak)
Privatised Company	Kelantan
Federal Public Works Department Headquarters	Federal Territory of Labuan

Source: Malaysia Water Industry Report, 1996/97

The state PWDs of Kedah, Kelantan, Perlis and Sarawak (except for Kuching and Sibu Cities), once the state branches of the Federal PWD, are now under state control. They now function like a state department. Labuan, however, is under the jurisdiction of the Federal PWD.

The state water authorities are responsible for operating and maintaining water systems, which include dams, water treatment plants, trunk mains, service reservoirs, water supply distribution systems and connections to consumers, and financing of its own projects and any projects co-financed with the federal government. The financial aid they receive from the federal government comes in the form of grants and soft loans for capital works in water projects, which include urban and some rural areas. Rural water supplies in general are implemented with federal grants.

As mentioned above, the states of Johor and Kelantan have respectively corporatised and privatised their water supply function in 1994 and 1995. For the state of Sarawak, a corporatised company was also formed in 1996 to manage water supply to the areas of Miri, Bintulu and Limbang. It is to be noted that once a state water supply authority is corporatised or privatised, a state regulatory body is formed at the same time to regulate the running of the water supply company. At present, there are two state water supply regulatory bodies, one in Johor (Johor State Regulatory Body) and the other in Kelantan (Kelantan Water Department).

Besides the state water agencies, other agencies involved in water projects are:

(a) Ministry of Works: designs and implements water projects in Regional Development Areas and Special projects, for example Antah-Biwater Rural Water Supply Project.
(b) Ministry of Rural Development: plans, coordinates Federal Rural Water Supply projects.
(c) Department of Irrigation and Drainage: plans, designs and implements drainage and irrigation projects, as well as flood mitigation masterplans.
(d) Ministry of Land and Cooperatives Development: administers federal grants and loans for building treatment plants and distribution systems in FELDA schemes and regional development schemes.
(e) Ministry of Health: cooperates with state governments to provide community water supplies to prevent the spread of communicable diseases under the Rural Environmental Sanitation Programme (RESP).

In summary, the plethora of agencies involved in water management is best depicted in Table 7.6. As can be seen, the scope of water resource management aspect is very wide and many agencies are involved. In fact, no one agency oversees the entire management of water resources. Instead, the water management function is so fragmented that all levels of government are involved, depending on the aspect of water management or the nature of water pollution (IPT, 1992: 85).

7.3 Privatisation Plan for the Sector

Although Malaysia first declared its national privatisation policy in 1983, privatisation of water supply systems or parts of it did not begin until the late 1980s. It is one of the last public utilities to be privatised. This is because water supply has always been considered the responsibility of the Government in meeting the basic needs of the population for clean water. Most water privatisation projects are, thus, still at their initial stages of privatisation. Apart from social factors, complications unique to water management have also slowed down the privatisation process.

Water projects include the construction and maintenance of dams for the storage of water, building and maintenance of treatment plants, laying of pipes for distribution of water to end-users and the collection of tariffs from consumers. These projects can be privatised to one company, or separately to various companies.

In Malaysia, the water privatisation projects involve mainly treatment systems. Table 7.7 shows the list of privatised water treatment plants. The Government considers this to be the most capital-intensive aspect of the water supply system and wants to relieve itself of the financial burden. From the investor's standpoint, water treatment contracts constitute the most lucrative and clear cut of all water supply privatisations. In addition, water treatment is the least cumbersome aspect of the water supply system, as it does not require any change in state legislation to enable a private entity to manage it.

Table 7.6
Agencies Involved in Water Management

Task	Agencies
Watershed Management	Water Supply Department Public Works Department Forestry Department Land Office
Water Resource Planning	Water Supply Department Public Works Department State Government Federal Public Works Department (Water Supply Branch)
Irrigation and Drainage	Drainage and Irrigation Department
Flood Management (outside municipality) (within municipality)	 Drainage and Irrigation Department Municipal Council/Local Authority
Water Pollution Control: Rubber mills Oil palm mills Industrial effluent Sewage (factory) Sewage (household) Any pollutant or disturbance Animal waste (licensing)	 Department of Environment Department of Environment Department of Environment Department of Environment Municipal Council/Local Authority Municipal Council/Local Authority Municipal Council/Veterinary Department
Overall water quality	Department of Environment, monitors but not responsible
Landuse Zoning	Local Authority/State Planning Agencies

Source: Adapted from IPT, 1992: 84

Table 7.7

List of Privatised Treatment Plants

State/Treatment Plant	Capacity (MLD)	Concession Period	Operator's Name
Selangor			
1. Sg. Semenyih	540	1987-1997 (10 years)	Taliworks Consortium Sdn Bhd
		1997-2020 (23 years)	Puncak Niaga (M) Sdn Bhd
2. Tg. Karang	27	1991-2001 (10 years)	Taliworks Consortium Sdn Bhd
3. Sg. Selangor	940.50	1993-2003 (10 years)	Perangsang Water Management Sdn Bhd
4. 26 treatment plants	1020.15	1994-2020 (26 years)	Puncak Niaga (M) Sdn Bhd
N. Sembilan			
1. Sg. Terip	40.5	1989-1999 (10 years)	Taliworks Consortium (NS) Sdn Bhd
2. Kepis	3.15	1990-2000 (10 years)	Taliworks Consortium (NS) Sdn Bhd
Kedah			
1. Bukit Pinang	135	1990-2005 (15 years)	Sisma Management Sdn Bhd
2. Pelubang	135	1990-2005 (15 years)	Sisma Management Sdn Bhd
3. Sg. Ular	29.70	1990-2005 (15 years)	Sisma Management Sdn Bhd
4. Pinang Tunggal 1	33.75	1990-2005 (15 years)	Sisma Management Sdn Bhd
5. Pinang Tunggal 2	15.75	1990-2005 (15 years)	Sisma Management Sdn Bhd
6. Langkawi	40.50	1995-2020 (25 years)	Taliworks Consortium Sdn Bhd
Perak			
1. Sultan Idris Shah			
(a) Ulu Kinta	90	1989-2009 (20 years)	Metropolitan Utility Corporation Sdn Bhd
(b) Parit	90	1989-2009 (20 years)	Metropolitan Utility Corporation Sdn Bhd
2. Krian, Larut and Matang	72	1989-2009 (20 years)	Innovest Lyonnaise Sdn Bhd
Labuan			
1. New Labuan Supply	37.35	1988-2001 (13 years)	Labuan Water Supply Sdn Bhd
Sabah			
1. Kota Kinabalu	108.90	1992-2012 (20 years)	Labuan Water Supply Sdn Bhd
2. Tawau/Sandakan	94.50	1993-2013 (20 years)	Jetama Sdn Bhd
2. Lahad Datu, Semporna, Kunak Pulau Bum Bum	92.66	1995-2014 (20 years)	Lahad Datu Water Supply Sdn Bhd

Source: Malaysia Water Industry Report, 1996/97

There are 478 water treatment plants in Malaysia with a total production capacity of about 9,660 million litres of water per day. Most states have privatised or are in the process of privatising their treatment plants. Privatised water treatment plants normally obtain raw water from a state authority free of charge.

After treating the water, the private entity then sells in bulk the clean water back to the Government. In Johor, however, the state water authority has been corporatised, giving the enterprise an independent status and subjecting it to the same legal requirements as private firms. Johor Water Bhd, set up in February 1994, is wholly-owned by the state government but is supposed to run like any other private concern.

Once a water project is privatised, the role of the state water authority is reduced to that of a regulatory authority acting as a watchdog for the Government. Funding of water development projects and subsidies provided by the federal government also ceases.

Modes of Privatisation

Three modes of privatisation have been adopted in the water sector. They are: (a) Management or service contracts; (b) Build-Operate-Transfer (BOT) contracts; and (c) Mixed management and BOT contracts.

Management or service contracts involve the transfer of management operation and maintenance of existing treatment plants or newly-constructed plants by the Government to the private sector for a definite period of time. Generally, the private company awarded the contract is wholly responsible for the operation and proper maintenance of the plant. It also bears all the risks involved in the repair and/or replacement of the facilities. The Government pays the company a fixed rate for the supply of treated water during the concession period, which is normally five years and renewable for a further five years. At the end of the period, the company will return the plant in good condition back to the Government.

An example of this mode of privatisation is the operation of the 545MLD Sungei Semenyih water treatment plant in Selangor. This plant, privatised in the early 1990s, supplies water to the Klang Valley (capital city Kuala Lumpur and adjacent areas). In this case, the company not only has to bear all the risks involved, but also has to face penalties if it fails to supply water in accordance with the specified quantity and quality during the five-year concession period.

There are also contracts that provide management staff and labour for the operation of the water treatment plants. In these cases, the Government pays for all the chemicals and electricity consumed as well as for the maintenance of the facilities. The Government also bears the risks in the operation and maintenance of these plants.

In BOT contracts, the private company finances the construction of the project. When the project is completed, the company operates and maintains the facility for a specified period before the whole project is transferred back to the Government in good working condition. This type of contract normally carries a concession period of 20 years to 25 years. An example of a BOT privatisation is the Labuan Water Supply project. The company awarded this contract designed and constructed the project and is maintaining it. The concession period is 13 years, from the time of the construction of the project.

Under the terms and conditions of the concession agreement, the Government purchases the water in bulk from the company. The amount of payment depends on the quantity of water delivered. This payment takes into consideration the amount of chemicals and electricity consumed and fluctuations in price of materials. Additionally, the Government also makes a separate monthly payment to the company to cover its overheads, investment and financing costs.

Under the contract, the company will be penalised for failing to supply water in accordance with the specified quality or the minimum scheduled quantity. The company bears all the risks associated with construction and financing costs, exchange rate fluctuations and technical problems. At the end of the concession period, the company is required to hand over the entire facility in good condition to the Government free of charge.

Mixed Management and BOT contracts are a combination of the first two modes of privatisation just discussed. The private firm takes over the operation of existing treatment plants and undertakes to finance and build new facilities to meet rising demand during the concession period. The Government purchases water in bulk from the company.

Two such contracts have been awarded in Perak and one in Johor. The concession period for all the contracts is 20 years. In the Perak case, the price of water paid by the Government was fixed at the time the contract was awarded. This meant that the company has to bear inflation risk. The company can, however choose to time the construction of new facilities to meet rising water demand. In the case of Johor, the price of water sold to the Government changes with the phasing in of new facilities. The new price will also take inflation into account.

7.4 Status after Privatisation

Table 7.8 summarises the status of privatisation in the water supply sector. In general, the states are in various stages of transition from public sector water agencies to becoming fully-privatised entities. The current water crisis has accelerated the privatisation process. In Selangor, the privatisation process is the most advanced; it started with water treatment in 1994, but the state government announced that Puncak Niaga was also to take over the Water Supply Department. Several other states have also announced that their water departments would be privatised by the end of 1998, namely, Perak, Negeri Sembilan and Terengganu (corporatised).

Table 7.8
Status of Water Supply Privatisation by State, as of April 1998

State	Operator's Name	Type of Operation	Status
Selangor	Puncak Niaga Sdn Bhd	27/29 treatment plants	BOT (25 years) – privatisation announced in January 1998
Negeri Sembilan	NS Water Consortium	Treatment and distribution	RM763 million (30 years) – privatisation by end 1998
Perak	Metropolitan Utility Corporation Sdn Bhd	Treatment	BOT (20 years) and management contract – fully privatised by end 1998
Terengganu		Treatment and distribution	Corporatised by end 1998
Malacca	Malacca Water Corporation	Treatment and distribution	Corporatisation, eventually privatisation
Kelantan	Kelantan Water	Treatment and distribution	Fully privatised
Penang	Penang Water Corporation	Treatment and distribution	Corporatisation
Kedah	Sisma Management Sdn Bhd	Treatment	
Johor	Syarikat Air Johor Sdn Bhd	Treatment	BOT (20 years) and management contract – corporatisation in 1994
Sarawak	LAKU	Treatment	Privatised for Miri, Bintulu and Limbang
Sabah		Treatment	Privatised for main towns
Labuan	Labuan Water Supply	Treatment	BOT (13 years)

Source: Malaysia Water Industry Report 1996/97 and PE Research 1995

Kelantan privatised its water department in 1995. The department is now known as Kelantan Water. Johor formed a Water Corporation in 1994, and Malacca and Penang have also followed suit. These will mostly take the form of corporatisation under the state governments' control and ownership.

The fact of the matter is that major international players are entering into the water supply industry. They are part of the process of making bids for the control and ownership of agencies involved therein.

As mentioned earlier, the federal government has also directed state governments to launch into the privatisation or corporatisation of the water supply sector.

7.5 Key Issues

The implementation of water privatisation projects has brought to light several issues and problems. Below are some major ones.

Extent of Privatisation

The privatisation of water supply in Malaysia has been confined mainly to water treatment the modes used are mainly management contracts, BOT contracts and a combination of the two. To a large extent, water privatisation has shown initial positive results, but it is not entirely satisfactory to privatise only the water treatment process. Privatising water treatment alone does not address the issue of water loss through the distributive network, that is, non-revenue water, currently an investment issue of considerable magnitude. Water loss is a drain on the state's resources in the sense of wasted asset, and also a cost concern, since treated water is lost, not raw water. Water loss is thus a gain to the privatised water treatment firm, with the Government, a net loser. In addition, due to greater pollution of water resources, there is an urgent need to enhance water management at source.

The EPU recently issued guidelines to all state governments to privatise all three components of the water supply system – catchment, treatment and distribution parts, rather than just the treatment process alone. As such, there appears to be considerable investment opportunities for both local and foreign firms.

Cost of Privatised Services

Privatised services in water supply may not necessarily result in a cheaper service. Even with increased efficiencies and productivity, the net effect of a privatised service is usually more expensive than a government-operated one. This is because a government-operated department has a lot of "hidden" costs, such as, finance, insurance and amortisation, which are not normally costed into the water tariff. These costs will have to be accounted for in any private concern. Further, the private sector has to allow for higher financing costs and associated risks, taxes and a profit on their investment.

In the Labuan privatisation project, the Government decided to bear the financial burden and subsidise the project and in the process forestall the raising of water rates to consumers. In the privatisation of treatment plants, several state governments have openly announced that water tariffs will not be raised. This may mean that the Government will pay for the additional costs, or that the private sector is able to absorb these costs in their operation.

It will be politically unacceptable for water rates to be high. Traditionally, water has been a subsidised commodity to meet the basic needs of the people. It is generally perceived that every person has a right to cheap, clean and safe water. If such an essential commodity becomes an expensive item, social concerns or problems could arise. This is a matter of concern to the Government.

Economic Viability of Projects

Water regulatory authorities need to assess the economic viability of water projects before making any decisions to embark on privatisation initiatives. When projects are privatised, water authorities seem to work on the assumption that the private sector is able to solve all the problems, including financing. That may not necessarily be so, or from the concessionaire's standpoint, desirable. One issue that may plague all privatisation has to do with the social acceptance of these projects, and the willingness of the public to pay a higher price. The current practice has been for the state water authorities to purchase treated water from concessionaires. This means the State is absorbing a cost of treated water that is higher than it otherwise should be.

