Economic Analysis of Privatization in Malaysia

Volume II

A Report Submitted to
Japan International Cooperation Agency
(JICA)

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Abbreviations

AMDB	Arab Malaysian Development Bhd.
BOD	Biological Oxygen Demands
BOT	Build, operate and transfer
CEO	Chief Executive Officer
CT	Cardio Thoracic
DOE	Department of Environment
DRE	Destruction and Removal Efficiency
EIA	Environmental Impact Assessment
EPU	Economic Planning Unit
ESOP	Employee-share-ownership plan
FELDA	Federal Land and Development Authority
GDP	Gross Domestic Product
GOEs	Government owned enterprises/entities
HMOs	Health Medical Organizations
IJN	Institut Jantung Negara (National Heart Institute)
JICA	Japan International Cooperation Agency
JKR	Public Works Department
KLGH	Kuala Lumpur General Hospital
MBO	Management -buy-out
MoH	Ministry of Health
MPPJ	Majlis Perbandaran Petaling Jaya (Petaling Jaya Municipal Council)
PJMUS	Petaling Jaya Medical Stores
PKENJ	Perbadanan Kemajuan Ekonomi Negeri Johor
PWD	Public Water Department
RESP	Rural Environmental Sanitation Program
RM	Ringgit Malaysia
TSD	Treatment, storage, disposal
UEM	United Engineering Malaysia
WMC	Waste Management Center
WMI	Waste Management Inc.
WSEM	Worldwide SITA Environmental Management Sdn Bhd

Chapter 1 An Economic Analysis of Privatization In Malaysia: Introduction

1.0 Objectives Of The Study

The objective of this study is to examine Malaysia's experience in the privatization of selected environmental services such as water supply, solid waste, toxic wastes, sewerage and hospital services.

In particular, the consultants shall examine whether privatization of environmental services have addressed certain key concerns of the government[1], namely,

(a) relieved the government of financial and administrative burden

(b) improved overall efficiency and productivity of environmental services to the public

(c) facilitated economic growth

(d) reduced the size and presence of the government sector

(e) helped to meet national economic policy targets

Further, since privatization is based on the premise that market forces are superior compared to administrative directives, other objectives become important, namely,

(f) improved overall welfare, e.g. greater social benefits

(g) reduced or eliminated price distortions for the services

(h) enhanced the management of natural resources or services provided

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[1] EPU (1993) *Privatization Masterplan*, Kuala Lumpur

1.1 Methodology Of Study

This study shall use economic analysis as a primary means to understand the issues related to environmental service provisions. However, the study is not solely confined to economic analysis, as other sectors are more influenced by other factors, e.g. institutional problems, management or organizational weaknesses, or even policy inadequacies. We shall of course examine both quality and quantity type of issues, especially where privatization had been initiated. For instance, for water resource, we shall examine both the issue of water shortage as well as water quality.

In order that the privatization experience be carefully appraised, it is necessary to examine the "before and after" situation. And we shall also examine either or both the costs and benefits issues as well, depending on the nature of the resource as well as service provided.

Another critical area of inquiry appears to be the forms of privatization that is whether the changes in the level and quality of services provided is due to a change in the management of the enterprises or whether the change is due to a transfer of ownership rights.

The theoretical basis for examining market and public policy failures is already well sketched out[2]. In the area of market failures we shall examine various issues and premises, e.g. property rights, competition, transaction costs, market imperfection, supply and demand situations and their price levels, and whether these prices reflect true social costs and benefits of their use. Issues such as externalities or diseconomies will be examined also.

As for public failure, we shall examine whether government policies and intervention have given rise to distortions in the market. The other likely scenario may be the underpricing of services such that costs of environmental provisions are subsidized, thus giving rise to environmental degradation. The other big issue in Malaysia is also likely to be underinvestment in environmental infrastructures thus giving rise to degradation.

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2 Adequate descriptions of these can be found in Panayotou T (1993) *Green Markets The Economics of Sustainable Development*, ICEG & HIID, World Bank (1992) *World Development Report 1992, Environment and Development*, Washington

More specifically, the consultants will do the following:

i. Review the literature on the services indicated in this study;

ii. Examine the environmental issues and trends in the sectors, and describe the key Malaysian features

iii. Discuss the key policy issues related to the privatization of the said services, especially its environmental aspects; what does the privatization exercise hope to achieve for each sector;

iv. Quantify the analyses of each sector, using various approaches. Data would be collected of a number of items: the price of services, e.g. sewerage rates, water charges, toxic waste charges, and health care costs, etc., make appropriate estimates for which there is no price for those services;

v. Attempt to interview the privatized agencies or successful bidders to obtain detailed information on the conditions of privatization;

vi. Discuss the before and after privatization experience, focusing on the question why the government could not provide those services; discuss the impact of privatization on overall welfare using cost and benefit analysis, where appropriate;

vii. Explore other policy options.

The consultants shall focus on the following sectors,

* water supply, Puncak Niaga (M) Sdn Bhd; and Syarikat Johor Sdn Bhd
* sewerage, Indah Water Konsortium Sdn Bhd
* toxic wastes, Kualiti Alam Sdn Bhd
* solid wastes, Worldwide Sita Environmental Services Sdn Bhd
* public hospital services, National Heart Institute (a corporatization study instead); and Remedi Pharmaceuticals (PJ Medical Stores)

1.2 Layout of this Report

This report should be read in conjunction with the first volume which discusses in detail many of the issues in relation to privatization.

The main intention of this report is to discuss each of the privatization cases more closely and examine the related economic issues and policy implications. We shall discuss the following sections in order. The first study shall be a corporatization study of the National Heart Institute, to be followed by an examination of Kualiti Alam (toxic wastes), Worldwide Sita Environmental Services Sdn Bhd (solid wastes), Puncak Niaga (M) Sdn Bhd and Syarikat Air Johor Sdn Bhd, Indah Water Konsortium Bhd and finally Remedi Pharmaceuticals Sdn Bhd.

Chapter 2 Privatization of the Health/Medical Services: Corporatization of the National Heart Institute (Institut Jantung Negara or IJN)

2.0 History of IJN[1]

IJN originated from the Kuala Lumpur General Hospital's Cardio-Thoracic Unit. In 1990 (or thereabouts), the Ministry of Health commissioned Ernst & Young, a local management consultancy firm, to conduct a study of how to deal with the Cardio Thoracic (CT) Unit. The background to this is that this Unit was very costly to run. This hospital ended up paying huge expenses to run the CT Unit but couldn't recover the costs because of civil service regulations and service orders. A large part of the cost was in consumables, supplies and drugs, which were very expensive but the government couldn't charge accordingly because of both the service to the *rakyat*, and also it had to provide such medical care to its civil servants.

The consultancy study resulted in the recommendation that the best option was to corporatize the IJN.

After this recommendation, the government commissioned IJM Corporation Berhad (another firm) and Environmental Engineering Corporation of the US to build the IJN complex. They were also to maintain the equipments and building for two years after its completion. Construction started in June 1990 and was completed two years later. It was a turnkey project financed entirely by the government, with the Public Works Department (JKR) as the project manager.

Before corporatization, the working conditions at the CT Unit were appalling. The specialists were cramped into small offices which were inadequately provided. It was more of a cost centre. Although there were lots of demand for cardiology and cardio-thoracic consultancy services they could only charge according to government approved rates, which was way below rates charged by the private sector.

In the meantime, the economic conditions were recovering in the early 1990s (from the recession in the mid to late-1980s), and developed a concomitant demand for specialists, with the private sector initiating the opening up of private hospitals and clinics in a rapid pace. The General Hospitals and its CT Unit were thus an obvious target for staff poaching. Quite a few specialists left the government service to start up in private hospitals, with promise of much higher salaries.

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[1] Information of the history were provided by the CEO Dato' Dr Hjh Nor'Aini Hj Abu Bakar, and Khor Lee Hean, Head of Finance Division of IJN

2.1 Objectives: Setting Up IJN

The three main objectives of setting up IJN are:

1. To retain specialist, medical paramedical and support staff.
   [There was a mushrooming of private hospitals, and a concomitant demand for specialists and medical doctors. The government hospitals was a logical place to poach for such specialists. Because of the very attractive salaries, the civil service was losing quite a lot of staff. The corporatization of the IJN was intended to arrest this problem; partly to enable the new institution to pay specialists and other staff better; the other aspect seemed to be to meet the demand for such health services. In a private conversation, it was estimated that surgeons in the private sector earned about 4 to 5 times that of an IJN person of the same qualifications and experience]

2. To provide a more efficient service [a more efficient service is certainly needed, as the government saw here a huge demand, but was unable to meet the demand, and hence had agreed to set up a separate unit]

3. To continue with the social service/obligation for the poor and civil servants [This condition was necessary, since the corporatization meant that the IJN would apply commercial rules of operation. However, the special arrangement was that the government would now pay to subsidise the poor and the civil servants. These two categories of patients pay only wards charges and the surgical and medical fees are paid for by the Ministry. A qualification is needed for the poor; they are required to pay according to an assessment of their economic (affordability) and social conditions. Pensioners and students below 21 are also subsidised].

2.2 Operations of the IJN

The IJN is governed by a 9 member board. Dr Khalid Sahan is the chairman of the board. He was a former director general of the Ministry of Health, and is currently the chairman of Bank Bumiputra Malaysia Berhad, one of the largest banks in Malaysia. Three executive directors are working at IJN, the Ministry of Health has 2 representatives (Secretary General and the Director-General of Health). Treasury or Ministry of Finance has one representative. There are two private sector representatives: a lawyer and a management specialist. The IJN is 100% owned by the Ministry of Finance Incorporated.

Some important dates associated with the IJN are shown in Table 2.1.

Table 2.1 Important Dates of IJN

Date	Event
June 1990	construction began on the IJN complex
June 1992	completion of the IJN complex
Aug 1, 1992	IJN Sdn Bhd, the company, was formed
Sep 1, 1992	IJN corporatization took place; a total of 295 staff of the KL General Hospital opted to join IJN
Jun '92 - Jun '94	Equipment & Building Maintenance Contract with Environmental Engineering & IJM Berhad

IJN has three main medical and health areas: Cardiology, Cardio-Thoracic and Cardio-Anaesthesiology.

IJN recognises three types of patients: fee-paying patient, civil servants and the underprivileged. About 50% of their patients are civil servants, 25-30% are from the under-privileged group, and the balance from the fee paying patients. Of this remaining 20-25% of private patients, only 2 % pay their own medical and surgical bills; the rest are paid for by their employers.

A standard charge rate is applied for all clients, whether in the government or private sector. The fee-paying patient will pay for him/herself. For the civil servants, they pay for ward charges, and the government (Ministry of Health) will pick up the rest of the tab. For the underprivileged, the amount they pay is based on an assessment of their affordability status and social condition.

Because of the high demand for surgery, a queuing system was established. The only way that the queuing system is interrupted is during an emergency. Otherwise, the waiting period can be as long as 18 months.

After the corporatization, IJN engaged an accounting firm (Azman, Wong & Salleh) to help them revamp their financial policies and at the same time to work out charges and fees for the services that IJN provides. These charges have stayed unchanged until 1994. There has also been a computerisation of the entire system and finance is now linked with patients, wards and inventory.

IJN provides only one service, whether it be for first or third class. It is team work service, not the personal service of the private hospitals.

There are 4 operating theatres and 3 labs at the IJN, compared to only 1 operating theatre at the KLGH. As such, there has been a corresponding increase in terms of the productivity of surgery cases. In a private paper tabled before the IJN board, it claimed that in the 17 months of IJN's establishment, they have had more surgery cases than KLGH for 10 years (CEO, per comm.).

As for facilities, there are 211 beds, with a planned capacity of 275. There are 64 beds in the third class, 60 beds in the 2nd class, 21 first class beds, and 30 emergency beds .

The IJN operates on a referral system. Government and private doctors can refer patients. As such, they are able to access to all kinds of complex and risky type of cases. Although this does not provide the best of statistics in terms of successful cases treated, the fact remains that the IJN will see all kinds of patients, not only the affordable ones. The variety of patients is much wider than that for the private hospital. As such, this situation has also made IJN into a centre for research, learning and also training. IJN provides post-graduate training to various universities and institutions of higher learning.

2.3 Financial Aspects

IJN received a RM15 million launching grant, and a further RM3.9 million in terms of equipment and working capital. Since these disbursements, the IJN has not asked for any more funds from the government, except for the subsidies that the government agreed to provide for the underprivilege and the civil servants. [During the first year of corporatization, the Ministry of Health paid out about RM30 million; in the second year, they paid out RM50 million]. These estimates provide an idea of the magnitude of subsidy that the government provides for the former CT Unit at the KLGH. IJN is financially self-sufficient, in terms of earning profit for their effort.

In terms of charges, the subsidised patients pay very little comparatively. For instance, for the first visit, the average out-patient charge is RM30/visit, RM5/follow up. For the surgery charges, a typical no-complication CAPG at IJN would cost between RM16,000 to RM22,000, with an average at about RM18,900 for a first class treatment. Compared to the private hospitals in Malaysia, CAPG at IJN may only be about 70% of private hospital costs. Even the third class treatment at IJN may be equivalent to the first class facilities of a government hospital.

The Environmental Engineering group estimated that it would take 5 years for IJN to breakeven, with a 50% bed occupancy in the first year, with a progressive 10% increase annually.

But, the huge demand for CT, cardiology and CA services translated into higher bed occupancies than were anticipated. Within 3 months, IJN achieved the 50% bed occupancy. By April 1993, they reached 70%, two years ahead of schedule, which is deemed to be the breakeven point. Today, they have an occupancy rate of between 68-72%.

2.4 Staff and Specialists

IJN is the CT centre in Malaysia. It has 6 of the 12 CT surgeons in Malaysia, private and public hospital combined.

Most of the staff that have joined the IJN have remained. A total of 295 joined in 1992, and today staff strength has increased to 540. Of the 13 surgeons that joined, only one has left for the private sector while five more have joined. IJN has 18 consultants today.

Meeting the first objective of their corporatization has not been easy, since the private sector can offer vastly attractive salaries for skills, since they didn't have to pay to train those personnel. Staff salaries will be the principal issue for IJN in the years to come.

The trade-off appears to be with the management and the philosophy that IJN embodies. The IJN philosophy is: professionalism, human dignity, team spirit, training and education/research. Staff are working in a professional environment, and that appears to be a good trade-off. They see all kinds of cases from complex and risky to the ordinary. As such, the professionalism is being developed in the work that IJN receives.

But salaries in private hospitals can be quite alluring. For instance, paramedics are offered senior registrars pay. There is not much package other than the salary in the private sector, and such salaries attract mainly the younger and less experienced who are more attracted by the salary than IJN's non-salary package.

IJN conducted a salary assessment with Price Waterhouse. The basic finding was that the income side of the remuneration was slightly lower than the private hospitals. However, with the total package added in, they are very competitive with the top private hospitals.

Whereas the IJN staff used to compare their salaries with their government servants previously and were happy at their better incomes. They now compare with the private hospital wages and feel dissatisfied. As such, the more junior staff, especially those who joined after 1992, have been seen to be using IJN as a stepping stone to private sector positions. IJN is having another consultant, Hayes Management, in to conduct a study and to see what can be done, and to recommend actions to this effect.

2.5 Performance

There are thousands in the waiting list for surgery. IJN's operating capacity is 2,400-2,500 cases per annum or about 200 operations per month. Individual consultants and surgeons can see about 15-22 cases per day. This is already maximum.

However, for a country of 20 million, one can likely expect to carry out about 6,000-7,000 cases per year. IJN is capturing about 25-40% of the total demand of surgery cases. This is not the effective demand, since there are many on the waiting list. In fact, the current notification time is about 4 months, with cases being lined up at 2-18 months at a stretch.

According to the CEO, this situation is already 50% better than what it was compared to the KLGH time.

A total of 120-150 outpatients are seen every day by the medical personnel at IJN. Additionally, they also carry out 300-320 invasive procedures per month.

2.6 Competition

Since the setting up of the IJN, the government has not had a CT Unit, until in 1996, they are setting up a unit in Penang. And there are plans for expansion to Johor in 1997.

IJN has signed a memorandum of understanding with the PKENJ group of Johor, where they provide specialist consultancy services (i.e. cardio-thoracic, cardio-anaesthesiology and paediatric cardiology) to their hospital in Johor. This appears to be a co-operative arrangement. IJN provides the consultants, and PKENJ provides the market (patients).

Other than this, other private hospitals providing similar kinds of services are: Subang Jaya Medical Centre, Ampang Puteri, Tarwakal Medical Centre, Pantai Medical Centre, Gleneagles Kuala Lumpur. In Penang, there is the Penang General Hospital which has a cardio-thoracic unit, Gleneagles Penang, Lam Wah Ee and Adventist Hospital. In Melaka, there is Mahkota.

Private hospitals are prepared to offer very high wages to attract away skilled staff from IJN.

Apart from staff, curative costs are also an important means of comparison. An average CAPG operation without any complications would be about 70% lower than that of the private hospitals. Such a comparison is only of a ballpark type because each surgery is different from another. In cases of valve repair, it can be as low as 50%.

Intensive Care Unit charges are fixed at IJN, and is a lump sum of RM600/day, inclusive of food, nursing care, bed, etc. The private hospitals price their beds at RM200-300 per day, and will slab on nursing care, medicines, food, etc. separately. At the end of the day, it could cost as much as RM1,000.

Regionally, a comparative visit to Singapore hospitals for a similar treatment may cost up to double the cost at IJN, if the exchange rate differences are taken into consideration.

2.7 Success Factors

What has been presented appears to be a fairly successful case where corporatization of a unit of medical services has managed to achieve its corporatization objectives. What are the success factors?

The Chief Executive Officer attributes success factors to the following:

* Team work and company spirit
* Good working environment
* Professionalism in their work
* Good management
* Expertise to assist in detailing the transition from a government to commercial operation
* Sufficient working capital
* Institutional support
* Heavy demand situation; no fear of competition

Indeed, the last item identified has important economic relevance in health care economics. The IJN's success is dependent on a number of key factors. First, being a health care service, they are able to provide professional service. Second, because there is so much demand, there is no problem with markets. Third, the fact that they are priced below the market not only ensures that they will continue to have long queues, but that could be a means to containing health care costs, especially in a market driven situation. The rest of the market could raise the price of their health care but the floor will be provided by IJN. This may be a good exercise in seeing cost containment, with the government setting up commercial enterprises to compete with the private sector. Fourth, because they operate on a commercial basis, they can afford to pay their professionals decently, and thus retain their loyalty to the institution. Fifth, consumers see the IJN as value for money. There is consumer surplus, and because IJN charges lower than the market, they feel that they have captured back some consumer surplus.