Financing

Compared to international financial institutions, local banks are relatively inexperienced in the financing of privatised projects. Hence, major privatisation projects have been undertaken by international financial corporations. Local banks have asked for insurance cover for different types of risks that used to be assumed by the Government before privatisation. This raises the cost of financing projects, and makes local financial institutions less competitive.

Under the current economic situation, however all privatisation projects will have to be examined under strict financial returns. Government departments do not pay tax on profits. Under current tax laws, income from the BOT projects are not tax deductible, even for loan repayments. Also, the depreciation of assets is not permitted for tax deduction. Unless the tax laws for such privatised concerns are reviewed, the private sector invariably will pass such costs onto consumers.

Pollution Control

Malaysia's fast pace of development and industrialisation, high population growth, rapid rural-urban migration and lack of control on pollution has affected the quality of its raw water. Going by WHO specifications, 74 per cent of Malaysia's water sources are slightly or grossly polluted. Sites for suitable dams near urban areas are no longer easy to find. For example, Kuala Lumpur's future water supply might have to come from Pahang rather than Selangor. Over time, treated water will cost more. Water is, thus becoming a "depleting resource" in Malaysia. To ensure that Malaysia will continue to be blessed by abundant supply of clean water, the country has to take steps to stem pollution and has to be more environmentally conscious in its development projects.

Regulation

The privatisation of water supply in various states will consequently result in the establishment of many regulatory authorities, each acting independently of one another. There is thus a need to design and standardise the regulatory aspects in the privatisation process to ensure that the general public's interests are taken into consideration. With the increasing number of privatised water supply projects, there is a need to ensure that

standards and guidelines on water supply, reliability and quality are developed and adhered to.

Rationale for Privatisation

Although water privatisation has proceeded thus far, the question that is still being raised by some quarters is whether an essential service such as water supply should be privatised. Should the Government treat water supply as a social service to the people? Although raw water is 'free', treated water has a cost. Also, more efficient services can be offered by the private sector. The issue of water privatisation is a trade-off between price and service quality.

7.6 Costs and Benefits

Costs

The major investment costs involved in a water supply system include investments in the construction of infrastructure, such as storage areas, treatment plants and laying of pipes. The major operational costs incurred include the processing of water, use of chemicals, petrol and electricity, repair and maintenance of the water supply system and payment of staff salaries.

Once privatised, hidden costs – such as insurance and corporate costs – which were previously borne by the Government in government-run water supply system, will emerge and will have to be built into the cost structure. These hitherto hidden costs may be transferred to the State governments or the end-users. In the Malaysian context, state governments buy back treated water in bulk from the privatised concerns. Hence, these costs may well be borne by the state governments if water tariffs remain unchanged.

Out of political consideration, state governments are generally prepared to absorb the hidden costs in the initial stages of privatisation. It is a popular belief that water supply should be a social service, and people should enjoy water freely and cheaply. But many believe that the burden will eventually be passed on, or shared with, end-users. If this happens, it is inevitable that water rates will rise and consumers have to bear the costs.

As the profit bottom-line is the main consideration of a privatised concessionaire, it may want to choose water supply projects catering for the urban rather than rural area. In densely populated urban areas, returns may be good as there are economies of scale, but this may not be the case in rural areas. Hence, it appears that in rural areas, it may be necessary for the Government to continue its social programme on water supply.

The pressure to increase investments in this sector has been brought to bear on the Government as the demand for safe water increases with population and industrial development. By bringing in private sector finance, the Government has succeeded in reducing its financial burden. The Government does not have to finance development costs

and to maintain water facilities in BOT or mixed privatisation contracts.

But under the current arrangements, the government still pays for the treated water. Eventually, the Government will pass over to the concessionaire the powers to charge consumers directly. Table 7.9 shows the development expenditure incurred by the Government in the water sector since 1976.

Table 7.9
Water Supply Expenditure Under the Five-Year Malaysia Plans

Five-Year Plan	Period	Water Supply Expenditure (RM'000)
Third Malaysia Plan	1976 - 1980	538
Fourth Malaysia Plan	1981 - 1985	2,085
Fifth Malaysia Plan	1986 - 1990	2,348
Sixth Malaysia Plan	1991 - 1995	2,089
Seventh Malaysia Plan	1996 - 2000	*2,907

Note: * Budget Allocation
Source: Malaysia Water Industry Report, 1996/97

Benefits

Although many water privatisation projects are still in their initial stages of privatisation and full-scale privatisation (where a public offer of its shares and applies for listing on the stock exchange) has not materialised in any of the projects, some initial success can be seen in some privatised projects. The major non-quantifiable, but discernible, benefits seen in the privatisation of water supply system are stated below.

Benefits to End-users

On the whole, consumers are able to enjoy a higher level of service without a very high increase in cost. There is a greater reliability of water supply and the quality of water supply has improved, such as in the case of Selangor,

In Kedah, the privatised treatment plant was found to be more efficient than plants operated by public sector agencies. The cost of water from the privatised plant was found to be cheaper than when it was government-managed (The Star, 3 July 1993).

Benefits to the Government

The Government is relieved of the financial and administrative burden and it is able to reduce its development budget. The Government has also benefited from reduced staff strength despite an increase in coverage. The Government can enjoy higher revenues when privatised projects turn profitable and start paying taxes. The rise in private investment as a result of privatisation will spur greater economic activities resulting in higher economic growth. This benefits the nation as a whole.

Benefits to the Private Sector

By teaming up with a foreign technical partner, the local private sector stands to gain from technology transfer. After gaining the know-how in managing water supply projects, a private firm may venture overseas to bid for similar contracts (as in the case of Thames Water in the Kelantan water supply privatisation). In the long run, the private sector not only profits from local privatisation but also foreign ventures. Its home country can also benefit if foreign exchange is brought back by the privatised firm.

Benefits to the Staff

Generally, civil servants enjoy higher salaries after joining a privatised firm. The terms of employment under the new employers are generally better than the public sector's. A privatised department or a company involved in privatisation projects cannot lay off former civil servants in the first five years of operation.

Under a new private employer, the staff is placed to work in an environment where they are rewarded according to their performance and productivity. This new work culture may stimulate them to work harder and learn faster.

In the Johor case, more than 1,700 employees of Johor Water Bhd had their pay package revised in February 1995, one year after the company was corporatised. The implementation of the new package will cost the company an additional RM1 million per year to its current salary allocation of RM17 million (The Star, 3 November 1995)

Benefits to the Environment

The efficiency and productivity that is expected of privatisation will likely see an improvement in the management of water resources.

7.7 Summary Remarks

Water supply privatisation in Malaysia is still in its infant stage. Initially, privatisation has been focused on operating water treatment plants. Concessionaires would charge the water supply authorities for the service of water treatment. The privatisation exercise has not proceeded beyond this stage in some states. The trend is to privatize the entire water supply function, namely, from water collection, storage, treatment, distribution and operation of the entire system.

A more objective set of performance indicators is needed to evaluate a privatised service. The importance of a well-thought-out regulatory framework cannot be more strongly emphasised. In this aspect, Malaysia has limited experience, partly because of the early stage of privatisation. The regulatory agency should be adequately financed, and have experienced staff who can manage the privatisation process carefully.

In so far as the larger objective of increasing bumiputera participation, the government has succeeded in ensuring that the privatisation concessionaires have a fair proportion of ownership by bumiputeras. In fact, many of the staff of the previous water works departments are working in the newly-privatised agencies.

In terms of lessons that can be learned from Malaysia's recent privatisation, it would appear that the experience is still very new. As a first step, it might be important to note that the privatisation of water treatment plant operations is the easiest to implement as it basically involves a water supply authority subcontracting treatment operations to a private firm.

If the entire water supply operations were to be privatised, in the sense of the storage, collection, treatment, distribution and operations, it would be important to find a firm that is sufficiently well-capitalised. A financially strong firm would be able to invest in upgrading the infrastructure that earns revenue in the medium- to long-term.

The Government will have to decide on the social aspects of water supply. For instance, water is regarded as a social right. It is important to find out what the people think, and then to formulate policies accordingly.

CHAPTER 8

Sewerage Services Privatisation

8.1 Background

Sewage and sullage, such as solid and toxic wastes, are an environmental and health hazard, particularly in the fast growing urban areas of Malaysia. With the rapid pace of urbanisation and industrialisation, sewerage facilities in Malaysia have been unable to cope with the rise in volume of sewage and sullage generated by households and industries, resulting in environmental pollution caused by untreated sewage and sullage. The need to set up a more efficient and effective sewerage system thus became essential in order to prevent further deterioration of the environment.

Sewerage systems in Malaysia currently range from the modern flush toilet that is connected to individual septic tanks, communal systems and central sewers, to archaic systems, such as hanging toilets, bucket system and pit latrines. Only 53 per cent of households have access to modern sewerage systems. This means that a large proportion of the population is still using archaic systems, which constitute a major environmental and health hazard, particularly in the urban areas. Where modern sewerage facilities are used, these facilities are generally in poor condition and there is a lack of resources and expertise to maintain them. It has been estimated that Malaysia produces 5 million cubic metres of domestic sludge every year. Facilities to treat and dispose of this sludge are, however, limited. Sewage treatment plants with excess capacity are currently being used to treat septic tank sludge. In addition, another 1.5 million cubic metres of stabilised sludge is being held in existing sewage treatment plants (Indah Water, 1997).

Some Environmental Concerns

The lack of sewerage facilities to treat and dispose of sewage and sullage has contributed to environmental pollution, particularly of water sources, coastal waters and beaches. In fact, about 80 per cent of total organic pollution is contributed by the disposal of partially treated or untreated human and animal (piggery) waste (Abu Bakar Jaafar, October 1995, "Two Decades of Environmental Quality Management in Malaysia: The Way Forward," Seminar on National Review of Environmental Quality Management in Malaysia). Rivers, particularly those in the west coast of Peninsular Malaysia, continue to be polluted by human waste, piggery waste, silt and other suspended matters.

A system of sewage pipes, connected to thousands of homes, dump tons of raw sewage into the sea every day. This system of pipes was supposed to have terminated in a treatment plant that has never been built. The continued pollution of coastal waters is a threat to island resort tourism, now a big foreign exchange earner for Malaysia.

The Government has always been aware of the need to control pollution arising from sewage and sullage. In 1979, the Environmental Quality (Sewerage) Regulations was introduced, compelling developers of houses, hotels, tourist resorts and other building projects to build communal treatment plants and sewerage systems in their respective projects.

While developers have adhered to these requirements, the sewerage systems provided did not function efficiently. For instance, due to a rise in building and land costs, some developers looked for cheaper, but not necessarily appropriate, options. Many also failed to carry out proper maintenance of these systems due to shortage of manpower and lack of expertise.

Environmental deterioration caused by pollution from sewage and sullage has thus pointed to the need to accelerate investment in sewerage infrastructure. The shortage of public funds has, however been a constraint and this prompted the Government to privatise the national sewerage system.

Under the 6MP (1991-95), for instance, only RM500 million was allocated for sewerage facilities. If this amount were to be evenly distributed to the 144 local authorities, each would have received about RM3.5 million (US$1.4 million). This amount would have been totally inadequate for huge capital outlays, such as sewage treatment plants. The cost of building a medium-to-large sewage treatment plant is about RM300 million to RM400 million (PE Research, 1995).

8.2 Status before Privatisation

Prior to privatisation, sewage treatment plants, sewers and other sewerage facilities in Malaysia were managed by 144 local councils or local authorities. The local authorities were dependent on the federal government for grants and loans to develop sewerage facilities. On a day-to-day basis, however the local authorities would pay for all sewerage operations. These would either be contracted out to private firms or serviced by the council's own staff.

Due to a shortage of funds and human resource constraints, most local authorities placed low priority on the development of a centralised sewerage system. Between 1986 and 1990, only nine projects, out of a total of 19 feasibility studies on centralised sewerage systems for state capitals and major towns, were implemented (6MP, 1991-1995: 334).

Besides limited funding, local authorities also lacked expertise and technical know-how to maintain the sewerage systems. As a result, only 1 per cent of septic tanks (12,000 of approximately 1.2 million septic tanks) was desludged and there was no proper treatment of sludge. About 80 per cent of more than 3,600 public sewage treatment plants did not function according to required performance levels or were completely out of order (Indah

Water, 1997). In many instances, developers built sub-standard sewerage systems but

technical supervision by the local authorities had been lacking. Furthermore, many sewerage systems were left in the hands of private developers who fail to monitor and maintain them. Only the sewage portion of wastewater is sent into septic tanks or sewer pipe-lines. The sullage portion (that is wastewater from the kitchen) goes straight into open drains.

In terms of service delivery, 89 per cent of the population under the jurisdiction of the larger local authorities had access either to connected sewerage systems[1] or to septic tank systems,[2] while 11 per cent were not serviced. In the smaller local authorities, only 62 per cent of the population had access to connected sewerage systems or septic tank systems, while 38 per cent were not serviced (Indah Water, 1997).

Before privatisation, consumers were not charged separately for sewerage. No separate sewerage bill was sent to households. Instead, the council borne all operating and maintenance costs, and these came out of the council budgets.

8.3 Privatisation Plan for the Sector

The case for privatising Malaysia's entire sewerage facilities was first presented by a private sector consortium to Prime Minister Mahathir Mohamed in December 1991. Two years later, Indah Water Konsortium (IWK), a consortium of five companies,[3] was officially awarded the privatisation contract to rebuild and operate the country's sewerage system at a cost of RM6.3 billion (US$2.4 billion). A 28-year concession was granted to the consortium to provide sewerage services to all local authority areas on a BOT basis.

Institutional Set-up

Before the privatisation contract could be awarded, the country had to change its laws so that sewerage services, which was the responsibility of local authorities, would come under federal jurisdiction. The legislative change came in July 1993 (Sewerage Services Act 1993). The 1993 legislation not only allows for the privatisation of sewerage services to the

1 Connected sewerage system – sewage from the toilet flows via underground sewer pipes to treatment plants before the effluents are discharged into rivers. Usually, there will be an inspection chamber with only one metal cover at the back of the premises. The chamber does not need desludging as it is only used to inspect/clear blockages in the sewer pipes.

2 Individual septic tank system – sewage from the toilet flows directly into an underground tank before the effluents are discharged into the perimeter/monsoon drain. Septic tanks are usually found at the back of the premises and have three or four metal covers. Septic tanks have to be regularly desludged to ensure that they operate efficiently.

3 The consortium comprised North West Water (M) Sdn Bhd, a subsidiary of Britain's North West Water Group PLC; Berjaya Industrial Bhd; Aims Worldwide Sdn Bhd; Armed Forces Pension Fund; and Koperasi Polis DiRaja Bhd, a police cooperative. Idris Hydraulic took over the management of IWK in 1997.

private sector, but also approves the setting up of a national regulatory body to act as a watchdog for the government on sewerage services.
A new regulatory body, the Department of Sewerage Services (DSS), was also set up under the Ministry of Housing and Local Government to regulate and ensure that IWK fulfils that which is set out in the concession agreement. The DSS also acts as the licensing authority for all sewerage infrastructures. Besides the DSS, the DoE is responsible for monitoring the standard of effluents discharged from sewage treatment plants operated and maintained by IWK to ensure that they meet the prescribed environmental standards.