2.8 Issues

The biggest issue in health care is cost containment. Often times, this concern gets carried away without realising the concomitant impact on supply-side resources, and the wider economy. Costs in health care are escalating because of the entry of the insurance industry, fuelling the sector with financing, and leaving the costs side out of the health care (see argument by Alan Maynard, 1983, in McLachlan, Gordon and Maynard, Alan (eds) The Public/Private Mix for Health, The Nuffield Provincial Hospitals Trust, England).

In the US, cost containment policies have had to be called into the arena, and in England, and elsewhere, the same situation has been experienced. What has been Malaysia's experience?

Malaysia's health care has traditionally been a public service, with a minor private clinic servicing the more affordable. However, that situation changed significantly towards the mid-1980s when private hospitals were allowed to operate, and the government's attitude towards the private sector's participation in the economy became more encouraging. To date, the insurance industry has not quite infected the medical services industry, and cost containment has been relatively a minor issue[2].

However, the government, which pays for 95% of the health and medical costs, is now seen to be retreating, and leaving the turf to the private sector. The flourishing of private hospitals is one example of this move. The affordable can seek medical attention at a cost that they afford -- user pay principle.

Concomitantly, the setting up of the IJN represents another kind of move. Health care in the specialist areas have been very costly with the entrance of private sector. The IJN entry may help to stabilise or even act as a floor to market costs. [It may not be an unsimilar situation to the Proton Saga, where Malaysians buy it because far cheaper than other models, and may even perform just as good]. In that respect, IJN is a competition to the market. The government is setting up another CT unit in Penang, and that could well be another level of competition.

It is difficult to analyse this situation in terms of efficiency and price. The difficulty lies in understanding people's perception of how important is their health. If one notices that in insurance, people normally insure themselves more than their lifetime earnings worth, that may be indicative of the "value" placed on their health. When people are sick, they seek medical attention, often times without regard to cost.

In practise, this has led to cost escalation in the medical sector. And it is important that the government continue to maintain a presence rather than retreat from their regulatory responsibility, either for prices, quality of service or even in the licensing of professionals.

The brief IJN experience has demonstrated that it is able to deliver on professional and managerial performance. It has achieved certain set targets, and has to a large extent is self-sufficient in financing. Indeed, in its 1993 annual report, it reported incomes of RM41 million and expenditures of RM11.4 million. By 1994, the revenues had shot beyond RM55 million. Although still in its infancy, the basis for its continued operations are in place.

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[2] The Consumers Association of Penang have put out a publication entitled "Curing the rich or the sick?", seeking to point out the increase in health care costs in the mid-1980s

2.9 Preliminary conclusions

Because of the early nature of this corporatization, it would be appropriate to qualify our findings to date. But on most counts, the IJN appears to have been corporatized on a sound footing. It enjoys strong growth, has a good presence in the heart industry, and appears to be performing financially well.

It would appear to be a model for future government privatization and provides good lessons in its experience. It would however be important to conduct another objective assessment a few more years on, with all the financial and operating indicators available to effect such an exercise.

Chapter 3 Toxic Wastes Privatization: Kualiti Alam Sdn Bhd

3.0 Background

Malaysia's industrialisation has been the one of the main basis for its high rate of economic growth. That industrialisation process has brought about some unwanted by-products: toxic and hazardous wastes. By 1995, the Malaysian government was recording about 410,000 tonnes of scheduled wastes annually[1]. As of May 1995, the government had licensed 58 firms for transport of such wastes, 10 off-site storage areas, fined 22 for contravention of toxic wastes regulations, and licensed one firm for waste management.

Kualiti Alam Sdn Bhd, the firm which won the privatization award, is required to design, build, operate, manage and maintain the waste management centre.

The principal question for the management of toxic and hazardous wastes is whether it would succeed. This chapter hopes to shed some light on the economics of toxic wastes, and to describe the project and the project proponents in some detail. In the end, we hope to be able to comment on the policies of privatization as it relates to toxic wastes.

3.1 Economics of Toxic Wastes

Without any doubt, the main intention of the toxic waste privatization is to internalise cost. Formerly, the cost for disposing toxics into the environment was borne by society at large. Industries who had toxics would ask a contractor to remove the waste, and that usually ends up in a waste dump. The pollution created by that waste may not be evident for sometime, but when problems do emerge, society will bear that cost. Thus, the privatization will increase the cost of toxics being produced from the manufacturing by-process.

The main concerns of toxic waste legislation is to protect against health, especially human health. And the level of toxicity threatens humans directly, when we experience adverse effects on being exposed to toxics. We cannot escape from using toxics because they are part and parcel of the chemicals that we use in products, whether for production or consumption. In excessive amounts, these products or by-products or more properly the chemicals that are contained in them become toxic to humans. As such, the concerns that government should have is to define an acceptable risk level in balancing the use and discharge.

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[1] Scheduled wastes are discussed more carefully in the first volume of this study Kindly refer to section 4 3

Health effects can be summarised into impacts on mobility (acute or chronic exposure), mortality, or even to reproductive ability. In many instances, because of the large amounts of chemicals in use, and the uncertainty that is created, it is difficult to define cause and effect.
Indeed, this is the main type of problem, that consumers who suffer health impacts from exposure to toxics will have to establish a case that their illness or death are caused directly by exposure. And this is the most difficult part, and is the case in Malaysia, where redress is sought after. As most people know, taking firms to court is very costly, and unless the evidence is watertight, judgement are likely to be decided on direct cause and effect. Pollution victims will have a tough time to establish a case for this in the most convincing manner.

In Japan, the situation is rather different. The courts have shifted the responsibility of proof to industry, the cause of the problem, once the plaintiff has established the nature and cause of their diseases and the mechanism by which they were affected; the courts will accept a high statistical correlation in such cases.

But courts are normally places which drag plaintiffs and defendants through vast amounts of time and effort. At the end of the day, the courts may end up punishing the defendant more, than satisfy the plaintiff with retribution and compensation.

Given this scenario, there is a need for government to step in to establish the standards, risks and exposure limits by which toxics could be more safely disposed into the environment without causing health risks to the population at large.

In that regard, the government's concerns are dialectical. They want to encourage industrialisation, and yet need to regulate them in order that they don not discharge unacceptable risks in the form of toxics into the environment.

The method that the government has chosen is to state quite clearly that they will be involved in regulation. They will set the standards, undertake enforcement, and license firms to carry out prescribed activities. Beyond that, they have left it to the private sector to come up with ideas how best to deal with the toxic waste problem.

And that is precisely where Malaysia is at the moment. Perhaps a little more detail on the privatization of the scheduled wastes will be helpful.

3.2 Privatization to date

The Malaysian approach to toxic and hazardous wastes is mainly that of the end-of-pipe approach, i.e. the privatization of a centralised waste treatment and disposal facility. It is a build, operate and transfer (BOT) project, with a concession period of 10 years

The winning bid came from the UEM-Danish group, and they were given a letter of undertaking to begin work in January 1992. There were 2 competitors in the final shortlist, viz. UEM and Chemsecurity bids.

The principal concept of the privatization lies in the concept of a cradle to grave management. Here, the regulations call for the use of a manifest system which is intended to record all wastes that is generated, the amounts and volumes, and other important information about the wastes generated and up till their disposal. Waste generators are required to prepare a manifest for all scheduled wastes, label and packaged properly and delivered to a licensed site for temporary storage or to the proposed waste management centre. Through this recording system, the DOE hopes to monitor all scheduled wastes and detect any surreptitious dumping. Failure to comply with this regulation is punishable by fines and imprisonment.

3.3 The Privatized Project

A Waste Management Centre has been approved for Bukit Nenas in Negri Sembilan.

The Waste Management Centre or WMC is a secure landfill which is designed for a 15 year life span at 10,000 tons/year. The waste management system involves the establishment and operation of a centralised waste management centre (WMC) and the setting up of transfer stations at strategic locations throughout Malaysia.

Transfer stations serve as collection points and temporary storage areas for incoming wastes. Once the transfer stations and the transportation system is operating smoothly, it is anticipated that a series of local collection stations will be established. This will provide the small waste generators such as households, with a facility to which they can deliver their wastes.

Kualiti Alam will assist in setting up of the local collection stations which will probably be implemented on a Municipality or District basis.

(a) The Integrated Waste Management System

Industrial wastes will be transported from their source to transfer stations. These stations which are equipped with receiving and storage areas, shall sort, weigh and grade the collected wastes, into categories like bulk solids, organic or inorganic wastes, oily and liquid wastes and so on.

These wastes are then transported to the WMC, they are further sampled and tested in the laboratory, before treatment.

The WMC will provide a treatment and disposal system for scheduled wastes. Organic wastes will be mainly treated by incineration in a high temperature rotary kiln incinerator.

A physical/chemical treatment plant will treat inorganic wastes.

Residuals from the incinerator will be sent to the solidification or stabilisation plant if required, or directly to the secure landfill.

(b) **Treatment capacity**

The Waste Management Centre at the initial stage, has the following capacities:

* INCINERATION	30,000 t/y
* PHYSICAL/CHEMICAL TREATMENT	10,000 t/y
* SOLIDIFICATION	30,000 t/y
* LANDFILL	10,000 t/y

The incineration plant consists of a rotary kiln system with suitable liquid, sludge and solid waste feeding provisions and a secondary combustion chamber. A gas cleaning system as well as ash and slag handling will be provided.

The incinerator will be designed to handle 25,000 tonnes/year of wastes with a mean calorific value of approximately 15 MJ/kg. At temperatures of 1200 degrees C and a retention time of 2 seconds in the secondary chamber, a volatile destruction and removal efficiency (DRE) including PCB's, of at least 99.99% can be expected.