Services

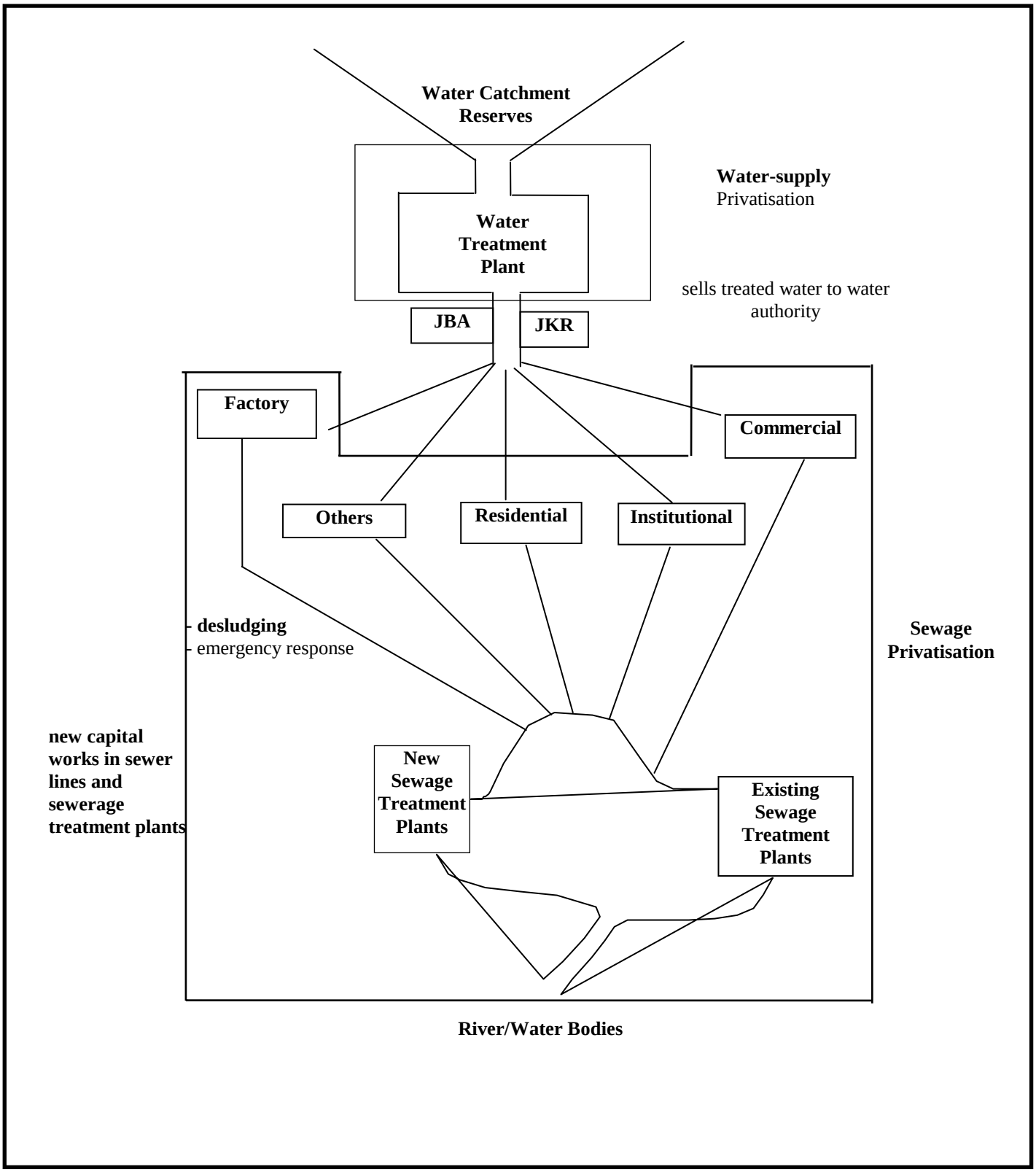
Under the concession agreement, IWK is committed to provide the following services:

- Connected sewerage services to 85 per cent of the population living in 49 large local authority areas, and septic tank services to the remaining 15 per cent of the population.
- Connected sewerage services to 30 per cent of the population living in 95 small local authority areas, and septic tank services to the remaining 70 per cent of the population.
- Implement the Capital Works Programme in six phases over the 28-year period. This programme includes the following:
    - ◊ Upkeep over 5,800 km of public sewer pipes that link households to sewage treatment plants and build another 15,000 km of new public sewer pipes.
    - ◊ Refurbish and upgrade over 2,800 existing public sewage treatment plants to enhance their efficiency. Prior to privatisation, 80 per cent of all the public sewage treatment plants were not operating to the required standards.
    - ◊ Build 300 new treatment plants.
- Operate and monitor over 3,600 public sewage treatment plants.
- Provide scheduled desludging services for over 1.2 million septic tank customers.
- Clear blockages in the public sewer system.
- Treat and dispose of septic tank sludge in accordance with the guidelines set by the DSS and DoE.
- Treat and dispose household sullage.
- Monitor effluent samples from public sewage treatment plants to ensure that they meet the prescribed standards (Indah Water, 1997).

It is to be noted that the privatisation plan does not cover rural areas outside the jurisdiction of local authorities. Sanitation in these areas would continue to come under the MoH's Rural Sanitation Programme. This programme ensures that pit latrines are properly situated in places that are away from the sources of water supply.

The national sewerage system to be developed by IWK is to be a "multi-point sewerage system". This system is illustrated in Figure 8.1. Under this system, treatment facilities are located at strategic locations to serve high priority areas, such as, residential, factory, and commercial area, among others. These facilities can be amalgamated into a regional centralised system in the future. IWK would take over all assets and liabilities of local authorities. IWK is responsible for refurbishing existing sewerage systems, plus invest in new sewerage facilities, equipment and infrastructure.

Figure 8.1
Multiple-point Sewerage System



8.4 Status after Privatisation

IWK began operations in April 1994, starting with a clean-up of Kuala Lumpur. Up until March 1998, a total of 84 local authorities have come under the management of IWK. By the end of 1997, IWK had spent some RM278.6 million on capital expenditure to upgrade the country's sewerage system (New Straits Times, 5 November 1997). As mentioned above, it is envisaged that by the end of the 28 year-concession period, all the major towns in Malaysia will be serviced 85 per cent by sewers and 15 per cent by septic tanks, while the smaller towns will have 30 per cent sewers and 70 per cent septic tanks.

As part of efforts at regulating the sector, a Technical Working Group comprising the DoE, the DSS and IWK, was established in July 1996 to discuss various environmental and operational issues faced by IWK. The main objective of this Working Group is to facilitate compliance with the Environmental Quality Act, 1974 and Sewerage Services Act, 1993 (DoE, 1997).

Tariff Rate

Consumers are sent a sewerage bill every six months. There is, however a high rate of default on payments (New Straits Times, 12 January 1998). Consumers were unwilling to pay for waste treatment services as they feel that they had been charged for a service that is not directly or effectively rendered to them.

Due to widespread protest against sewerage tariff charges, the Government instructed the IWK to stop billing the public for sewerage services until the matter could be resolved. The Government then embarked on an extensive and thorough review of sewerage services. The review addressed customer concerns regarding billing, charges and services as well as the financing of the development and management of a modern and efficient sewerage system for Malaysia.

Following this review, the Government decided that effective from 1 January 1997, IWK was to commence new sewerage charges and billing for connected sewerage service customers and for customers whose septic tanks have been desludged by IWK. The schedule of new sewerage charges is shown in Appendix A.2.

Under the new tariff arrangements, 98 per cent of sewerage customers will have to pay fixed sewerage charges and the charges will not be based on water usage. Only the remaining 2 per cent will pay fixed sewerage charges and an additional charge for water usage above 100 cubic metres per month.

It was also decided that customers whose individual septic tanks had not been desludged were not to be billed. Customers would only be charged after desludging was carried out. All previous sewerage charges were also cancelled. As a result, some RM290 million in sewerage charges was written off by IWK. In essence, IWK had provided Malaysians with free sewerage services since the commencement of its operations in April 1994 to 31

December 1996 (Indah Water, 1997).

Despite the revision in billing arrangements, the rate of non-payment still remains high. For instance, only 20 per cent of the bills issued by IWK to domestic users in July 1997 for services rendered between January and June 1997 had been settled (New Straits Times, 3 November 1997).

Several instances of poor service delivery marred IWK's image and eroded confidence in the concessionaire's work. News reports of illegal dumping of untreated sewage into a river appeared. In another incident, IWK was charged under the Environmental Quality Act for non-compliance with discharge emission standards when it was detected that the ammonia content in the river, Sungai Langat, was found to be unusually high. These incidents contributed towards the further erosion of public confidence.

Land Issue

IWK faced problems with applications for land from respective state governments. Suitable land is needed to build sewage treatment plants. Under the Federal Constitution, land matters come under the jurisdiction of state governments. There have, however, been delays in the approval of IWK's applications for land to build sewage treatment plants. This has affected the implementation schedule of the capital works programme. The federal government has had to intervene to direct all state governments to expedite the approval process so that the privatised sewerage programme can be implemented as scheduled. Additionally, in April 1998, the federal government sought the cooperation of the states to provide land for IWK's infrastructure plants at reasonable costs.

Investments

The concession agreement has an infrastructure investment plan for this privatisation sector. Investments estimated at RM6.4 billion for the 28-year concession period was reported. However, this planned investment programme could not really be carried out because of the incomplete knowledge of the condition of sewerage infrastructures in almost all of the major towns.

Another issue related to the schedule of planned investments relates to the rate of takeover of the services of the local authorities. This would have implications as to what level of capital investments would go into the refurbishment of infrastructures, upgrading and new investments. Needless to say, IWK needed to finance these capital works programme through the sewerage payments. As such, with the payments default, the entire capital works programme has been thrown into disarray. The most recent proposal by the IWK was to undertake refurbishment only on a priority basis (New Straits Times, 12 January 1998).

8.5 Key Issues

Since the national privatisation of sewerage services in Malaysia is the first of its kind in the world, some of the issues and problems encountered here may be unique. In most other countries, privatisation of sewerage services has taken place on a regional basis. Some of the key issues that have arisen with respect to the national privatisation of sewerage services in Malaysia are described below.

Tariff Rates and Public Acceptance

One of the main problems faced in the privatisation of sewerage services has been with respect to tariff imposition. The principle adopted was affordability, meaning that those who can afford it will pay more than those who cannot afford it. From Table 8.1, can be seen that the original tariff structures in the concession agreement shows a lot of urban-rural cross-subsidy and industry-household cross-subsidy. In fact, the tariff is loaded on commercial and industrial operators who are connected to the sewerage system.

This implies that firms would be paying not only for the sewerage services that they use, but also subsidising other users who do not pay their fair share. Tariff rates were originally based on water usage. However, the general public found this to be unacceptable as they were already paying rates for water consumption. Currently, consumers pay a fixed rate based on the assessment value of their residential unit.

As discussed above, the imposition of these tariff resulted in widespread protest from the public and industry. This prompted the Government to undertake a review of the tariff charges and other matters related to financing. Subsequently, a more balanced tariff structure was introduced in 1997. The revised tariff rates are shown in Appendix A.2. Even after revising the tariff, the Government had to step in again on 4 April 1998 to conduct another review, in view of the high default rate.

Under the new tariff arrangements after the first review, sewerage charges would no longer be computed on water usage, as was the case under the original tariff arrangements. Households would be now charged fixed rates depending on the assessment value of their dwelling, while industry's rates would be based on the number of employees. Commercial and business customers, however, are charged rates based on the estimated annual rental that could be derived from their property as well as a charge of 65 sen per cubic metre of water usage, if water consumption exceeded 100 cubic metres per month.

After the first review, 98 per cent of sewerage customers would pay fixed sewerage charges, not based on water usage. However, 2 per cent of consumers would pay fixed charges and a water usage charge for quantities above 100 cubic metres per month. There is thus less differentiation in rates charged between urban and rural households, and between industries and households.
The first revision in tariff rates, however, did not improve the public's perception and

acceptance of the privatised services. The rate of non-payment has remained high even after the tariff revision.

The Need for Public Awareness

The public resistance towards paying for sewerage charges has been attributed to the fact that there was a lack of public awareness on the importance of having a good sewerage system. When privatisation was first mooted, the responsibility was passed to IWK to educate the public on the importance of a proper sanitary system to improve public health and reduce environmental pollution. The Government's responsibility in this area was considerably limited, being a regulator on the one hand, and exhorting the public to cooperate on the other.

An educated and enlightened public would have facilitated the implementation of good and efficient sewerage services. The challenge facing IWK and the Government is to change the public's perception of the privatised services. IWK has thus intensified its efforts to educate the public on the importance of having a well-managed and efficient sewerage service.

Land Issue

In planning for national privatisation, IWK and the federal government had overlooked the hiccups that would arise with respect to land acquisition. Under the Capital Works Programme in the concession, IWK has to acquire land to build catchment and treatment plants. While it is more cost-effective to locate plants within city limits, such prime land has not been easily available.

State governments, who are in charge of land matters, have been reluctant to surrender such pieces of land to IWK, while private land owners would only sell their property at commercial rates. According to the implementation schedule, IWK should have carried out about 20 capital works projects in the first three years. However, after one and a half years, it has only been able to implement three of the projects.

As mentioned earlier, the federal government recently had to step in to get the cooperation of all state governments to expedite the processing and approval of IWK's land applications in the various states.

Regulation

There is a need to ensure that the regulatory body has the capacity and capability to act as a watchdog in the implementation of the privatised sewerage services. According to industry sources, the Sewerage Services Department of the Ministry of Housing and Local Government, when it was first established, lacked the expertise to supervise the implementation of such a large privatised sewerage programme. Its regulators had to undergo training simultaneously while performing their duties. It would have been ideal to

have a pool of regulators trained before the Department became fully operational, and also to have sufficient resources allocated to them for undertaking such a large job and with substantial responsibility.

Planning for Future Needs

The Concession Agreement addresses the immediate needs of sewerage treatment. It does not specify in detail what or how new sewerage systems will be integrated into the IWK system. Under the law, property developers have to build their own sewerage treatment plants and their building plans have to be approved by the Sewerage Services Department.

There is thus a need to ensure that future sewerage treatment plants built by private developers can be properly connected to IWK's planned central catchment system. This mechanism and plans have still to be specified.

Private Treatment Plants

The concession agreement also fails to address the issue of treatment plants built and maintained by the private sector. Since most of these private plants are in bad condition, IWK is not prepared to take over them unless they have been refurbished.

Sullage treatment

IWK is also required to treat sullage discharged from households. Presently, households have pipes which discharge sullage from kitchens and bathrooms into drains and then into public waterways. It is envisaged that households will eventually channel all their sullage into sewers for treatment before being disposed. This will mean that the plumbing systems in existing houses will have to be renovated to be able to connect to the sewers. The plans for new buildings will also need to include provisions for channelling sullage to sewers.

Table 8.1
Sewerage Tariffs Set by the Government

Assessed Value Band	Connected Services		Septic Tank Services	
Domestic Customers	**Fixed Monthly Availability**	**Monthly Usage Charge**	**Fixed Monthly Availability**	**Monthly Usage Charge**
Up to RM 600	RM 2.00	Not Applicable	RM 2.00	Not Applicable
RM 601-RM 1,000	RM 1.00	RM 0.14/m^3	RM 0.68	RM 0.07/m^3
RM 1,001-RM 3,000	RM 2.11	RM 0.14/m^3	RM 1.43	RM 0.07/m^3
RM 3,001-RM 10,000	RM 5.32	RM 0.14/m^3	RM 3.61	RM 0.07/m^3
Above RM 10,000	RM 10.00	Not Applicable	RM 10.00	Not Applicable
Commercial/ Industrial / Government	-	RM 1.20/m^3	-	RM 0.90/m^3

Notes:
The domestic rate is calculated on a combination of the assessed value of your property and your water usage. The assessed value is actually the annual assessed value upon which one's assessment tax (*cukai taksiran*) is based. For example, if your property is connected to a sewerage system and your assessed value is RM9,600, and if you use 30 cubic meters of water per month, you will be charged:

RM5.32+(RM0.14/cu.m. x 30) = RM9.52 per month

If you have a septic tank, your bill for the same property, using the same amount of water, will be:

RM3.61 + (RM0.07/cu.m. x 30) = RM5,71 per month

The Government has also laid out the minimum and the maximum sewerage tariff:
Minimum Monthly Sewerage Charge - RM 2.00 (Applicable only to single and separate
Maximum Monthly Sewerage Charge - RM 10.00 used solely for residential purposes)

Source: "Indah Water Begins Operation," newspaper supplement on Indah Water

Table 8.2
Impact of Sewerage Charges

Activity/Business	Percentage charge over estimated revenue	Equivalent charge
1. Hotel		
Large	0.52 - 0.76%	RM 1.62 - 2.48 per occupant per day
Medium	0.16 - 0.63%	RM 0.19 - 0.81
Small	0.47 - 1.07%	RM 0.58 - 1.08
2 Office complex		
Large	0.21 - 0.80%	RM 0.01 - 0.05 per square foot
Medium	0.20 - 0.48%	RM 0.01 - 0.03
Small	0.40 - 1.96%	RM 0.02 - 0.09
3. Shopping complex		
Large	0.52%	RM 0.08 per square foot
Medium	1.59%	RM 0.10
Small	1.09 - 1.34%	RM 0.07 - 0.12
4. Coffee shop		
Large	0.53 - 1.11%	RM 0.02 - 0.03 per customer per day
Medium	0.39 - 0.97%	RM 0.01 - 0.03
Small	1.77 - 2.58%	RM 0.05 - 0.08
5. Restaurant		
Large	0.06 - 0.13%	RM 0.02 - 0.03 per customer per day
Medium	0.21 - 0.22%	RM 0.05 - 0.06
Small	0.10 - 0.11%	RM 0.02 - 0.03
6. Hair dressing salon		
Large	0.16 - 0.44%	RM 0.05 - 0.13 per customer per day
Medium	0.07 - 0.31%	RM 0.02 - 0.09
Small	0.35 - 0.99%	RM 0.11 - 0.30
7. Clinic		
Large	0.01 - 0.04%	RM 0.00 - 0.01 per customer per day
Medium	0.13 - 0.52%	RM 0.03 - 0.11
Small	0.09 - 0.22%	RM 0.02 - 0.05
8. Laundry		
Large	2.54 - 6.89%	RM 0.16 - 0.45 per customer per day
Medium	0.99 - 3.80%	RM 0.06 - 0.25
Small	1.85 - 2.77%	RM 0.12 - 0.24
9. Manufacturers		
Large	0.02 - 0.04%	RM 0.0039 - 0.0045 per prod qty set*
Medium	0.54%	RM 0.0108
Small	0.7%	RM 0.0027
10. Army and Police Camps		
Large		RM 0.24 per office per day
Medium		RM 0.03

* "Production quantity set" e.g.: equals 4.345 litres of soft drinks of which water comprises 90 per cent, or 5 litres of ice-cream produced of which water comprises 45 per cent.

Source: "Indah Water Begins Operation," newspaper supplement on Indah Water

8.6 Costs and Benefits

Costs

The major investment costs in sewerage services are the cost of constructing treatment plants and land cost. The cost of sewage treatment is not cheap. For instance, a plant serving about 150 people can cost up to RM150,000; a big one catering for 400,000 people can be RM400 million. The capital works programme in the Concession Agreement is estimated at about RM6 billion. That is the magnitude of the investment involved. Land cost has not yet been included. The Government regards this sum as savings from its capital investment responsibility.

Land has been a problem in this privatisation exercise. Land is a state prerogative under the Malaysian constitution. Thus, sewerage treatment plants require state government consent and approval. In this regard, there have been delays in IWK's access to land applications. It is not clear whether the issue is over price or whether there are other issues involved. The price issue is a reluctance to release prime land to IWK for a low price.

Having taken the risks and made the investments, IWK wants to be paid back for the venture. In the concession agreement, IWK has been given the rights to recover its investment through sewerage charges and tariff for the services provided. A special act, the Sewerage Service Act 1993, allows IWK to impose charges. The original tariff charges are shown in Table 8.1.

There have, however been some misgivings amongst various segments of industry and the public on what they perceive as a monopoly. In that regard, there was considerable concern over whether it would respond promptly to complaints and problems.

In a situation where the "user pays" principle is applied in many privatisation exercises, the Malaysian public has perceived sewerage charge as an added burden. Moreover, the instances of poor performance as reported in the press have resulted in a negative impression of the company and their monopolistic intentions.

The industrial sector has also felt the impact of the additional tariff charges and had voiced its concern about the high tariff rates that were originally imposed on them. It was felt that the high tariff rates would increase production costs, and would deter existing industries from expanding their operations and multinational companies from locating their industries in Malaysia. These considerations are even more important at a time when there is greater competitiveness from regional countries.

Benefits

This privatisation exercise was to benefit the Government in that it would reduce its financial and administrative burden. From a human resource standpoint, civil servants who opted to join the privatised entity have been given better pay packages and benefits. In terms of pay, the average for privatisation has been about 17.5 per cent of the previous pay package.

Indeed, this privatisation exercise would also have slowed or reversed the deterioration of the environment and water quality. By improving the quality of sewerage services, the privatisation would likely have ensured that cleaner water entered rivers and coastal waters.

The plan is to connect septic tanks in residential areas to central sewers, cut down the number of small treatment plants, centralise sewage treatment, and standardise the treatment process. This is expected to increase efficiency and bring about cost-savings. Quality control can also be better supervised once sewage treatment is centralised and all the systems are standardised. This will be one of the main benefits of the project.

For the private sector, this privatisation exercise has provided a business opportunity for the five partners of IWK with a guaranteed average profit of 14 per cent to18 per cent per annum over 28 years. After learning the management skills from North West Water and gaining experience from this privatisation experience, Malaysian companies – such as Berjaya Industrial and AIMS Worldwide – may be able to export their skills overseas, particularly to other third world countries hoping to emulate Malaysia in privatising their sewerage services nationwide. If they are successful in exporting their experience, this will not only bring in additional foreign exchange for Malaysia but will also boost the image of the country internationally.

This privatisation exercise could have been an excellent opportunity to educate the public on the importance of environmental quality. Malaysians generally do not care much about the environment, and tend to be complacent about their polluting behaviour. Hence, in making them pay, this privatisation exercise would raise their consciousness that it would cost them something to have a cleaner environment and better public health.

8.7 Summary Remarks

The idea of privatising sewerage services is an innovative one. In most countries, sewerage services are provided by the Government or by the public sector. People believe that environmental quality is too important to be left to the private sector as the profit motive may conflict with public interests, resulting in services being provided only or mainly to those who can afford to pay. It is in this context that the privatisation of sewerage services is novel and different.

In Malaysia's case, sewerage services before privatisation have long been neglected.

Negligible levels of investments in a period of rising urbanisation have undermined environmental quality very significantly. Archaic systems of sewerage systems need to be upgraded, replaced and refurbished. The institutional arrangements, however, did not allow this to take place quite so easily, as the local governments were weak financially and politically. As for the ordinary people, most of them did not pay anything for sewerage, and thus tolerated the fact that the main rivers that flowed through towns were beginning to have water quality no different from that of sewers.

Privatisation was thus seen to be an apt solution by the Government. The "polluter pays" principle could be applied. The Government could hand over the services to a private firm to raise the capital investment that was required and, in turn, charge the public for providing that service. Over time, environmental quality would improve, and the country would benefit. The Government would reduce its staff, stimulate private sector growth, encourage greater productivity (greater efficiency means higher profits), and practise the "polluter pays" principle. On paper, this is a fine idea.

IWK, the privatised firm, undertook an extensive publicity campaign to explain the rationale for their existence. The public was told that environmental quality was deteriorating and human sewerage was the main polluter. High levels of sewerage infrastructure investments would be required to slow down the degradation, and to reverse it over the long term.

Their performance, however left much to be desired. A few cases of IWK's trucks were caught dumping raw sewage into rivers in remote areas. This image demolished their claim to being the high priest of environmental quality. They started charging the public without having been seen to have provided any service. And the rates were set at levels which set off many questions about whether they were affordable. A high default in payments started to build up.

Within the operational environment, the IWK faced innumerable problems with the state governments over land. States have been reluctant to release land to IWK, especially when the privatisation effort was done at the federal level. Previously, it was only local authorities' staff and assets, but IWK wanted, probably for better planning purposes, more, larger and better located land in urban areas. With the negative image, the high default rate affected their cash flow, thus, affecting their financing and borrowing arrangements.

The Government stepped in a little too late, after much of the damage has been done. This could have been partly due to a weak and ill-defined regulatory authority, and also other non-economic interests operating institutionally. The Government cancelled the charges and instructed IWK to charge only from 1 January 1997; with previous payments credited back to the households that had paid. The default rate, however, is still very high as of early 1998; the effects of poor performance and image are still indelible in the public eye. A change of owners in mid-1997 has done little to the poor public reception.

The experience for other countries is to examine a number of areas carefully before

implementing sewerage privatisations. First, one would have to study the public's consciousness and appreciation for the environment, and their willingness to pay for good environmental services. This aspect is vital, especially if the privatised firm has to collect charges and payments directly from the public. Rates charged must be affordable.

Second, the regulatory framework has to be set in place carefully. The terms of reference must be sufficiently broad to enable the regulatory agency to act on behalf of public interest. It should have adequate resources in staffing, experience and finances. Where possible, political considerations should be well catered for so that it operates without interference. Issues such as land are paramount, especially when it involves huge capital infrastructure works, and such matters should not get in the way during implementation.

Third, the design of the privatised sewerage system must be commensurate with the willingness to pay. An optimal design is preferable. An over-designed system will impact severely on the poor and disadvantaged. As such, both the economic cost factors and project design need social inputs.

Fourth, because of the size of capital investments required, it may be better to split up the privatisation package. Regulating a few firms may be more difficult, and there may be a loss of some economies of scale. But, individually, they would require much less capital and logistically it is less complicated.

Finally, the government must strike the right balance between privatisation and social justice.

CHAPTER 9

Environmental Monitoring Privatisation

9.1 Background

The Government is constantly aware of changes in environmental quality brought about by rapid development. Rapid industrial growth and urbanisation, together with the high demand for transportation, has contributed towards air and water pollution, especially in urban areas. Steps were, therefore, taken since the late eighties to privatise environmental monitoring.

There are several factors which led the Government to consider the privatisation of environmental monitoring. They are:

- Insufficient resources to carry out the task of environment monitoring, for example manpower, technical skills, finance;
- Increasing need for technology – equipment and expertise in this field;
- High cost of implementation and operation of environmental monitoring.

Privatisation was undertaken to ensure that air and water quality monitoring would be carried out effectively and efficiently. The Government realises that Malaysia does not have the technology for this purpose. Hence, technology transfer from developed countries is one of the main criteria in the privatisation.

Some Environmental Concerns

Air Quality

Rapid industrial growth and urbanisation, together with a high demand for transportation, contributed towards air pollution. The three main sources of air pollution are: mobile (vehicles), stationary (power stations, industrial fuel burning processes and domestic fuel burning) and the burning of municipal and industrial wastes, as shown in Table 9.1. In 1995, these three sources contributed 75.1 per cent, 20.3 per cent and 4.6 per cent, respectively, to air pollution (7MP, 1996-2000). During the period 1990-5, the meteorological stations recorded an increase in atmospheric acidification.

Malaysia has also been experiencing another form of air pollution – haze. Transboundary atmospheric pollution has contributed to serious haze problems in 1991, 1992, 1994 and 1997. The major source is believed to come from forest fires in a neighbouring country – a classic example of transboundary pollution.

In August and September 1997, the whole country was shrouded in haze due to fires raging through thousands of hectares of forests in Sumatra and Kalimantan. Indonesia is also facing a drought because of the El-Nino effects. The Malaysian Government was forced to announce a state of haze emergency for the whole state of Sarawak when the Air Pollutant Index[1] (API) breached the 600 mark, far surpassing the "500" hazardous level (The Star, 19 September 1997).

More people have been suffering respiratory problems, including asthma attacks, following the worsening of the haze and rising API. The Malaysian Government has taken steps to mitigate the decline in air quality, particularly in urban areas where vehicle emission is the main culprit. Enforcement efforts by the DoE, police and Road Transport Department were stepped up to reduce black emission from diesel-powered vehicles. In addition, the inspection of emissions from commercial vehicles was privatised (7MP, 1996-2000).

Table 9.1
Emission of Pollutants to the Atmosphere by Source, 1987-1995 (`000 tonnes)

Sources	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**
Mobile	571.1	542.1	572.7	630.8	681.0	1283.1	1283.1	1388.9	1426.7
Stationary	364.4	368.2	184.9	197.4	204.4	296.9	293.0	376.2	464.7
Burning of Wastes	30.7	23.2	16.5	24.0	25.9	27.7	41.8	83.8	106.7

Source: 7MP, 1996-2000: 592

River Quality

For over 10 years, the DoE has been monitoring the quality of rivers in Peninsular Malaysia. The number of rivers monitored increased from 87 in 1991 to 116 in 1996. The monitoring exercise is based on the Water Quality Index (WQI) which appraises water quality based on five parameters, namely Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (AN), Suspended Solids (SS), and Hydrogen Sulphide (HS) levels. Overall, based on the WQI, it was found that river water quality has slightly declined, as shown in Table 9.2.

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[1] The API comprises five parameters, that is, PM_{10}, CO, SO_x, NO_x, and O_3. Each parameter has a certain threshold; if each of them crosses the threshold, they are classified according to their descriptive labels, *viz.* unhealthy, hazardous, etc.
The Malaysian API Index Classifications are as follows:

<50	= Good	>301-500	= Hazardous, emergencies
51-100	= Moderate	>500	= Significantly harmful
101-200	= Unhealthy		

201-300 = Very unhealthy

Sewage contributed 65 per cent of water pollution in terms of BOD, while agriculture and industry accounted for 27 per cent and 8 per cent, respectively. Table 9.3 shows the organic load discharge according to sector. In order to reduce water pollution from domestic sewage, the Government in 1993[2] privatised the sewerage services managed by 144 local authorities. Several studies were undertaken to improve the provisions of the Environmental Quality (Sewerage and Industrial Effluents) Regulations 1979 to reduce waste at source from highly polluting industries.