The physical/chemical treatment plant consists of a physico/chemical treatment and a biological treatment plant. The objective of the physico/chemical plant is to remove the toxic materials from inorganic wastes as settleable solid residues as well as to render the liquid phase suitable for discharge to the environment.

The stabilisation/solidification plant is designed to stabilise a range of wastes so that the wastes can be disposed safely in the secure landfill. The stabilisation plant utilises a cement-based process for the fiction of organic compounds. The stabilisation process is a low temperature, low energy process using relatively simple standard equipment. It is a process that readily stabilises solids, sludge, ashes and to some extent liquids, into a concrete, stabilised final product that is environmentally acceptable form for permanent secure landfill disposal.

A secure landfill will be established for wastes suitable for depositing without further treatment and for residual products arising from the waste treatment processes. The landfill will be established in stages as the need arises.

In order to minimise leachate generation, the deposit area of the landfill will be established in sections, keeping the open working area to a minimum. When a section

has been filled, it will be re-established with a top liner to reduce leachate generation Each landfill section is subdivided into subsections.

The bottom of each section is lined and provided with a leachate drainage system. The leachate is treated at the polishing plant or physico/chemical treatment plant.

3.4 The Privatized body

Kualiti Alam, the joint venture that eventually won the bid, is a joint venture, with the following shareholding structure:

50% United Engineers (M) Bhd or UEM
20% Arab Malaysian Development Bhd or AMDB
30% Danish Waste Treatment Services A/S (comprising I Kruger Engineering, Chemcontrol & Enviroplan)

UEM is a member of the large and diversified Renong Berhad, a company which is closely associated with UMNO, the dominant political party. UEM is famous in Malaysia for having completed the North-South Highway in record time (see UNDP 1995). In the post North-South Expressway construction period, the Company is commencing works on the giant second-link between Singapore and Malaysia, the National Sports Complex, as well as the Central Link, another major expressway linking Shah Alam, the Kuala Lumpur International Airport at Sepang and Nilai. In a move towards diversification, it has also secured the privatization of the Government's medical stores and supplies.

AMDB is part of the stable of the Malaysian entrepreneur Tan Sri Azman Hashim, head of the Arab-Malaysian Merchant Bank Berhad. AMDB has diversified to other business activities such as engineering construction, manufacturing other than textile products, tourism, financial services, hotel industry, media advertising, hospital, air-conditioning, deer farming and food industry.

The Danish Waste Treatment Services A/S is owned by I Kruger A/S, a large engineering firm and an international market leader in biological removal of nutrients from waste water, Europlan A/S, a multidisciplinary group of civil, mechanical and chemical engineers, planners and technicians provides professional advice, planning and project management in four areas: environment and resource planning, collection and recycling, treatment and disposal, and environment monitoring, Chemcontrol A/S, a consultancy firm specialising in waste disposal systems for waste oil and chemical wastes. Chemcontrol is in turn owned by Kommunekemi, a Danish municipal firm which has treated well over 1 million tons of environmentally hazardous waste About 80% of waste received at Kommunekemi is returned to the new materials cycle. The remaining approximately 20% which are residual products of the waste treatment is deposited.

3.5 The Cost of Privatization

The original cost of the project estimate was RM200 million. However, today, the cost was reported to have escalated to RM353 million (Malaysian Business 1/1/95). The escalation of cost has been attributed to increase in land costs, said to have escalated from RM3 to RM15 million for 80 ha of estate land, with prices averaging between RM25,000/acre and RM75,000/ac. (see Sun 4.4.95).

According to Kualiti Alam, the capital investment of this project is estimated at RM410 million.

Kualiti Alam is expected to pay for the entire cost. It hopes to raise shareholders' funds and also a commercial loan to pay for this cost. However, it was recently in the papers that Kualiti Alam was seeking a soft loan from the government, but this has been resolved, with the funding being entirely that of Kualiti Alam.

In addition to these, it will have to charge industry for accepting wastes. Kualiti Alam has discussed the level of charges at a number of occasions, there is a definite set of charges, as shown below.

Table 3.1 Proposed Treatment Fee structure for Schedule Waste disposal

Type of Treatment Facilities	For Waste Groups	Average Treatment Fee, RM/Tonne
Incineration	A, B, C, H, T	2200
Physical/Chemical	X, K	1900
Solidification	X, Z	1000
Landfill	Z	600

[Note: Waste groups A,B,C,H and T are mainly organic wastes, and pesticides; Waste group X are inorganics, and other wastes]

It is not known whether the private sector groups have accepted these set of charges. But an inquiry at two electronics firms showed that they were not informed, and were generally of the opinion that they needed time to study such matters more carefully.

3.6 Schedule of Implementation

After the letter of undertaking was issued in early 1992, Kualiti Alam carried out an EIA study This EIA was completed in July 1992, and was approved in August 1993. The Negri Sembilan government gave its consent in December 1993. Construction was supposed to have begun immediately for a temporary storage site and landfill facilities; these were supposed to open in October 1995, after having pushed back the deadlines twice, due to unforeseen reasons. Construction was supposed to have been completed by 1997 and full commissioning is expected in September 1998.

However, the project has been delayed. Work started on site on 15th July 1995. It is only expected to start receiving wastes on a temporary basis in October 1995. The reasons for the delay are associated with project funding, especially the loans. Bankers need to be convinced that this project is bankable. Initially, during the EIA study period, there were many protests from the people who live in downriver from the proposed WMC.

The EPU started discussions with Kualiti Alam at the end of 1994.

3.7 The Concession Agreement

No Concession Agreement has been signed as of end of October 1995, although the government is expected to make an announcement soon. However, apart from the 10 year concession agreement, no price levels were set. As such, this could be a contentious issue with industry.

3.8 Policy Issues

As discussed in Volume 1 of this study, the apparent delay in the implementation of the scheduled waste privatization has prompted various actions by the government. Though the federal government is still very keen to launch ahead with this project, certain issues still remain.

First, would the capacity of the WMC be adequate to cater for the amount of wastes that is anticipated? Presumably, the technology is such that it can be modularly increased. The government, having faced so much resistance from local people, would like to avoid repeating such experience. As such, this is of concern to them. To Kualiti Alam, they need to keep track of the market situation. After having invested millions into their project, they would like to accept as much wastes as possible. Their concern is really whether there is that much waste to justify providing for extra capacity. Already, they have problems convincing their financiers of the volume of business.

Second, with so much delay in the implementation, at least one state government and some private sector initiatives have taken shape. We note that the Selangor State government is about to privatise its own toxic waste treatment facility. If this were to be so, it may complicate the situation since the DOE will have to license such operations, and they have given Kualiti Alam a 10 year exclusive arrangement. Would a compromise take shape?

Third, the willingness of industry to accept the level of charges will be a key issue. With industry having a powerful lobby in government, problems can be expected ahead. No less of a problem is the fact that Kualiti Alam is also owned by a holding firm which is beneficially related to UMNO. Will there be a compromise here?

Fourth, the regulatory framework will be crucial to the success of this privatization, as in other cases as well. Will the DOE be able to enforce the environmental regulations adequately and take charge of the toxic and hazardous waste issue? Would this affect Malaysia's industrialisation? Again, this will be a crucial issue. Malaysia wants to achieve developed nation status and industries is one of the driving forces of that development.

Fifth, related here is the question of regulating Kualiti Alam also to ensure that the risks and contamination levels that are claimed in the EIAs are complied with.

3.9 Concluding Remarks

The BOT privatization of the toxic waste is still at its infancy. A better evaluation can be made later. It is not clear whether this particular privatization can provide lessons for other countries since its history has been fraught with difficult legal as well as economic and policy dilemmas.

However, with this, the government has legislated that the costs of toxics shall be internalised to the manufacturers, rather than push it to society to bear. Production costs will thus rise, but manufacturers may want to see this in a longer term perspective in that contamination and pollution issues arising from toxics will become the liability of the privatised body, once the proper manifests and handling and transfer of wastes has been effected.

Chapter 4 Solid Waste Privatization: Worldwide SITA Environmental Management Sdn Bhd (WSEM)

4.0 Background

Compared to many other countries, Malaysia's population density still relatively low. But over the past 25 years urbanisation has contributed to the growth of many towns. With the growth of populations, various infrastructures need to be upgraded to handle their consumption, accommodation, etc. Solid wastes is one such area which needs to be handled.

Traditionally, within the purview of the government, solid waste disposal constitutes the end of process of consumption. Because of the institutional arrangements in Malaysia, local governments are controlled by both the state and local governments. Financially, they are very weak, depending only on revenues such as house assessments for which they have to deliver municipal services such as waste collection, street lighting, cleaning drains, and sweeping roads, etc. In the more urbanised local authorities, they undertake more development functions. But the basic function is to service their constituent municipality.

Malaysia's approach to privatising the solid waste has been rather strange. It took a national approach, rather than a state or municipality approach. This does not mean that the states will be eclipsed on this issue, since ultimately the land to be used as for disposal will still have to be approved by them. Their co-operation is necessary at some stage.

Nonetheless, Selangor has gone ahead, after several years of debate and discussion on its own solid waste privatization. This chapter will present some details of this privatization, and then discuss its implications.

4.1 Economics of Solid Waste Management

For an efficient solid waste management system to take shape, the marginal costs of its disposal must equal to its marginal benefits. One is tempted to ask, what are the benefits? Well, as the level of wastes rises, and the available disposal sites for safe treatment become scarce, the benefits are in avoiding nasty occurrence of bad odour of mercaptans and other organics pervading the air, and thereby becoming a nuisance.