Highland development and land clearing activities also resulted in an increase in suspended solids and changes in the morphological characteristics of rivers. These activities increased flooding as well as pollution of coastal and marine areas (7MP, 1996-2000).

Table 9.2
River Water Quality Index, 1987-1996

	1987	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**
Clean	43	46	46	43	35	25	31	38	52	42
Slightly Polluted	41	39	37	38	46	56	72	64	53	61
Very Polluted	3	2	4	6	6	6	11	14	14	13
Total Rivers Monitored	87	87	87	87	87	87	114	116	119	116

Source: 7MP, 1996-2000: 594 and DoE, 1997

Table 9.3
Organic Load Discharge According to Sector, 1990-5

Year	**Load (in tonnes/day), BOD**				
	Agro-based	**Manufacturing**	**Pig rearing**	**Population**	**Total**
1990	13	26	67	384	490
1991	11	26	58	387	482
1992	26	26	203	483	738
1993	25	73	227	707	1032
1994	24	40	227	573	864
1995	15	13	160	640	828

Source: DoE, 1997

[2] See Chapter 8 on Sewerage Services Privatisation.

9.2 Status before Privatisation

Before privatisation, the Government had in place some monitoring stations for air and water. These stations provided the DoE with information on ambient levels of air and water quality. However, the limited budget and resources often meant that environmental data and information were not always available when they were needed. Coverage was a problem. Skills and expertise were often lacking, and the maintenance of equipment left much to be desired. As the stations were manually operated, data collection was often hampered by the availability of resources, and priority accorded to this work.

The DoE did have a system of ambient monitoring stations for air and water quality. These are non-continuous monitoring stations. The data, however was often collected at intervals that were far apart (for example, 4 times per year), and could not provide real time data. As such, in times of emergency, such as the haze period of August to October 1997, it would not have been possible, under the pre-privatisation framework, to provide the kinds of continuous monitoring information made available over the mass media.

DoE used the Dust Deposit Gauge (DDG) to monitor dust levels. They had 186 DDGs, which only enabled the DoE to obtain data once a month. As for water monitoring, they have 559 permanent sites and these were also manually operated readings.

The DoE lacked manpower for environmental monitoring. In 1994, during the haze period, the DoE allocated six staff at each monitoring station, and this was done at great cost to the department, which was facing staff shortage.

9.3 Privatisation Plan for Sector

The move to privatise the environmental monitoring activity started in 1990 when the Government appointed Coopers and Lybrand to look into the feasibility of the privatisation. In 1993, a few companies bidded for the privatisation project, including Alam Sekitar Malaysia Sdn Bhd (ASMA).

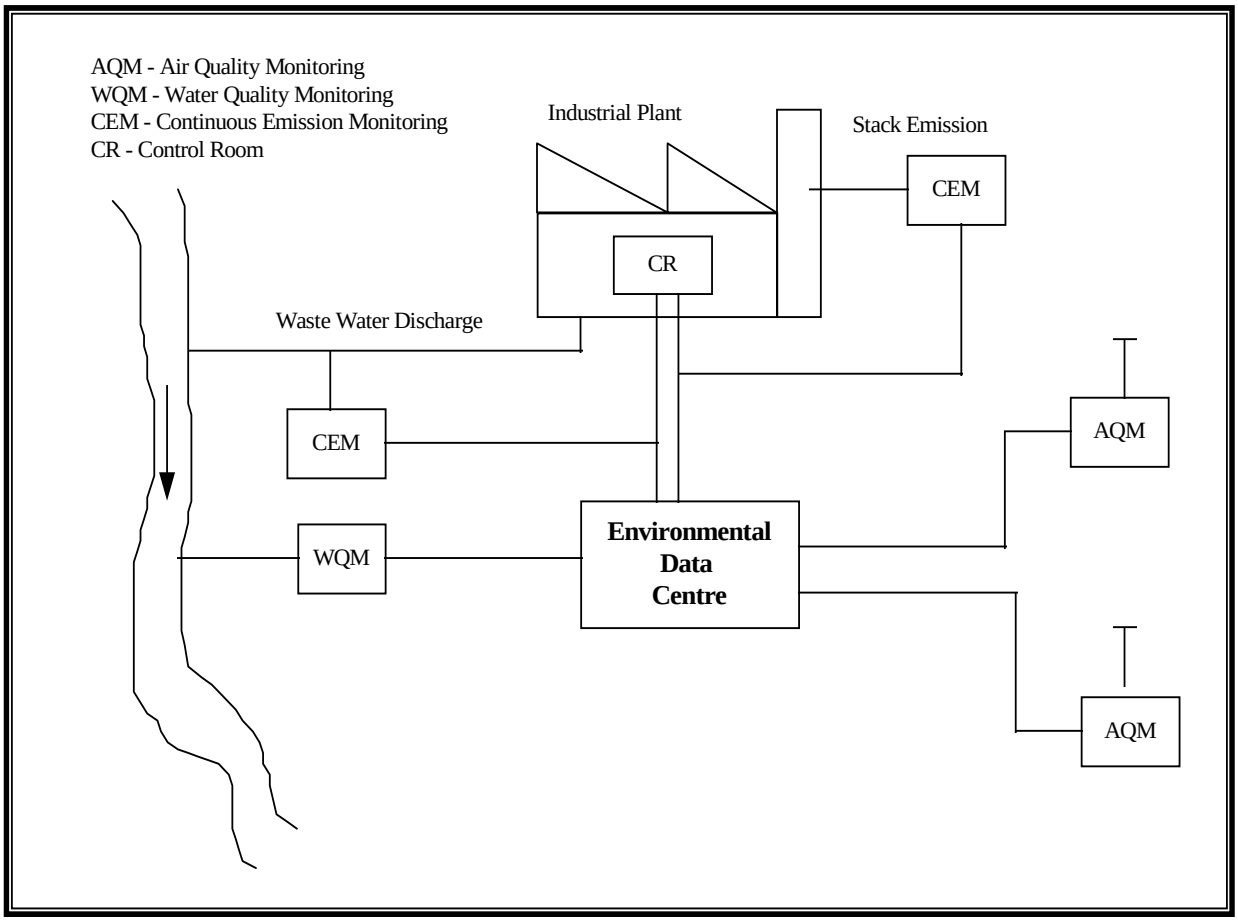
The high capital investment and technology needed in the privatisation had limited the number of companies bidding for the project. In February 1994, the Cabinet approved the bill on the privatisation of environmental monitoring. The following years, in April 1995, ASMA[3] was given a 20-year concession to manage a network of air and water quality monitoring facilities in Malaysia.

[3] ASMA is a joint venture company owned by a local company, Progressive Impact Corporation Sdn Bhd and a Canadian company, BOVAR International Limited of Canada.

The privatisation exercise involves installing, operating, and maintaining a network of 50 continuous air quality monitoring (CAQM) stations and 10 continuous water quality monitoring (CWQM) stations throughout Malaysia. In addition, ASMA took over the manual air and water monitoring operations of the DoE, and is supposed to manage the Environmental Data Centre (EDC).

ASMA is also involved in the continuous emission monitoring of gases and waste water discharge from various industrial areas. The environmental monitoring network is shown in Figure 9.1. The continuous air and water quality monitoring stations should be set up within a five-year time frame. The 1997 haze episode helped to speed up the installation of the CAQM stations.

Figure 9.1
Environmental Monitoring Network



Source: ASMA's Company Profile

The air quality monitoring programme involves continuous and manual air quality monitoring. Continuous ambient air monitoring is the process of performing ground level atmospheric measurements for specific gases within a defined geographical area. The specific objectives in setting up a monitoring programme include:

- Establishing baseline air quality levels,
- Developing guidelines and control policies,
- Developing and confirming dispersion models,
- Measuring and reviewing the impact of emission sources (old and new),
- Supporting enforcement,
- Documenting exposure and episodes, and
- Providing information to the public.

The CAQM stations are designed to measure and collect data continuously, that is, 24 hours per day. The analysers measure specific components in the ambient environment. The continuous air quality monitoring stations have been set up in various locations and regions to cover industrial, resident, traffic, and other backgrounds.

The manual air quality monitoring programme provides data for a regular predetermined operational period. It involves operating and maintaining a network of high-volume air samplers to measure the concentrations and chemical composition of air-borne particulates.

As for the water quality monitoring programme, it involves manual monitoring and continuous water quality monitoring. The manual river water monitoring involves in-situ or field measurements and surface water sample collection at a network of fixed sites within major river basins in Malaysia. In total, 30 parameters of pollution to rivers from sewage, land development, cultivation, and industrial activity are monitored, as shown in Table 9.4. ASMA now administers the entire network of 900 stations in Peninsular Malaysia, Sarawak, and Sabah, monitoring an average 600 stations each month.

Table 9.4
River Water Analytical Scheme and Activities Monitored

General River Health	General Human Activities	Sewage	Land Development	Cultivation	Industrial
Dissolved oxygen,* pH,* conductivity, temp,* dissolved solids, Cl, Ca, K, Mg, Na	BOD, COD, PO_4, oil and grease, MBAS	NH_4, E.Coli, Coliform	Turbidity,* Suspended solids	NO_3	As. Hg, Cd, Cr, Pb, Zn, Fe

Note: * In-situ analysis
Source: ASMA's Company Profile

The continuous water quality monitoring stations will be installed in selected rivers in

Malaysia. These stations will form part of a network of monitoring stations that will take measurements every 15 minutes.

The air and water monitoring stations are linked to EDC, the data centre, where data, system diagnostics and alarms are continuously recovered for evaluation and dissemination. EDC will collect all environmental data in Malaysia and disseminate the data to the Government and public. The data can be accessed immediately to determine the current environmental status.

ASMA is using its advanced Quality Assurance (QA) software to provide reliable data for accurate assessment of air and water quality and also for the development of control strategies by relevant authorities. In producing the data in their final form, the following three major stages are involved:

- Field calibration of monitoring equipment,
- Validation of field data, and
- Final quality check.

Field calibration is carried out on a routine basis by trained technicians. When the field data are sent to the headquarters, they undergo a validation process. After a visual check is carried out, the data is calibrated with the help of the QA software. The treated data then are given a final quality check by the QA/Quality Control Manager or Supervisor. Only then will the data be finally released to the end-user. These stages apply to both air and water monitoring, both continuous and manual.

Mode and Manner of Privatisation

The privatisation of environmental monitoring is based on a BOT concept, and is renewable every five years (via first right of refusal). The concession is valid for 20 years. Under the agreement, ASMA is to install 50 new air quality monitoring stations and 10 new water quality monitoring stations.

Technology Transfer

Bovar will provide technology transfer in setting up a network of monitoring stations for air and water quality, training of workers, and use of continuous monitoring equipment. ASMA is supposed to integrate the environmental data when all stations are in place. They have been given five years to set up the network. The process involves the purchase of CAQM stations from Bovar, and installing them. At the same time, the staff would be properly trained to take over the monitoring, maintenance and support of those equipment. Expatriate staff will eventually be phased out, with Bovar providing on-demand technical expertise, skills and technical training, referencing facilities via its Canadian office.

Coverage

The concession coverage is for Malaysia, and in particular, the urban environment.

Institutional Development

The DoE is monitoring ASMA's activities and performance.

Asset and Capital Investment

All assets are purchased and financed by ASMA, such as the purchase of new CAQM and CWQM stations from Bovar, and installing them in place. Therefore, ASMA owns all equipment in the network. The Government only buys a specified order of environmental quality data.

Human Resource

Currently, ASMA has about 50 employees. About 40 per cent are professionally trained (have at least tertiary level education), another 40 per cent are technicians, and the rest are administrative and managerial personnel. When it was first privatised, few DoE staff opted to join ASMA, partly because ASMA did not have a full-fledged programme at that time. This, however, has not hampered the progress and development of ASMA. In fact, ASMA has been able to provide special training for the technicians, and has arranged a special certificate /diploma programme at the University of Alberta.

Chargeable Rates

ASMA is the primary source of ambient air and water quality data in Malaysia. ASMA will sell the data to the DoE and any other interested parties, such as to industrial customers and environmental consultants for their environmental management needs. The Government will pay ASMA RM6 per data piece or less for environmental quality data (see Appendix A.3).

9.4 Status after Privatisation

Air Quality Monitoring

The air monitoring stations set up by ASMA are designed to measure data continuously for 24 hours a day. It provides immediate data on the current air environmental status. ASMA claims that the cost of obtaining data was RM40 per data set before the privatisation, and it is selling data to the DoE at RM6 per data set. As at November 1997, ASMA has set up 29 stations, and they plan to set up 45 stations by August 1998. As such, they are ahead of schedule.

Water Quality Monitoring

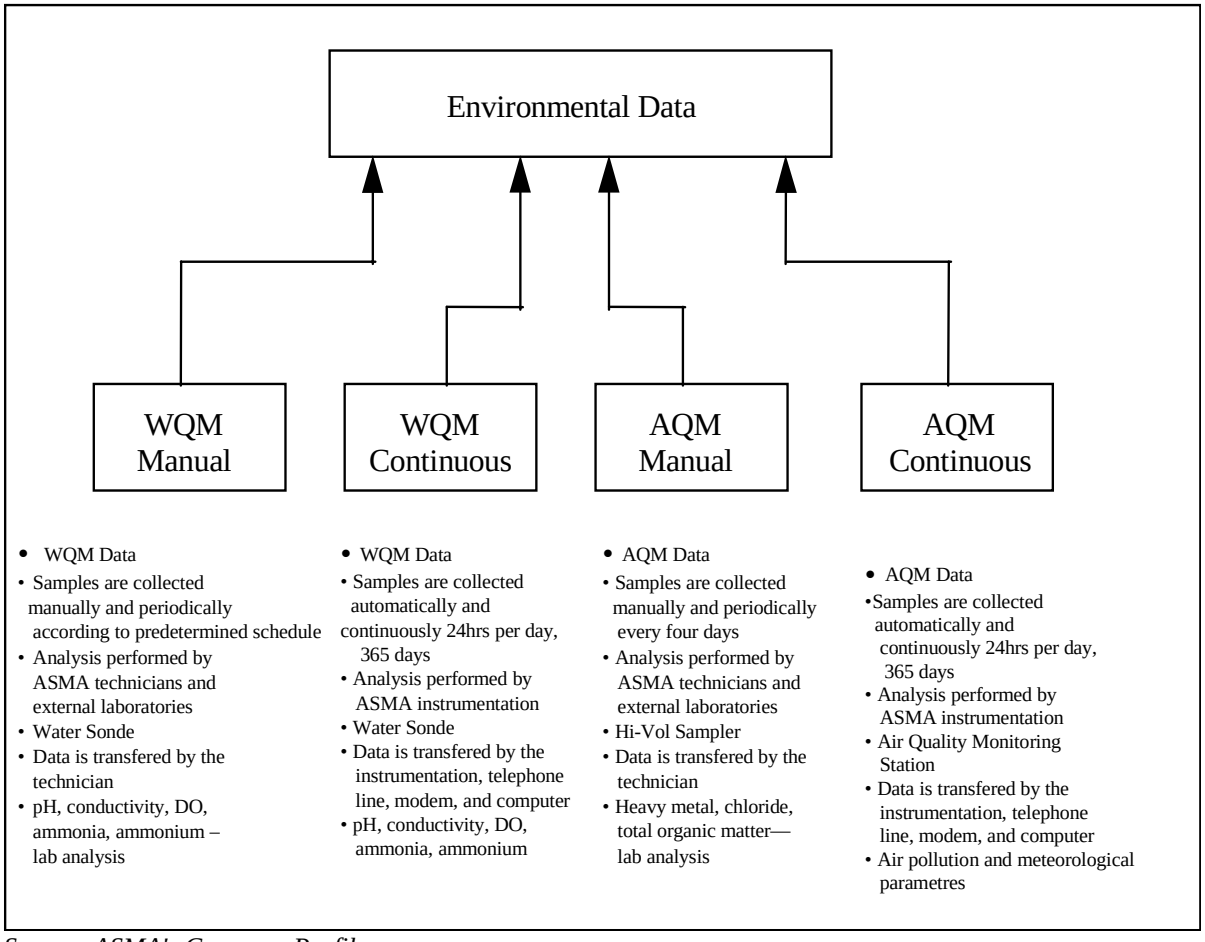
With the setting up of continuous water quality monitoring stations on selected rivers, measurements can be taken every 15 minutes based on parameters such as temperature, pH,

conductivity, dissolved oxygen, turbidity and ammonium concentration. By August 1998, all 10 CWQM will have been set up as well.

The stations are linked to the ASMA data centre and can be accessed immediately to determine the current environmental status of the river. Figure 9.2 shows the diagram of environmental monitoring network operation.

The EDC/EIT has enabled the DoE to access data efficiently. Data is available on a daily basis. Furthermore, with the privatisation, it has also enabled the DoE to acquire knowledge of QA methods for data validation.

Figure 9.2
The Environmental Monitoring Network Operation



Source: ASMA's Company Profile

9.5 Key Issues

Technology transfer is one of the more important components of this privatisation programme. The concession agreement calls for the setting up of a monitoring network and

for the development of the skills to maintain the system within the five-year time period. The employees who manage this system will be trained on how to use the equipment. In addition, ASMA will venture into the consultancy field, and have, as its backup, the environmental quality data that it is monitoring.

9.6 Costs and Benefits

Costs to the Concessionaire

The cost of the privatisation is borne by the concessionaire. It will provide a turnkey package, raise the finance and buy all equipment for the setting up of the network of monitoring stations. In addition, ASMA will have to ensure that 85 per cent of the data is available (five days down-time). Although, the Government issues it a purchase order to buy environmental data, it will not be paid if it does not meet the up-time standard agreed to in the concession. The estimated equipment investment is estimated to be about RM40 million, and the annual operations costs at about RM2 million-3 million.

Benefits to the Users

As for the benefits, there is a significant reduction in the cost of collection of environmental data. ASMA claims that the cost reduction has been from RM40 per data set to RM6 per data set. In addition, the continuous monitoring stations will save on labour to gather data. Technology transfer will also be effected, and training of Malaysians to maintain and operate the network of environmental quality data will also take place.

Benefits to the Government

By bringing in private sector finance, the Government has succeeded in reducing its financial burden. The concessionaire will now finance the capital equipment and operations. ASMA will own the asset base in this BOT privatisation.

The privatisation of environmental monitoring activities is a recent initiative and, thus, it is still too early to assess the full impact of privatisation.

9.7 Summary Remarks

Environmental quality monitoring privatisation has been seen as a minor success. Before privatisation, the DoE encountered various problems in maintaining the network of stations that produced environmental quality data. Much of that stemed from the limited resources committed to this effort by the Government. The privatisation of this operation has relieved the DoE of this responsibility, and it can now concentrate on its regulatory and enforcement role in a single-minded manner. In this regard, it is important for the DoE to set up performance standards for the concessionaire and to ensure that sufficient resources are allocated to monitor them.

The lessons for implementing this kind of privatisation in other countries is to ensure that the concessionaire has the experience and financial capability to implement such a plan. Although the capital investments are not large, they should be denominated in the local currency to ensure that the concessionaire is protected against any currency fluctuations.

It is also important to ensure that the implementation period is the shortest possible, but comfortable enough for the concessionaire. There is a considerable amount of technology transfer and training in setting up a network of monitoring stations. Hence, attention should be given to ensure that there is adequate technology transfer. Although in Malaysia's case, the bidding is done via open tender, it is nevertheless monopolistic as there is only one operator. Hence, on the regulatory side, it is important to set up performance indicators and measures – both for implementation as well as for operations. Adequate resources should be allocated for such purposes, to ensure that monopolistic behaviour does not derail the privatisation, nor hamper other kinds of development efforts. For instance, non-governmental organizations may need data for a variety of community purposes, and it would be unfair to have them pay commercial rates.

Joint venture arrangements seem to have worked well in this Malaysian example, where the local party raised part of the finance and took care of institutional and organisational needs, while the foreign party came in with skills, technology, training, and partly financed the privatisation. However, as in most developing countries, they should hold the controlling stake. It should also be noted that not all foreign firms have the right skills and technology, and therefore evaluating them strictly on certain lines is important. As training is also important, this should also be a key component of the joint venture. The joint venture should also be fixed for the period of implementation. Any exit from the joint venture during this period is bound to be costly for the country, and should be prevented. The Malaysian case could serve as a model for other countries.

CHAPTER 10

Summary And Lessons Learnt

10.1 The Government's Own Assessment

The Malaysian Government has undertaken an assessment of the privatisation experience. In the Malaysia context, privatisation is defined as the transfer to the private sector of activities and functions which have been traditionally rested with the public sector.

Based on the Malaysian experience, the implementation of the privatisation programme provides invaluable lessons which are useful in determining the success of the programme. The lessons learnt can be summarised as follows:

(a) ***National consensus on privatisation and acceptability of the programme***

The need for a national consensus on privatisation and acceptability of the programme by the policy formulators, administrators, the public, employees and their unions, opposition parties, non-governmental organisations and all other affected parties;

(b) ***Strong commitment and determination by the Government***

A strong commitment and determination by the Government to support privatisation programme and ensure success of the programme. In this respect, the public sector must recognise that some of its activities and functions particularly those associated with commercial development should be best undertaken by the private sector in order to improve its efficiency and productivity;

(c) ***To garner support of the management and employees of the entities to be privatised***

In Malaysia, the Government introduced several policy decisions to protect the interests of the employees upon privatisation;

(d) ***Maturity expertise and readiness of the private sector***

The private sector to attain a certain level of maturity expertise and readiness to take investment risks especially for those activities involving high risks and with high social obligations. In this respect, the public sector's confidence on the

ability of the private sector is also significant to ensure the smooth implementation of the programme;

(e) ***Well-developed financial market needed***

A well-developed financial market including commercial banks, institutional investors and capital market which is ready to support large scale investment in privatisation exercises to be undertaken by the private sector;

(f) ***Public awareness***

Instituting public awareness for the programme through continuous campaigns on the positive aspects of privatisation to be undertaken by the Government through the various mass media including newspapers, radio and television;

(g) ***A clear division of functions in the implementation of the programme***

In Malaysia, the administrative machinery for privatisation which is based on centralised planning at the EPU and decentralised implementation by the ministries and state governments; and

(h) ***Proper planning and coordination***

The need for proper planning and coordination to ensure successful implementation of the privatisation programme. In the initial stage of implementation, emphasis was given towards policy planning and formulation and improvement in the administrative machinery. Having done that task, effort was taken to facilitate and expedite implementation of the programme (Zainuddin, 1997).

These experiences are important reflection based on policy implementation since 1983. These are, thus, vital lessons for others to consider.

The rest of this chapter provides a brief summary of the Malaysian experience and highlights the main lessons that can be learnt in the privatisation of Malaysia's seven environment-related sectors discussed in this report. These sectors are:

- Health,
- Clinical wastes management and non-medical services,
- Hazardous wastes,
- Solid wastes,
- Water supply,
- Sewerage, and
- Environmental monitoring.

10.2 Privatisation in the Health Sector

Medical services have traditionally been provided by the Government, alongside a system of private physician clinics. Government hospitals handled diverse functions, including among others:

- Health care,
- Laundry,
- Catering,
- Grounds maintenance,
- Dentistry,
- Pharmacy,
- Medicine distribution,
- Equipment maintenance,
- Specialised health and medical services.

Even before privatisation became a policy, the Government had contracted out some of these services, such as laundry and catering. Since the 1985 privatisation push by the federal government took shape, the following have been privatised:

- Petaling Jaya Medical Stores, a former department within the MoH supplying medicines and supplies to hospitals and clinics:
- Non-medical support services in hospitals, which includes management of clinical wastes, maintenance of bio-medical equipment, laundry and linen, building and facilities management, and cleaning services;
- Health/medical screening and monitoring of migrant workers; and
- (Corporatisation of) the National Heart Institute.

In addition, the Government is also considering privatisation proposals for the following:

- Kuala Lumpur General Hospital (including its relocation);
- Health insurance scheme; and
- Ambulance and emergency services.

The main lessons that can be drawn from the privatisation experiences are:

(a) ***Need for a more transparent regulatory and supervisory framework***

The MoH's privatisation efforts are supervised by a privatisation committee headed by the Ministry's secretary-general. This committee screens all privatisation possibilities and examines how the services offered by the Ministry can be made more effective. Such a committee is an important component of any privatisation exercise.

Our recommendation is that information pertaining to the workings of the committee and its assessment criteria be made public as greater transparency would likely yield higher level of accountability.

Information that would provide for greater public confidence include:

- The criteria or standards used by the committee to identify services for privatisation,
- How the committee monitors the privatisation, and
- What roles are played by which institutions in the process.

(b) ***Need for detailed implementation plans and clear objectives and goals***

A detailed implementation plan and a vision of health care service objectives and goals must be set out to guide privatisation efforts. Performance and standards should be clearly specified and the regulatory institutions ought to be able to carry out their work well.

(c) ***Need for reasonable cost framework in return for better services***

While privatisation can improve on the quality and performance of the health care industry, there is a need to devise privatisation plans that meet demand expectations and are, at the same time, capable of being financed on a sustainable basis as privatisation is a costly affair. In Malaysia, the Government is currently considering a financing plan for health care. Such a plan must be carefully design so that the people can enjoy the full benefits within a reasonable cost framework.

Although privatisation efforts in the health sector in Malaysia have been initiated primarily to address key issues in public service provision of health care, the Government should not have to bear the full costs of privatisation. Costs should be distributed to those who can afford them; a "user pays" principle would be best to apply wherever it can be done.

10.3 Clinical Wastes Management and Non-medical Services Privatisation

The privatisation of the clinical waste management system and the non-medical services is still at a very early stage having only been implemented for one and a half years. As such, a proper assessment should be done after a few more years. Nonetheless, some important issues deserve to be highlighted.

(a) ***Any system adopted from other countries should to suit local's needs***

The privatised agency and the Government should put in place a training programme at the front end to ensure that generators of such wastes – hospital staff, patients, visitors, and paramedics – know how to handle them. There should be adequate documentation to ensure wastes are separated, packaged, stored, and transported to their designated sites. At the treatment and disposal site, it should

be environmentally secure, with human health as a prime consideration for designing the system. The design of any system adopted from other countries should be adapted to suit local's emphasis and priorities as different countries do not attach the same values and standards to such matters.

(b) ***Need for strong regulatory framework with clear legislation and adequate resources***

Health care, a public good, should be properly managed. Thus, the private sector entrusted with the task must provide a sufficiently high level of service. A strong regulatory framework is required. Performance standards must be developed at the start of the negotiations, and flexibility to raise these standards over time must be built in.

Governments have an important role to play to support both the regulator as well as the concessionaire(s). They should provide the requisite resources to the regulatory agency, as well as not treat the successful concession with deference. A certain amount of trust and distance should be maintained. The Government may also want to employ the services of experienced consultants to assist in evaluating the privatisation programme.

(c) ***Concessionaires must have the right calibre***

Concessionaires must have the right mix of resources and skills and have access to adequate funds for operating and capital expenditures. They should have strong management capabilities to ensure resources are properly managed to achieve productive outcomes in a more efficient manner than previously encountered. The management must also be able to aid in making the smooth transition from a public sector operation to a corporate organisation.

(d) ***Public opinion must be sought***

The public, who will eventually have to bear much of the cost of privatisation, should be informed and consulted at the outset as they are the main users and beneficiaries of such services. Their affordability levels, willingness to pay, and attitudes towards health and environment, are important factors to take into consideration in designing any privatisation programme. Most public health services are highly-subsidised so there is a need to think through how to match the demand with a range of supply services.

10.4 Integrated Waste Management Plan – Hazardous Wastes

The management of hazardous wastes has been privatised on a build, operate and maintain basis. A 15-year exclusive right has been awarded to a consortium to set up an integrated hazardous waste collection and disposal system.

A major teething problem has been with respect to the costs of waste treatment and disposal. The industrial community protested against the concessionaire's charges, arguing that the rates are far too high. There has been a persistent reluctance on the part of industries to utilise the waste facility, despite efforts taken to revise the tariff charges. The result is that much less wastes are brought to the facility than expected.

The major lessons that the Malaysian experience can offer are as follows:

(a) ***Government leadership***

The Government should take the lead in planning, design and implementation of the waste disposal system and facility.

(b) ***Consult industry and public***

The cost of waste treatment and disposal for industry should be commensurate with the willingness to pay (price of waste treatment and disposal is too high). Industry should, thus, be consulted before fixing the price for waste treatment to ensure the cost of waste treatment does not jeopardise the industrialisation programme.

(c) ***Centralised system***

The Government chose centralised management system so that all hazardous wastes are treated and disposed of at one site. This 15-year exclusive system, thus, provides secure management system, but it also brings less competitive environment and higher transportation cost.

(d) ***Establish clear legislative framework***

All liabilities arising from hazardous wastes should be worked out first. Legal issues are important and must be clearly set out right from the beginning. In particular, the legislative framework should establish rights and obligations. Perhaps examples from more developed countries could be studied and applied.

10.5 Solid Wastes Privatisation

In an attempt to redress a social as well as an environmental problem, the Government invited the private sector to bid for improving services to solid waste management, a municipal function. Since early 1997, the Government has awarded contracts to four consortia to manage solid wastes for all 144 local authorities nationwide.

The four concessionaires have undertaken preparatory works. Two of them have taken over the larger municipal areas (KL, PJ and JB) in the country. These take-overs involved direct negotiation between the concessionaires and the respective local authorities.

In terms of the overall situation, it is known that the solid waste privatisation has stalled due to a disagreement between the concessionaires and the Government over the disposal system: the Government wants an incineration but the concessionaires argue that the cost to users would be prohibitive.