Malaysia's experience with solid wastes needs to be highlighted as this background is important. First, people are generally reluctant to take issue with a poorly managed disposal site, as all sites are managed by the government. They are prepare to be tolerant to the extent that even foul smelling odours every night do occur[1]. Second, even when such complaints are filed, they are rarely ever acknowledged as problems and therefore it is the negligence of local authorities. Currently, all solid wastes are landfilled. Third, the solid wastes problem is placed squarely on the local authorities, even though taxes which could have an impact on consumption are collected by the central/federal government; the connection between consumption and waste disposal seldom acknowledged. As such, the adverse situation where virgin materials used in products and goods which are problems for waste disposal are being taxed exempted could arise, fairly easily. Hence, consumers don't have the tendency to use recycled or reuse products.

Under these circumstances, the options to solid waste disposal are really rather narrow, as the traditional answer of the 3Rs - reduce, reuse and recycle - cannot be economically viable. This feasibility of this issue has been examined in a separate study[2].

Hence, if the situation is such that local governments are disposing of their wastes in an indiscreet, and perhaps unsafe manner[3], then what can be done about this situation? The issue can be quite simple. Determine the cost of safe and acceptable disposal and then charge the people for this. This would be a cost effective way of achieving the objective of safe disposal.

But are there other options other than just landfill? The 3Rs approach something which needs to be tried. At the moment, this approach is not seriously explored in Malaysia. The principal approach is privatization of solid waste management, i.e. a cradle to

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1 Does this mean that there is no demand for proper solid waste disposal? There is no clear cut answer. We need to be able to differentiate whether the people are reticent because of government, or they are really apathetic. If the people were given a choice - public versus a private landfill operator - then, we might be able to examine the distinction Also, if the issue were one where the people were asked how much they would be willing to pay to avoid foul smells from landfill sites, that might also provide some economic values to adverse landfill impacts

2 PE Research Sdn Bhd (1995) **A Solid Waste Recycling Study: A report submitted to JICA Malaysia**, Petaling Jaya This study examined the options for recycling in urban Malaysia, focusing on Kuala Lumpur and Petaling Jaya.

3 In a study of 30 local authorities in Selangor, Federal Territory of Kuala Lumpur, Negri Sembilan, Melaka and Johor, Mohd Nasir Hassan and associates found "the majority of existing landfills are dumping grounds with no management of leachate or gas and no earth covering of the daily pile Most of the dumping grounds are however almost full with a few useful years left" (Mohd Nasir Hassan, Rakmi Abdul Rahman, Mohd Kamil Yusoff and Wan Norazmin Sulaiman, 1995, "Issues and Problems of Solid Waste Management in Malaysia", paper presented at National Review of Environmental Quality Management in Malaysia Towards the Next Two Decades, 10-12 October 1995, Kuala Lumpur

grave type of approach, without investigating whether the solid waste streams could be somehow reduced

If the 3Rs approach were to be given serious attention, then certain economic considerations need to be taken into account. We shall provide a short analytical description. Figure 4.1 shows the various options that one could adopt to increase the recycling option.

First, it must be assumed that there is a social and private cost to unsafe landfills. This cost is not evenly shared out, and the residents living closest to those sites face those problems most acutely. This cost arises because landfill sites are not properly designed and subsequently managed.

Second, over time, the cost of sites to landfill will go up. In Malaysia, the rising property prices is putting an economic cost to governments. Governments are already facing this problem and the national solid waste privatization attempts to address such problems.

Next, solid waste begins with consumption. If goods could be remade from recycled materials, then the waste stream will be reduced. The first action is then to identify price distortions in goods and products, and then to rectify the distortions. Alternatively, one could also tax the usage of virgin materials and use the tax to subsidise products made from recycled materials. This kind of incentive will stimulate the recovery of waste stream items, and attempting to convert wastes into intermediate raw materials.

Then, apart from providing incentives to manufacturers, certain incentives could be considered for consumers, and here some new innovative market based approaches could be used.

Finally, there may be a need to increase the cost of landfill and solid waste collection. This cost increase could have several dimensions. First higher costs will go towards building safer landfills such as a sanitary landfill, compared to the dumps which are currently the norm in local authorities; hence a charge for pollution damage. The government could effect this by making landfill construction comply with certain standards. A second method could go towards a specific charge for the amount of solid wastes that is disposed; people's behaviour are likely to alter, if experiences from other places are any indication[4]. Third, the relationship between disposal and material recovery could be better established. Disposal costs, if they are high enough, would be avoided in favour of recycling.

Currently, there has been little association between the national or state privatization exercise with recycling. However, with increased costs in the disposal, this may give rise to more recycling initiatives. But now to examine more closely the state initiatives in landfill.

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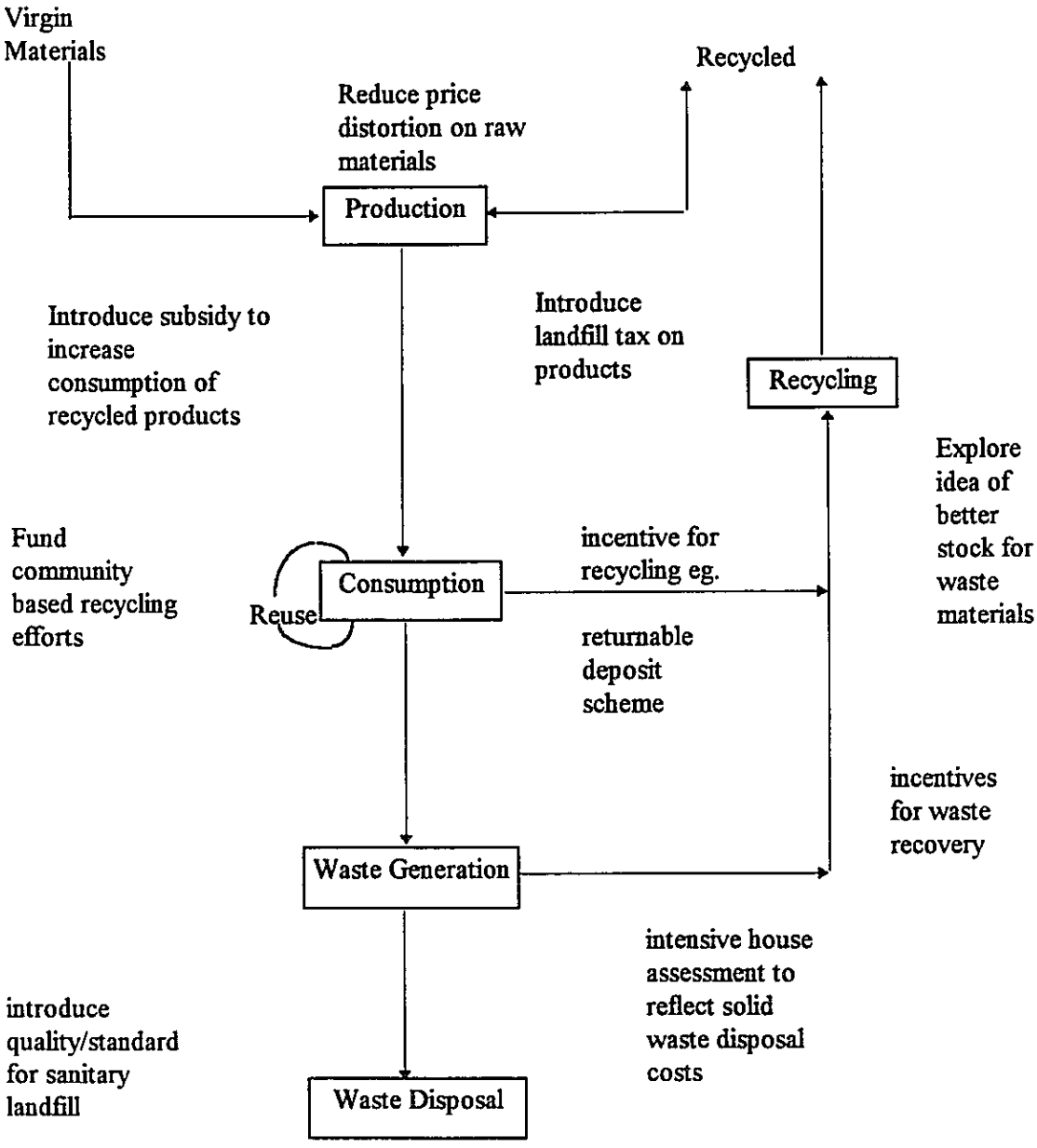
[4] See examples in T Tietenberg (1994) Environmental Economics and Policy, chapter 17

Figure 4.1: Options for Recycling



4.2 Case Study: Sanitary Landfill Project by Worldwide SITA

The Selangor State government announced the privatization of the Air Hitam/Puchong sanitary landfill in April 1995. This announcement came after a long period of closed door discussion and negotiation. The process apparently started in 1992 when an open tender was called. The specifications for that tender was slightly different as it called for a more comprehensive solution with a sanitary landfill and transfer stations (Pascal Voisin, WSEM, per comm. October 1995). However, the government entered into closed discussions, and they were finally invited to enter into negotiations in 1995.

Worldwide SITA Environmental Management Sdn Bhd (WSEM) is a 60-40 joint-venture between Worldwide Holdings Berhad of Malaysia and SITA Group of France. Worldwide Holdings is a Malaysian property development company controlled partly by Selangor state government's investment arm Selangor Economic Development Corporation Bhd, while SITA is an international group renowned for its waste management techniques.