It is also expected that there may be public resistance to the proposed privatisation, similar to that in the sewerage privatisation exercise. In anticipation of this, the Government has postponed the privatisation in April 1998.

10.6 Water Supply Privatisation

Water supply privatisation in Malaysia is still in its infant stage. Privatisation efforts in the water sector has been limited to the management and operation of water treatment plants, whereby concessionaires would charge the water supply authorities for water treatment services. The trend, however, is to privatise the entire water supply function –water collection, storage, treatment, distribution and operations of the entire system.

The lessons to be learnt from this relatively recent privatisation effort is as follows:

(a) ***Coordination between privatised body and related government department***

Privatised body and related government department such as the water authority should have better coordination work. This aspect is important, especially in cases such as water shortage, raw water contamination, etc.

(b) ***Formulate adequate design parametres***

There is a need to formulate an objective set of performance indicators to evaluate the privatised service.

(c) ***Importance of regulatory framework***

The importance of a well-thought out regulatory framework cannot be more strongly emphasised. The regulatory agency should be adequately financed, and have experienced staff who can manage the privatisation process carefully.

(a) ***Need financially strong and technically capable firm***

Privatisation of water treatment plant operations is easy to implement if it basically involves a water supply authority subcontracting treatment operations to a private company. If the entire water supply operations were to be privatised, it is important to find a company that is sufficiently well capitalised. A financially strong and technically capable company would be able to invest in upgrading the infrastructure, thereby earning revenue in the medium- to long-term.

10.7 Sewerage Services Privatisation

In most countries, sewerage services are run by the Government, as it is believed that environmental quality is too important to be left to the private sector. The profit motive may conflict with public interests, resulting in services being provided only or mainly to those who can afford to pay. It is in this context that the privatisation of sewerage services is novel and different.

In Malaysia's case, sewerage services before privatisation had long been neglected with public investments in these services being traditionally very low. The outmoded systems proved unable to cope with the pressure of a rising population and increased urbanisation. The Government saw privatisation as the answer – the management of sewerage services could be handed to a private firm which would raise the capital investment that was required and, in turn, charge the public for providing that service.

Once privatised, however, the concessionaire was faced with a series of problems, two of the more serious were:

- High default in rate payments arising from public dissatisfaction of the tariff system and of services rendered. A revision of the tariff rates failed to significantly improve the situation. The high default rate has inevitably affected the cash flow of the company, as well as their financing and borrowing arrangements.
- State Governments were reluctant to cooperate over the acquisition of land by the concessionaire, which affected its schedule of implementation. A change of owners in mid-1997 has done little to improve public reception.

The lessons that can be drawn from the Malaysian experience are:

(a) ***Importance of public consultation***

There is a need to first study the public's awareness and appreciation for the environment, and their willingness to pay for good environmental services. This aspect is vital, especially if the privatised firm has to collect charges and payments directly from the public. Rates charged must be affordable. Also, public relations is very important because the bill is totally new to the public.

(b) ***Adequate regulatory framework***

The regulatory framework has to be put in place carefully. The terms of reference must be sufficiently broad to enable the regulatory agency to act on behalf of public interest. It should have adequate resources in staffing, experience and finances.

Where possible, political considerations should be well catered for so that it operates without interference. Issues such as land are paramount, especially when it involves huge capital infrastructure works. Such matters should not interrupt implementation.

(c) ***Balance design with cost***

The design of the privatised sewerage system must be commensurate with the willingness to pay. An optimal design is preferable as an over-designed system will impact severely on the poor and disadvantaged. As such, social inputs are necessary.

(d) ***Take over process from local authority***

The take over of the sewerage systems by the concessionaire will include the physical assets, employees who are willing to join the privatised firm, and a detailed program of capital investment for a particular area, and liabilities that the local government may have incurred for this service. Where land falls outside of the purview of the local government, the relevant authority should also have agreed to a schedule of allocation and provision. Close attention should be paid to the legal aspects of the handover.

10.8 Environmental Monitoring Privatisation

Environmental quality monitoring privatisation has been seen as a minor success. Before privatisation, the DoE had problems maintaining the network of stations that produced environmental quality data. This was mainly due to limited government resources committed to this effort. The privatisation of this operation has allowed the DoE to now single-mindedly concentrate on its regulatory and enforcement role. It is important for the DoE to set up performance standards for the concessionaire and to ensure that sufficient resources are allocated to monitor them.

The main lessons from this privatisation experience are as follows:

(a) ***Concessionaire to have experience and financial capability***

The concessionaire must have the experience and financial capability to implement the plan and capital investments should be denominated in the local currency to ensure the concessionaire is protected against currency fluctuations.

(b) ***Technology transfer***

There should be adequate technology transfer and training.

(c) ***Performance monitoring***

On the regulatory side, performance indicators and measures – both for implementation as well as for operations, particularly if there is only one operator –should be set up. Allocate adequate resources for such purposes, to ensure monopolistic behaviour does not derail the privatisation, nor hamper other kinds of development efforts.

(d) ***Encourage right joint venture partnership***

Joint venture arrangements between local and foreign parties seem to have worked well in this Malaysian example. However, as in most developing countries, the local partner should hold the controlling stake. Not all foreign firms have the right skills and technology, therefore strict evaluation is important. Training should also be a key component of the joint venture. The joint venture should also be good for the fixed period of implementation otherwise it could prove costly for the country. The Malaysian case could serve as a model for other countries.

Bibliography

Adam Christopher and Cavendish William (1995). "Early Privatisations" in Jomo K. S. (ed) (1995).

Abdul Wahid Ghazali, Mohd. Nasir Hassan and Azizi Muda (1996). Domestic and Commercial Waste: Present and Future Trends (CAP-SAM National Conference on State of the Environment in Malaysia). Consumer's Association of Penang, Penang, Malaysia.

Abdul Wahid Ghazali, Mohd. Nasir Hassan, Mohd. Kamil and Wan Norazmin (1996). Waste Recycling Problems and Prospects (CAP-SAM National Conference on State of the Environment in Malaysia). Consumer's Association of Penang, Penang, Malaysia.

Al-Haj, Radin S. (1985). Conference on Privatizing Policies, Methods and Procedures, Manila.

Alam Sekitar Malaysia Sdn Bhd (1997). Company Profile.

American Business Council (1986). *Centralised Toxic Waste Project Proposal.*

Asian Wall Street Journal, Various issues.

Bennett, A., Chang, Y.T. and Pun K.L.(1995). *A Study on Privatisation in Malaysia: Impact on Competition, Productivity and Efficiency*. UNDP-EPU (confidential).

Bishop, Matthew (1994). Privatisation and Economic Performance, Oxford University Press, New York.

Bridger G.A (1983). Planning Development Projects: A Practical Guide to the Choice and Appraisal of Public Sector Investment, Her Majesty's Stationery Office, London.

Brown, Lester R. (1988). State of the World: A World Institute Report on Progress Towards A Sustainable Society, Penguin Books Canada Ltd, Canada.

Cairncross, Frances (1992). Costing the Earth: The Challenge for Government, The Opportunities for Business, Harvard Business School Press, Boston.

Chang, Tien Kher (1994). Present Solid Waste Management System in Petaling Jaya.

Communication briefings, Volume XIV, Number IV, USA.

Dewan Bandaraya Kuala Lumpur (1992). Laporan Tahunan.

DOE (1991). Environmental Quality Act, 1974 (Act 127) and Subsidiary Legislations Made Thereunder (1991).

DOE. Environmental Quality Report, Department of Environment, Ministry of Science, Technology and the Environment, Malaysia, various years.

Domberger, S, Meadowcroft, S.A., Thompson, D.J. (eds, 1994). Privatisation and Economic Performance, Oxford University Press, Oxford.

Economic Planning Unit, (1994). *Privatisation Masterplan*. Prime Minister's Department, Kuala Lumpur.

Economic Report 1997/98.

Engineering and Environmental Consultants Sdn Bhd. Masterplan on Solid Waste Management for Petaling Jaya Municipality, Black and Veatch International, Kuala Lumpur.

Environment Protection Authority of Victoria (1985). Hazard Assessment of Industrial Waste Disposal Facilities.

Faber Medi-Serve Sdn Bhd (1997). Brochure.

Far Eastern Economic Review, 2 April 1998.

Fifth Malaysia Plan, 1986-1990.

Finger, J.M. Dumping and Antidumping: The Rhetoric and the Reality of Protection in Industrial Countries, Research Observer (Volume 7 Number 2,1992), The World Bank.

Galal, Ahmed (ed) (1994). Does Privatisation Deliver? Highlights from a World bank Conference, The International Bank for Reconstruction and Development, Washington, D.C.

Glover, David (ed) (1992). Contract Farming in Southeast Asia, Institute for Advanced Studies, University of Malaya, Kuala Lumpur.

Hashim, Rahman (1992). Dasar Penswastaan Negara: Kesannya kepada Industri Penyiaran Televisyen di Malaysia, Jabatan Komunikasi, Universiti Kebangsaan Malaysia, Selangor.

Horton, F.W. (1994). Analyzing Benefits and Costs – A Guide for Information Managers, International Development Research Centre, Canada.

Ibrahim, Hajah R. (1985). Management of Toxic and Hazardous Wastes in Malaysia, Department of Environment, Kuala Lumpur.

Ibrahim, Shafi (1997). Regulations and Requirements for Clinical Waste Management (Seminar Towards A Cleaner Environment in Malaysia), Malaysia.

Ibrahim, Shafi (1996). Toxic Chemicals and Hazardous Waste Management in Malaysia: An Overview (CAP-SAM National Conference on State of the Environment in Malaysia). Consumer's Association of Penang, Penang, Malaysia.

Indah Water (1995). Brochure.

Indah Water (1997). Brochure.

Industry and Environment (Special Issue – No. 4, 1983). United Nations Environment Programme.

Industry and Environment (Vol.11 No.1, 1988). United Nations Environment Programme. International Law Book Services.

Jaafar Abu Bakar (1995). Two Decades of Environmental Quality Management in Malaysia: The Way Forward, Department of Environment, Ministry of Science, Technology and the Environment, Kuala Lumpur.

Jabatan Alam Sekitar, Kementerian Sains, Teknologi dan Alam Sekitar Malaysia. (1995). Senarai Kemudahan Pengolahan dan Pelupusan Buangan terjadual yang dilesenkan sehingga 15 Mei.

Jebsen and Jessen Engineering South East Asia. Company Profile.

Jomo, K. S. (ed) (1995). Privatizing Malaysia: Rents, Rhetoric and Reality, Westview Press, Inc., Colorado.

Kualiti Alam (No.2/95, 1995). A Quarterly Newsletter on Industrial Waste Management.

Kualiti Alam, various documents.

M. S. Pillay (1997). Ministry of Health Policy for Clinical Waste Management (Seminar Towards A Cleaner Environment in Malaysia), Malaysia.

Malaysia Environment Pollution Regulations (1990). Malaysian International Chamber of Commerce and Industry.

Malaysia Water Industry Report 1996/97. Water Supply Branch, Public Works Department, Malaysia.

MICCI (1990). Malaysian Environmental Pollution Regulations, Kuala Lumpur.

MIER (1990). Final Report of Economic Policies for Sustainable Development: Implementing the Brundtland Commission in Malaysia (1990), Malaysia Institute of Economic Research, Kuala Lumpur.

Ministry of Health Malaysia (1988). Annual Report.

MTUC's Comments on the Paper on Guideline on Privatisation.

National Heart Institute (1994). Booklet.

NERA for the ADB (1996). Strengthening the Regulatory System for Private Infrastructure Inception Report.

New Straits Times, various issues.

PE Research (1995). A Study of Privatisation in Malaysia (Vol. 1), Petaling Jaya. (Report submitted to JICA Malaysia Office)

PE Research (1995). A Solid Waste Recycling Study, Petaling Jaya. (Report submitted to JICA Malaysia Office)

PE Research (1997). Issues in Solid Waste Privatisation, Petaling Jaya.

Penswastaan Lembaga Pelabuhan Johor (1989). Bilik Gerakan Badan Penyelaras Penswastaan LPJ 1989.

Postel, Sandra (1988). "Controlling Toxic Wastes" in 1988 State of the World, a Worldwatch Institute Report on the Progress Towards a Sustainable Society.

Rakmi Abdul Rahman (1992). Industrial and Toxic Waste and Sewage Management, Economic Planning Unit, Kuala Lumpur.

Rakmi Abdul Rahman (1992). Industrial Toxic Waste and Sewage Management, Background paper to the Malaysian Conservation Strategy, Economic Planning Unit, Prime Minister's Department, Kuala Lumpur.

Rosnani Ibrahim, Hajah (1985). Management of Toxic and Hazardous Wastes in Malaysia, Department of Environment, 25 March (mimeo).

Seventh Malaysia Plan 1996-2000.

Sixth Malaysia Plan 1991-1995.

The EDGE Survey and Guide, October 30, 1995, Malaysia.

The Star, various issues.

Third World Network. (1989). Toxic Terror: Dumping of Hazardous Wastes in the Third World.

Tietenberg, Tom (1994). Environmental Economics and Policy, Harpers Collin College Publishers, New York.

Tongkah Medivest Sdn Bhd (1997). Annual Report.

World Bank Conference. Malaysia KCT, MAS, Sports Toto (199?).

World Development Report (1992). Development and the Environment, Oxford University Press.

World Development Report (1993). Investing in Health: World Development Indicators, Oxford University Press Inc., New York.

World Development Report 1994. Infrastructure for Development, Oxford University Press, Washington D.C.

Zainuddin Hj. Abdul Rahman (1997). Privatisation in Malaysia, Economic Planning Unit, Prime Minister's Department, Kuala Lumpur.

Zajac, Vincent (1984). Appropriate Technology for Water Supply and Sanitation: Urban Sanitation Planning Manual Based on the Jakarta Case Study, The International Bank for Reconstruction and Development, Washington.

APPENDIX

Appendix A.1. Scheduled Waste Treatment Fees

Scheduled Waste Treatment Fees (RM) (Applicable until 31 December 1997)

Kualiti Alam Waste Classification Code

Group	Waste Type
A	Mineral Oil Waste – waste containing lubricating oil, hydraulic oil, oil contaminated soil, etc.
B	Organic Chemical Waste Containing Halogen/Sulphur – freon, PVC wastes, chloroform, solvents containing >1% halogen, capacitors and transformers containing PCB, etc.
C	Waste Solvents Without Halogen/Sulphur (<1%) – Acetone, alcohols (for example ethanol, methanol), benzene, turpentine, xylene, etc. waste should be pumpable, containing <50 per cent water and 18 kJ/kg calorific value.
H	Organic Chemical Waste Without Hologen/Sulphur – glue, latex, paint, phenol, printing ink. synthetic oils, soap, epoxy etc.
K	Waste Containing Mercury – mercury vapour lamps, COD-fluids, mercury batteries, etc.
T	Pesticide Waste – insecticides, fungus and weed killers, rat poison etc.
X	Inorganic Waste – acids, alkaline, sodium hypochlorite, inorganic salts, metal hydroxide sludge, chromate cyanide waste, etc.
Z	Miscellaneous – medicine waste, lab-packs, asbestos waste, mineral sludge, isocynanate (MDI, TDI), batteries, etc.

1. Organic Waste for Incineration

Waste Group	Package Waste*		Bulk Waste	
	Pumpable Liquid	Solid	Pumpable Liquid	Solid
A	810		630	
B	3,150	3,600		
C	1,350			
H/Z	1,890	2,790	1,800	2,700
T	3,150	3,600		

2. Liquid Inorganic Waste for Physical/Chemical Treatment

Waste Group (X/K)	800 Litre Pallet Tank	200 Litre Drum
Acid Waste Without Chromate (X)	1,440	1,620
Alkaline Waste Without Cyanide (X)	1,440	1,620
Chromate Waste (X)	1,800	1,980
Cyanide Waste (X)	1,800	1,980
Mercury Waste (K)	3,600	3,780

3. Inorganic Waste for Solidification**

Waste Group	Packaged Waste*	Waste in Bulk*
X/Z	810	765

4. Inorganic Waste for Direct Landfill**

Waste Group	Packaged Waste*	Waste in Bulk
X/Z	495	450

Note:
All rates are quoted in Ringgit per tonne
*Packaged waste refers to wastes packed in standard 200 litres drums
**Subject to Kualiti Alam's landfill acceptance criteria

Source: Kualiti Alam

Appendix A.2. Sewerage Charges

1. Domestic Customers (including government quarters)

Category	Monthly Charge
Low cost dwelling houses, dwelling houses with annual value of less than RM600 and government quarters in categories F, G, H and I receiving either Individual Septic Tank or Connected Sewerage Services.	RM2
Village dwelling house, new village dwelling house, estate dwelling house receiving either Individual Septic Tank or Connected Sewerage Services.	RM3
Domestic premises and government quarters in categories A, B, C, D and E receiving Individual Septic Tank Services.	RM6
Domestic premises and government quarters in categories A, B, C D and E receiving Connected Sewerage Services.	RM8

Note: Residential customers and government quarters will now pay fixed charges which are no longer linked to water usage

Definitions

"Domestic Premises" means any premises built, constructed, adapted or intended to be used exclusively for human habitation.

"Low-cost dwelling house" means any domestic premises classified by the relevant local authority or state authority as a 'low cost house'.

"Estate dwelling house" means any domestic premises located on land designated by the relevant state authority for agricultural purposes under sections 52 and 53 of the National Land Code 1965 "…In that such land on which the said domestic premises is located includes such land used for the purpose or purposes of cultivation of any crop (including trees cultivated for the purpose of their produce), market gardening, the breeding and keeping of honey-bees, livestock and reptiles, and aqua-culture."

"New village dwelling house" means any domestic premises located on land designated by the relevant state authority as a 'new village'.

"Village dwelling house" means any domestic premises situated on land declared to be a village by the relevant state authority in accordance with Section 11 of the National Land Code 1965, or deemed as a duly constituted village by virtue of Section 442 of the National Land Code 1965.

"Government Quarters" categories A, B, C, D, E, F, G, H & I is as defined by the Government General Orders (Chapter E).

2. Industrial Customers

Category	Rate based on number of employees
Premises receiving Individual Septic Tank services	RM2.00 per head per month
Premises receiving Connected Sewerage services	RM2.50 per head per month

Note: Industrial customers will be charged based on the total number of employees

"Industrial Premises" means any premises in which the principal activity carried out involves the making, altering, blending, ornamenting, finishing or otherwise treating or adapting of any article or substance with a view to its use, sale, transport, delivery or disposal and includes the assembly of parts and ship repairing but does not include any activity normally associated with retail or wholesale trade.

3. Commercial Customers

Annual Value (RM)	Monthly Charge for premise receiving Individual Septic Tank Services (RM)	Monthly Charge for premises receiving Connected Sewerage Services (RM)
2,000 or less	10	10
2,001 - 5,000	12	20
5,001 - 10,000	25	40
10,000 - 50,000	45	70
50,001 - 100,000	65	100
100,001 - 200,000	220	330
200,001 - 500,000	650	900
500,001 - 1,000,000	2,500	3,500
1,000,001 - 3,000,000	5,000	7,000
More than 3 million	11,500	15,000
Rate on excess volume	65 sen per additional cubic metre if water consumption exceeds 100 cubic metres per month	

Note: Commercial customers will pay fixed charges based on the annual value of their property, plus a charge of 65 sen per additional cubic metre if water consumption exceeds 100 cubic metres per month.

"Commercial Premises" means any premises used wholly or partly for trade, business, provision of services or facilities or any other activity, whether for profit or otherwise.

"Annual Value" of a property is defined as the estimated yearly rental which can be derived from the said property and is not the same as the property value.

4. Government Premises (excluding government quarters)

Category	Monthly Charge
Premises receiving Individual Septic Tank services	RM25
Premises receiving Connected Sewerage services	RM40
Rate on excess volume	65 sen per additional cubic metre if water consumption exceeds 100 cubic metres per month.

Note: Government premises (excluding government quarters) will pay a fixed charge, plus a charge of 65 sen per additional cubic metre if water consumption exceeds 100 cubic metres per month

"Government Premises" means any premises owned or occupied by the federal government, the government of state, a local authority, a statutory body established by federal or state law, a court or tribunal.

5. Miscellaneous Sewerage Services

Miscellaneous sewerage services are a range of services provided by Indah Water upon request for a fee. Amongst the services offered are:

- Desludging and treating of sludge for non Indah Water customers,
- Clearing blockages in property connection pipes, and
- Treating of sludge at designated sewage treatment plants from private licensed contractors.

Miscellaneous Sewerage Charges

Services	Rate (RM)
Desludging upon request for:	
• Traditional toilet systems – 'palong'/hume hole/ pour flush	48.00
• Individual septic tank with a capacity of up to 2.5 cubic metres	150.00
• Private sewage treatment plant or individual septic tank with a capacity of more than 2.5 cubic metres and less than 4.5 cubic metres	220.00
• Private sewage treatment plant or individual septic tank with a capacity that is more than 4.5 cubic metres	220.00 (per desludging)
Clearing blockages in property connection pipes upon request for:	
• Domestic properties	180.00
• Commercial properties	220.00
Treating Sludge	
• Treating one 4.5 cubic metre load of sludge from private licensed contractors	60.00

Source: Indah Water's brochure

Appendix A.3. Schedule of Rates for Continuous Air Quality Monitoring

Schedule of Rates 1998

Standard Reports
ASMA's standard report format comprises monthly data sets generated from Continuous Air Quality Monitoring (CAQM) stations located throughout Malaysia. Data available from specific CAQM stations include criteria pollutants designated specifically for each unique monitoring application including Residential, Comprehensive, Capital City, Background, Traffic, and Industrial.

The CAQM station configuration and the available parameters monitored is as follows:

Designation	Parameters
Residential, Comprehensive, Capital City, Background	Sulphur Dioxide (SO_2) Oxides of Nitrogen (NO/NOx/NO_2) Carbon Monoxide (CO) Ozone (O_3) Hydrocarbons (THC/MHC/NMHC) Particulate Matter (PM_{10}) Ultra Violet Radiation "B" Spectrum (UVB) Meteorological Wind Speed/Direction Ambient Temperature
Traffic	Oxides of Nitrogen (NO/NOX/NO_2) Carbon Monoxide (CO) Ozone (O_3) Hydrocarbons (THC/MHC/NMHC) Particulate Matter (PM_{10}) Meteorological Wind Speed/Direction Ambient Temperature
Industrial	Sulphur Dioxide (SO_2) Oxides of Nitrogen (NO/NOx/NO_2) Particulate Matter (PM_{10}) Meteorological Wind Speed/Direction Ambient Temperature

STANDARD REPORT PRICING

STANDARD REPORTS ARCHIVED DATA		
CAQM Designation	**Volume of Data**	**Rate per Month (RM)**
Residential	1-3 months 4-6 months 7-9 months 10-12 months 13 and above	1,750 1,400 1,225 1,070 935
Traffic	1-3 months 4-6 months 7-9 months 10-12 months 13 and above	1,510 1,210 1,060 930 815
Industrial	1-3 months 4-6 months 7-9 months 10-12 months 13 and above	1,005 805 705 615 540

STANDARD REPORTS INDIVIDUAL PARAMETERS		
Individual Parameter	**Volume of Data**	**Rate per Month (RM)**
API	1-3 months	500
	4-6 months	400
	7-9 months	350
	10-12 months	300
	13 and above	250
SO_2	1-3 months	230
	4-6 months	185
	7-9 months	160
	10-12 months	140
	13 and above	115
NOx/NO/NO_2	1-3 months	230
	4-6 months	185
	7-9 months	160
	10-12 months	140
	13 and above	115
CO	1-3 months	230
	4-6 months	185
	7-9 months	160
	10-12 months	140
	13 and above	115
O_3	1-3 months	180
	4-6 months	145
	7-9 months	125
	10-12 months	110
	13 and above	90
THC/NMHC/MHC	1-3 months	435
	4-6 months	350
	7-9 months	305
	10-12 months	260
	13 and above	115
PM_{10}	1-3 months	465
	4-6 months	375
	7-9 months	325
	10-12 months	280
	13 and above	235
UVB	1-3 months	70
	4-6 months	55
	7-9 months	50
	10-12 months	40
	13 and above	35
Meteorological[1]	1-3 months	250
	4-6 months	200
	7-9 months	175
	10-12 months	150
	13 and above	125

Note: [1] Purchase of Meteorological Data will include a windrose and the pollutant windrose

for each parameter ordered

BILLING

Example 1: An order of data for a 12 month period at a Residential Station will be charged as follows: 3 x RM1,750.00 + 3 x RM1,400.00 + 3 x RM1,225.00 + 3 x RM1,070.00 = RM16,335.00

Example 2: An order of data for an 8-month period for SO_2 and O_3 will be charged as follows:

SO_2 3 x RM230.00 + 3 x RM185.00 +2 x RM160.00 = RM1,565.00
O_3 3 x RM180.00 + 3 x RM145.00 + 2 x RM125.00 = RM1,225.00
Total: RM1,565.00 + RM1,225.00 = RM2,790.00

CUSTOM REPORTS

CUSTOM REPORTS ARCHIVED DATA		
Parameter	**Custom Report Rate Per Week* (in RM)**	**Custom Report Rate Per Day* (in RM)**
SO_2	175	60
$NOx/NO/NO_2$	175	60
CO	175	60
O3	135	45
THC/NMHC/MHC	220	110
PM_{10}	235	120
UVB	40	20
Meteorological[2]	125	65

Note: [2] Purchase of Meteorological Data in Custom reports do not include windrose

BILLING

Note: Custom reports require an additional charge of RM150.00 for each prepared data set.

Example 1: Archived data for SO_2 for a 1-week period for any given month is
RM175.00 + RM150.00 = RM325.00

Example 2: Archived data for O_3 for 3 random days within any given month is
RM45 x 3 + RM150.00 = RM235.00

Example 3: Archived data for O_3, SO_2 and CO for 3 weeks is

RM135 x 3 + RM175 x 3 + RM175 x 3 + RM150 = RM1,605.00

Source: Alam Sekitar Malaysia Sdn Bhd

Appendix A.4. Personnel Contacted for Interview or Information

Environmental Services	Government Agency	Privatised Body
1. Water Supply	Water Supply Division Public Works Department Jalan Sultan Salahuddin 50582 Kuala Lumpur ✆ : 03-2919011 Fax: 03-2921202	
2. Sewerage Services	Ridzuan Ismail Deputy Director General; and Ahmad Rozian Regional Director (Central Region) Sewerage Services Department Ministry of Housing and Local Government Lower Ground Floor Wisma Damansara Kuala Lumpur ✆ : 03-2562605 Fax : 03-2562609	K. Asairinachan Executive Director (Operations & Engineering) Indah Water Konsortium Sdn Bhd 193 Jalan Tun Razak 50400 Kuala Lumpur ✆ : 03-2413555 Fax : 03-2480028
3. Hazardous Waste	Ibrahim Shafi (Principal Assistant Director) Department of Environment 12th & 13th Floor Wisma Sime Darby Jln Raja Laut 50350 Kuala Lumpur ✆ : 03-2947844 Fax: 03-2931480	
4. Solid Wastes	Abdul Halim & Ibrahim Othman (Technical Div) Local Government Department Ministry of Housing and Local Government Aras 4, Block K Pusat Bandar Damansara 50782 Kuala Lumpur ✆ : 03-2547033 Fax: 03-2554066	Mohd Jamil Zainal Abidin (Head of Division – Corporate Services) Alam Flora Sdn Bhd Level 5, Wisma HICOM No.2, Jln Usahawan U1/8 Seksyen U1 40150 Shah Alam, Selangor ✆ : 03-2027922 Fax : 03-2028144

Environmental Services	Government Agency	Privatised Body
		Kamal Kamaruddin (Corporate Communications Manager) Southern Waste Management Sdn Bhd No. 28 Jln 1/71 Off Jln Tun Mohd Fuad Taman Tun Dr. Ismail 60000 Kuala Lumpur 🕭 : 03-7169619 Fax : 03-7168750
5. Clinical Wastes & Non-Medical Services	Mr. Singhar (Head of Kawal Selia) Engineering Division Ministry of Health 4th Floor Wisma Sime Darby Jalan Raja Laut 50350 Kuala Lumpur 🕭 : 03-2949304	Ainon Suleiman (Manager – Corporate Affairs) Faber Medi-Serve Sdn Bhd No. 18 Jln 4/109E Desa Business Park Taman Desa Off Jln Klang Lama 58100 Kuala Lumpur 🕭 : 03-7816066 Fax : 03-7812549
		Shamsulbahrain Ludin (Senior Manager – Commercial Group); and Mohamad Roza Shah Hussin (Manager, Clinical Waste Management) Radicare (M) Sdn Bhd No. 34 & 36, Lorong Rahim Kajai 14 Taman Tun Dr. Ismail 60000 Kuala Lumpur 🕭 : 03-7162020 Fax : 03-7161010
		Norhaiza Mamat (Business Development Executive); and Haslin Ismail (Biomedical Engineer) Tongkah Medivest Sdn Bhd Lot 11.04/5, 11th Floor Wisma HLA Jln Raja Chulan 50200 Kuala Lumpur 🕭 : 03-2448918 Fax : 03-2450040

Environmental Services	Government Agency	Privatised Body
6. Environmental Monitoring	Nor A'zman Rosli (Control Officer) Department of Environment 12th Floor, Wisma Sime Darby Jln Raja Laut 50350 Kuala Lumpur 🕭 : 2947844	Lory Whiteley (Business Development Manager) Alam Sekitar Malaysia Sdn Bhd Suite 13.04/05 Wisma Cyclecarri Jln Raja Laut 50350 Kuala Lumpur 🕭 : 03-2946500 Fax : 03-2946511
7. Health	Chua Kok Ching (Ketua Penolong Setiausaha) Privatization Department Ministry of Health Perkim Building Jalan Ipoh Kuala Lumpur 🕭 : 03-4421211	