SITA has been in Malaysia for the past ten years, engaging in transport and collection of wastes. Over the past years, it had on its own accord made several major proposals to the Selangor government on how to manage and treat solid wastes in the state, but until recently none of its earlier efforts had borne fruit. However, in mid-April 1995, WSEM was awarded a 20-year privatization contract by the Selangor government to build, operate and maintain a sanitary landfill for seven local authorities in the Klang Valley of Selangor state. The mode of privatization used is the BOT (build-operate-transfer) method.

SITA's senior official Pascal Voisin feels that prior to this, the timing was not right for any major proposal on solid waste management. For example in 1992, SITA submitted a comprehensive proposal to collect, recycle, transport and treat solid wastes for Selangor but it was in May this year, after a long exercise of closed-door explanation to the state government, that Selangor agreed to the building of a sanitary landfill. SITA thinks that it is important to team up with a local partner which understands local situation well to help resolve problems.

The land for the landfill, provided free of charge by the state government, is located on a 145 acre land at Air Hitam Forest Reserve in the District of Petaling. The concept of the sanitary landfill is to protect the environment by containing and isolating the waste, as well as using specific control measures to minimise potential environmental pollution. WSEM is solely responsible for the financing of the project, estimated at RM30 million. Part of this will come from internal funds while the balance will come from bank loans.

The landfill will only accept domestic, commercial and industrial waste that are non-hazardous, non-toxic and non-radioactive. WSEM will impose a tipping charge of RM25 per tonne for waste delivered to the landfill by the local authorities and private

waste collectors This charge will be reviewed after the first two years of operation, and any subsequent increase in tipping charges will be linked to local inflation index.

Currently, dumping charges can be as low as RM1 (one ringgit) per tonne for municipal contractors of the MPPJ. Private contractors pay about double that, i.e. RM2/tonne. However, because WESM collects tipping charge from the local authorities, households will not feel the impact of the increased charges. They will feel the impact only when the local authorities decide to pass the burden to households and raise house assessment rates. But private waste collectors will feel the impact immediately, and will have to negotiate with the municipal councils. It is envisaged that the industrial waste contractors will suffer the greatest, since they are not likely to be protected against such cost increases. Eventually, these will be passed down to industry and other waste generators.

The Selangor state government has given the understanding to WSEM that it will direct seven local authorities -- Petaling, Petaling Jaya, Ampang Jaya, Hulu Langat, Gombak, Klang and Shah Alam -- to deliver their waste to the landfill. It is estimated that the seven areas generate a total of over 2000 tonnes of solid waste daily. During the concession period, the state will not permit opening of new dumping sites and will processively phase out existing dumps. Most of the dumping sites are close to filling up now.

WSEM's 20-year concession commences from the date of actual operation, with mutual option to extend for an additional specified period if deemed necessary by the state. In May 1995, WSEM began the design and construction of the landfill. The landfill was scheduled to complete in October and begin operation (accepting solid waste) in November 1995. The landfill, which will be modularly constructed and operated in phases over the 20 years.

SITA is responsible for the design of the landfill and transfer of technology to the locals, while Worldwide Holdings takes care of local matters such as getting contractors to carry out construction. The project involves a landfill, an impermeasble liner system, leachate collection and treatment system, gas control and environmental monitoring.

The liner system is designed to prevent waste water (leachate) from seepage to contaminate groundwater. A gravity piping system is installed to drain the leachate to a low central collection point, where the leachate is pumped out and given on-site treatment to meet local environmental standard before discharge. For landfill gas control, an active system is installed with the use of blowers to extract gas from vertical wells and burned off at a flare station.

A monitoring system will also be implemented on-site to ensure that all the technologies are performing their designated functions. When the landfill reaches its capacity, it will be sealed and capped with a layer of soil to support vegetation. After closure, the site can be rehabilitated into recreational grounds such as parks, gardens, playgrounds or even golf courses

The landfill will be managed initially by SITA. When the landfill begins operation, it will require seven to eight staff, including the operation manager, equipment manager and site operator. The team will grow as more solid waste is sent in. In Hong Kong, where the landfill operated by SITA is five times bigger than the Malaysian one, SITA staff total 50.

Although it is too early to assess whether this landfill project will be a success, SITA managers do not foresee serious problems. So far, work has been on schedule. Its cooperation with the local partner is smooth. Future factors on success will depend on its ability to handle and operate the landfill site according to specifications, and its ability to control and treat leachate, gas burning and environmental monitoring.

On the financial aspect, the joint venture company projects a return of 20%, with a filling capacity of 2000 tonnes a day based on a seven-day week work schedule. The operation is expected to break even after two years.

Prior to the award of landfill project, the EPU had invited tenders for the nationwide privatization of solid waste disposal and 28 bids had been received. Does this pose a threat to the Selangor landfill project when nationwide privatization takes place? SITA thinks that the project will not be adversely affected as the Selangor government has given the undertaking to direct seven local authorities to send their solid waste to the landfill. Although there is no written assurance on the minimum amount of garbage to be delivered, SITA is confident, through its own estimates, that it will be able to collect enough solid waste.

4.3 Impact of WSEM on MPPJ

It should be emphasized that the Puchong sanitary landfill is only part of the solid waste problem, specifically at the tail end of waste generation. As such, many other economic issues indicated above are not specifically relevant to this project.

Be that as it may, this landfill project will have wide ranging impacts on solid waste management. The most obvious impact is the increase in tipping fee. At the present Kelana Jaya dump site, the MPPJ charges its contractors RM1/tonne, outside contractors RM2/tonne, and other industrial wastes at RM3/tonne. At Puchong, the tipping fee is RM25/tonne.

The Solid Waste Masterplan for Petaling Municipality estimated the extra fuel cost in trucking wastes the extra distance was under RM2/tonne. However, this means that all waste trucks will have to make that extra distance of 35km, and the wear and tear on the roads and trucks themselves have not been taken into account. Hence, the overall impact would be to raise the cost of disposal of solid wastes.

Currently, the cost of collection is estimated at about RM50-60/tonne (Kamariah Md Nor, MPPJ, per comm, September 1995)[5] And the cost for the Kelana Jaya dump site (controlled tipping) is estimated at RM6.50/ton. Hence, the Puchong landfill site will increase waste disposal on MPPJ in the following manner.

The increase will be conservatively RM27/ton (tipping and extra fuel to Puchong). However, it will not have to maintain the Kelana Jaya dump site, and thus saves RM6.50/ton. Overall, the MPPJ will still have to pay out RM21.50/ton extra, or about a one-third increase compared to current solid waste costs. Total solid waste cost may rise from the current estimate of RM10-11 million[6] to about RM14 million annually.

It is further envisaged that with the cost of transfer stations the additional cost will further increase. At this stage, we do not have the full details to estimate the cost increase. However, it is almost certain that the cost of accepting solid wastes at the transfer station is unlikely to be at RM2/ton, given the fact that capital costs will have to be incurred, and perhaps even land may have to be purchased. Hence, the total cost of solid waste can be expected to rise even higher.

4.4 Issues

At this stage, we are unable of construct marginal cost curves for solid waste disposal. It is too early to say whether the new costs are too high. It could well be low. But the fact of the matter is that it is going to increase by about 34%.

The implications of higher cost of disposal is likely to be transferred to consumers, i.e. the residents or waste generators. However, unless the present system of charging consumers is changed, and certain alternatives introduced, it is unlikely to alter current disposal habits.

When disposal cost increases, it gives rise to opportunities for recycling, since savings can be obtained. However, if households are charged the same whether they dispose 1 or 10 kg of wastes then, recycling efforts may not be stimulated, since there is no additional marginal cost of throwing away rubbish. But if the cost of waste generation is pegged to the cost of its disposal, then this cost is internalised, and will consequently affect behaviour.

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5 A rough indication is 1 08Kg/capita/day for a typical 5 person household, the amount of solid waste generated is 1.971 tons/year With a collection cost of RM10/household/month, the estimated unit collection cost is RM60 88/ton Figures provided by Solid Waste Masterplan and Puan Kamariah. However, it should be noted that the Solid Waste Masterplan estimated SW collection costs at much lower; they estimated RM20/ton for administration and labour and RM15 80/ton for operations and maintenance, thus deriving a total cost of RM36/ton See Appendix P of the Solid Waste Masterplan Report (page P-3)

6 This sum excludes the cost of fill layering materials for the dump site, which in 1994 came to about RM2 million This will be savings for the MPPJ

Whether or not the increase in disposal cost can be turned into opportunities will depend on the local government. They could absorb all the cost increases or pass it down to its constituents or they could pass new regulations and laws to implement more innovative ways to encourage recycling. But as was indicated in an earlier study, the approach to recycling should be comprehensive and have to anticipate the reaction of the consumers. If the anticipation is poor, we could well end up with having to deal with more littering and casual disposal into the river systems and public places.

4.5 Concluding remarks

We have examined a proposed sanitary landfill project for Selangor and examined its impact on a local authority. The MPPJ is no ordinary local government. It is in fact one of the richest local governments in Malaysia, outside of the Kuala Lumpur City Hall. And the MPPJ has a very well managed solid waste system at the moment, managing to contain costs, as well as introducing new ideas for squatter and slum areas.

Nevertheless, the issue of increased disposal costs must be handled carefully, as the political conditions are such that the people and residents are used to not paying for diseconomies and externalities, in such cases as pollution damage, and nuisance.

It is important to bear in mind that privatization is so far associated with this aspect, as the public does not realise or refuses to accept that the environment has been damaged, and they have been contributed to that process. Damages are not paid for by anyone at the moment. Such are market imperfections.

The government will therefore have to introduce new laws and regulations if they want to effect those changes. An efficient role for government is to achieve a balance between the economic systems and the environmental concerns.

If other countries wanted to privatise, they may also wish to know that the government will have to address takeover details such as new legislations, as well as issues relating to what to do with parts of the system that have been previously privatised or managed on a contract basis. In Malaysia, it is the practise to follow the lead taken by the federal government, since they have the financial powers to persuade state governments to see their point of view.

Chapter 5 Water Supply Privatization: Puncak Niaga (M) Sdn Bhd and Syarikat Air Johor

5.0 Background

Malaysia, located in the tropics, is blessed with plenty of rain and therefore, water scarcity is not a serious issue yet. However, rain and water endowments are not evenly spread out over the country, and varies from region to region. Sometimes the availability of water can be a problem, as in Melaka's water shortage in the early 1990s.

Although rain water is essentially free, costs are incurred to store, treat, and to distribute water to consumers. Treated piped water is therefore not free, and neither is water for irrigation, as costs are involved in construction of storage dams and structures as well.

Over time, as Malaysia urbanises, its usage of water also tends to rise. Urban demand (domestic & industrial sectors) is estimated at 2.6 billion cubic metres in 1990, doubled the demand in 1980. Water for irrigation rose from 7.4 to 9.0 billion cubic metres in the same period (6MP: 336; JICA, 1982: 11). However, because of the abundance of water so far, there is little evidence of conflicts between uses for agriculture and for urban purposes. With industrialisation intensifying since the late 1980s, the demand for water is expected to rise further.

In terms of government's policy on water supply, water is regarded as a basic need, and thus there is a social basis to justify subsidies in its supply to consumers. The government's policy has been to provide 100 per cent coverage for Malaysia. However, with the rapid economic growth, the rising scarcity of water, and the competing demands on scarce government budgets, achieving that policy does have significant implications on government budgets. As such, the government has opted to select privatization as a means to achieving this policy objective.

This section will attempt to place the issue of water supply and its privatization in the perspective of efficient allocation. And then, the case study of Puncak Niaga (M) Sdn Bhd for Selangor and Syarikat Air Johor for Johor will be discussed. For the Puncak discussion, we shall focus more on the economics of the water supply privatization. In the Johor case study, we shall focus on the process, and highlight some of the institutional and legal issues involved.

5.1 Economics of Water Supply

The main function of economic analysis is to inform on the efficiency of water supply distribution. To balance between the demand and the supply of water, the political and social institutions govern the allocation of water between different users. And in the present circumstances, water rates are being used to balance that allocation.

Currently, the predominant approach to water supply in Malaysia has been an engineering approach, and that is mainly a supply side exercise. It seeks mainly to expand supply through building either new water treatment plants or increasing the capacity of existing plants to produce more treated water, or to build more dams to store water for distribution. And because building these infrastructures has been very costly, the government has had to subsidised heavily on the capital costs (see Volume 1, chapter 6).

More recently, the government has realised that the water supply system that is in place is inefficient. There is a very high element of unaccounted for water, through either leakages, water theft, inaccurate metering, etc. Such water, which could be revenue to the government, have reached high proportions, and disappears from the entire system. Best estimates by JICA and other experts put Malaysia's non-revenue water average at 43%, i.e. out of 100 litres of water that is treated and put into the distribution system, only 57% reaches the intended consumers who pay for its usage.

Of course, inefficiency could also be systemic. For instance, to increase the efficiency of staff in the civil service, the means are rather limited, and in-built efficiencies have to be tolerated.

But more important is the subsidy that is in-built into the system. Subsidies imply that water is not priced correctly, despite the block tariff system that exist[1]. And underpricing has a number of undesired outcomes, such as the misallocation of investment capital, under-investment, thus giving rise to uneconomic investments or excessively expensive water projects, as well as leading to a situation of neglect of maintenance. All these situations are real in the Malaysian context.

In the end, the water that is supplied costs more. And that cost is paid for either by consumers or the government.

Economically speaking, there are a number of ways that could allocate water more efficiently. One could tinker with the water tariff structure, but that has a limit. The limit is how to address the social element that the government sees as important to the

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1 For a discussion of the block tariff system, consult T Tietenberg (1994). Environmental Economics and Policy, New York, Harper Collins/College Publishers, chapter on Water Supply

delivery of water supply. Another way is to redress the technical inefficiencies in the system, e.g. reducing non-revenue water, plugging leakages, and improving productivities. A third way is to get rid of the subsidies that exist, and that means that one has to go on a user pay principle which has implications on the present water tariff rate and structure. The common way to expand water supply to meet demand is yet another.

Institutionally, the government has elected to try out the privatization route to better efficiency, and hopefully in that way it would reduce the amount of subsidy.

Theoretically speaking an efficient system should deliver the optimal amount of benefits, since the marginal net benefits are equalised, and are matched with the marginal costs of supply. At this level, prices should be lowest, since a non-optimal system means that some people are paying more than others. So if there is an acceptance that our present system is inefficient, does this mean that in a more efficient system, the price of water would be lower? Theoretically speaking, yes. But practically, it could be no.

For instance, currently there is subsidy in water supply. Complete removal of that subsidy would increase the price of water, although efficiency in a more efficient system would reduce the price. So which of these two influences is greater? If the price were to remain the same, it would mean that the government still had to subsidise, but the amount of subsidy would be less by the efficiency that were introduced. Subsidies in the form of insurance, cost of capital, free or subsidised services provided to civil servants in the water supply sector, etc. exist in one form or another.

5.2 Government policy

At this stage, the government's attitude can best be summarised by the following:

"the Government was committed to achieving 100% water supply coverage nationwide by the year 2005... Privatization of water supply systems would help achieve this target and keep pace with the increasing consumer and industrial demand for water,"... (the Deputy Works Minister) Railey added that the government also wanted to increase the industry's competitiveness, reduce raw water pollution and improve water quality to meet the new challenges of industrialisation. (The Star, 7.12.95).

Privatization is then the route that the government has identified for the development of water supply. In that regard, the different stages of privatization have already taken shape have already been discussed[2].

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[2] See discussion in Volume 1, Chapter 6

Suffice here that a case study of the Selangor privatization be examined in more detail. It should be emphasized that the nature of privatization has to begin at the state level, because water has been defined as a right of the state government, and advise is obtained from the federal government.

5.3 Key features of Selangor's Water Supply

Selangor is located in the highest growth area of Malaysia. And the Selangor Water Supply Authority or Selangor JBA supplies water to both Kuala Lumpur and Selangor State. Privatization initiatives were entertained as early in 1991 (based on news clippings), when the Selangor state government commissioned a consultancy firm to undertake a feasibility study on the privatization of water supply.

5.4 History of the Privatization

Selangor's water supply department (Selangor JBA) covers both Kuala Lumpur and Selangor state. According to the Selangor JBA, they have launched two phases of privatization to date. The first phase has been the privatization of water treatment plants. All 29 water treatment plants have already been privatised to three companies: Taliworks, Sungei Harmoni, and Puncak Niaga.

Taliworks and Sungei Harmoni belong to the same parent, according to market sources. The privatization to Taliworks did not involve any capital expenditures on their part. The Selangor JBA paid for the capital upgrading works. Taliworks only obtained a management contract in its water supply privatization for the Sungei Semenyih treatment works, and Sungei Harmoni obtained the contract for the management of Sungei Selangor Phase I water treatment works; this first phase was also paid for by the Government.

The Puncak Niaga privatization is a bit closer to the concept of water supply privatization, commonly accepted as the private sector undertaking investment and operations. Puncak Niaga (M) Sdn Bhd is a bumiputra company incorporated in Malaysia in October 1989. The chairman of the company is Rozali Ismail, a notable entrepreneur. Puncak Niaga entered into a privatization cum concession agreement with the Selangor Government in September 1994. This privatization agreement was required Puncak Niaga to operate, maintain, manage and rehabilitate 25 water treatment plants in the state. The total combined capacity of the water treatment plants was estimated as 932.2 million litres of treated water per day.

In March 1995, Puncak Niaga was awarded a second concession for the construction, operation, maintenance and management of the Sungei Selangor Water Supply Scheme Phase 2 This project involve design and construction of water treatment works with a capacity of 950,000 cubic metres per day. It is a case of the classic mode of Build Operate and Transfer (BOT).

This section will discuss the privatization of the water supply by Puncak Niaga (M) Sdn Bhd.

5.5 Information of the Puncak Niaga Privatization

Puncak Niaga has actually got two privatization and concession agreements. As indicated above, the first is for the operation, maintenance, management and rehabilitation of 25 water treatment plants in the state, and the second is for design, construction, operation, management and maintenance of a new water treatment facility as in Sungei Selangor Phase 2.

5.5.1 Phase 1: 25 Water Supply Treatment Plants

The first concession agreement has a starting date in December 1994, with a concession period of 26 years, ending December 2020. At the end of the concession period, Puncak Niaga is supposed to hand over the facilities (25 treatment plants) to the government for RM1.00. The services that are required of Puncak Niaga are:

i operation, maintenance & management of 25 treatment plants
ii rehabilitation and refurbishment of the treatment plants

The estimated capital expenditure of the upgrading services is estimated to cost RM150 million, spread out over 3 years, beginning 1995.

Puncak Niaga is required to provide the following outputs in the concession cum privatization agreement.

- improve the quality of treated water
- improve the reliability of water supply
- improve the productive capacity of the facilities
- install a monitoring system in the system

The Selangor state government is under obligation under this agreement to purchase treated water at a pre-determined volume and rate from Puncak Niaga, and then to distribute the supply in its own reticulation system.

5.5.2 Phase 2: Sungei Selangor Water Supply Phase II

Puncak Niaga entered into a second privatization and concession agreement in March 1995 for this water supply project. This Phase 2 project involves the design, development of intake and water treatment facilities at a treatment facility approximately 27 km away from its water intake at Batang Berjuntai.

The project is divided into two stages. The first stage will provide 475,000 cubic metres per day. Stage 1 will commence in 1996 (design has completed; tenders have been prepared, and construction is expected to begin February 1996). Stage 1 will cost RM749 million. The second stage will provide another 475,000 cubic metres per day. Stage 2 is expected to begin construction in 1999 and completed in 2001. At the end of the construction period, a total of 950,000 cubic metres of water per day will be available for distribution to Selangor. Stage 2 is expected to cost RM531 million.

[Note that this means that for both phases, Puncak Niaga will be responsible for supplying 1.9 million cubic metres per day to the whole of Selangor and Kuala Lumpur areas]

A 25 year concession period, ending at the same time as the first concession, i.e. December 2020, has been agreed upon.

In addition to this, the government has the option to further negotiate with Puncak Niaga on the distribution system, and also on the privatization of the remaining parts of the Selangor JBA. It should be noted that the distribution system appears to be a logical development from the Phase 2 concession awarded.

At the same time, if most of the Selangor JBA's functions would already be under private management, then what would be the rationale of having a fully staffed department. It is thus logical that the entire Selangor JBA be privatised as well. Perhaps this is where future privatizations of water in Selangor would take shape.

5.6 Financial Projections of Puncak Niaga

According to information provided to the Kuala Lumpur Stock Exchange, Puncak Niaga's pre-tax profit forecast are shown in Table 5.1.

Table 5.1 Pre-tax Profit Forecast of Puncak Niaga

Financial periods	Annual Pre-tax Profit Forecast (RM mil)	Description
1995-98	39	With existing 25 plants
1999-2002	130	After Stage 1 completion
2003 onwards	300	After Stage 2 completion

source AMMB letter to KLSE, 24 March 1995

Information on the price of water that is Puncak Niaga sells to Selangor JBA was not provided. Since we are not privy to the information on the sale of water by Puncak, we need to make an estimate. An assumption is needed here. Efficiency gains by a private firm should drive the cost down. But there is an element of subsidy by the government which a private firm cannot access to, and this should drive the price up. We thus assume that these factors neutralise each other, each at about 25% of the average cost (see below).

However, if one were to work out the profit portion of the water, it would amount to RM0.11/m^3. We estimate the average cost of water in Selangor to be about RM0.60/m^3 by the Selangor JBA[3]. We expect that the new upgrading works would also have to be capitalised, and that would amount to RM0.05/m^3. Hence, we estimate that the price of Puncak's water to Selangor JBA to be in the region of RM0.75/m^3.

The above estimates are based entirely on information that is publicly available as of 1995 on the first privatization. The impact of the second concession agreement have not been calculated. But it needs to be said that the actual selling price of water could be way off the mark, since the ability of the privatised body to negotiate its price does not have to correspond to its costs.

If the above were the actual cost to the JBA, it is almost certain that there will have to be an increase in the price of treated piped water, not a decrease.

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[3] Penang Water Authority has estimated that their costs of water supply at about RM0 32/m^3 (PBA Engineer, per comm 7 December 1995) He estimates that the cost of water for Selangor at 1 6 times that of Penang If that were the case, then the estimated cost would be about RM0 50/m^3 However, it is widely known that the government has incorporated a subsidy into the tariff structure, and that the middle stratum is closer to the cost of water If that were the case, then the cost of water is RM0 65/m^3 Taking all these into consideration, we estimate the cost for Puncak at RM0.60/m^3

At the same time, if RM0.75/m^3 were the true marginal cost of water, then the subsidy element in current price of water is estimated to be about 25%.

It should be noted that part of this subsidy is covered by the water tariff structure which charges industry and commercial sectors more, and that is used to subsidised the residential, and especially the poor, especially those who use the minimal amount of water.

It is interesting to note that a study undertaken by ISIS and HIID showed that the increase of water rates according to the block rate structure had very little impact on the usage of water. They concluded that this meant that the water tariff is likely to be too low. Indeed, the lowest block was estimated at 4% "ability to pay" criteria as a rule of thumb[4], and given the expansion in per capita and household incomes over the past few years, it is not unreasonable to expect this to be true.

While this may be true, there will still be the perception that water is a basic need, and subsidy is required. The way in which this can and should be done is perhaps through a modified water tariff structure that provides subsidy for basic (i.e. low) usage, and quickly rises at the next level to meet costs, and further on to subsidise the basic users. The affordability principle is incorporated at the lower end of the tariff, while the upper end is based on user pay.

5.7 Issues

Apart from the issue of efficient water tariff, can privatization address other issues, such as underinvestment, non-revenue water, and yet meet the government's targets of 100% coverage of water supply, by the year 2005.

The question of underinvestment and non-revenue water are related and has also been studied earlier. The issue is simple. Does it cost more to repair the existing leaking water supply systems than to build water treatment plants? However, the answer can be quite complex. Two sets of information are needed for an answer: technical data to determine the system efficiency, and then an economic component, to determine its economic viability. It is interesting to note that ISIS-HIID study concluded that it was more cost efficient to repair leaking pipes up to a certain extent, i.e. up to 20% but not beyond that. In the case of Selangor, this would be true, and Selangor should reduce its 43% loss to 20%. But for Penang, it would not make any economic sense to reduce its current 20% loss any further. However, they were quick to conclude that plugging leaking pipes could save enough water to cater to only one-third of future water demand. As such, it would also be necessary to mobilise extra capital to finance the expansion of water supply.

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[4] See discussion on this in Vincent and Rozali (eds, 1995), Chapter 7 on Freshwater

On the matter of achieving the government's target of 100% water supply coverage, this may conflict with the efficiency objective, but then again, it depends on the implementation. If the same quality of water and the same service requirements for urban and rural were to be required, then the optimal condition may not be achieved. This is because it costs more money to lay pipes to rural communities who are generally further away, and whose effective demand of water may be less. It is understandable that the government wants to have a common system for the entire country. Although administratively neat, it is economically not efficient, as rural portions of the same water system would have to be subsidised. This does not mean that the government is constrained by this conclusion. The rural sector does require water, but it may not require that water be provided by the same pipeline, or in the same kinds of quality as is provided for the urban areas. Indeed, for the very remote communities, they may enjoy free water in the sense that the best system would be for them to tap their own water, with the government providing the capital or infrastructure works. A more detailed assessment is needed before a firm decision can be made.

Can privatization do things more efficiently than the public sector? A study in Kedah reported that privatised plants were able to deliver water at 72% of the cost delivered by public sector plants. Although we do not have the benefit of examining the details of this study, it does show some prima facie evidence of the private sector operations.

5.8 Case Study: Corporatization of Johor Waterworks Department

In the case of Johor, the privatization exercise is undertaken quite differently. Instead of getting the private sector to take over water treatment plants, the government decided to corporatize the Waterworks Department, with a view perhaps to privatising it later.

The Johor Waterworks Department was corporatized on 1st February 1994, 19 months after the corporatization idea was first mooted. Accordingly, the name of the entity was changed to Syarikat Air Johor Sdn Bhd (A case study of the Johor Waterworks Department: Muhammad Hatta Bakri and Abdul Rauf Salim).

Corporatization is the first stage of privatization whereby the legal status of a state-owned enterprise or service is changed into a limited company incorporated under the Companies Act, 1965. Although in this phase, the Johor government retains 100% ownership in the company, the state government does not have a direct role in the management of the company which is run like any private enterprise. Ultimately, the 100% ownership will be divested either partially or fully by way of private placements and/or public floatation.

Initially, the Johor Waterworks Department was only a division of the State Public Works Department. It was separated from the Public Works department and turned into a department of Johor state in 1989. In 1992, the department was given autonomy

to operate its own financial transactions independent of the Johor state treasury. Water revenues, hitherto collected into the state consolidated revenue account, were now channelled directly into the water supply fund. With help from the World Bank, the water entity adopted commercial accounting system, which proved to be a success and prompted the state to embark on privatization of the water service (Paper presented by Dr Shahir bin Nasir: Institutional Development of Johor Water Supply System, 1994).

In November 1992, the state government agreed in principle to carry out a corporatization study. In April 1993, a consultant was appointed. In mid-July 1993, the first steering committee meeting decided that the water department would be corporatized in early 1994. A committee to determine the terms and conditions of the privatised service was set up and it held its first meeting in late July 1993.

In November 1993, the Johor state executive committee approved the corporatization of the water service after a second steering committee meeting adopted the consultant's final report and recommendations.

Option papers were issued to the staff in December 1993 to either stay in the civil service or join the privatised body.

On 16 December 1993, a company to take over the water supply function was registered with the Registrar of Company. On 18 December 1993, a regulatory body was formed and four days later, a new enabling legislation Water Supply (Successor Company) Enactment 1993 was passed by the Johor State Assembly.

On 13th January 1994, the Federal Government approved the corporatization of the water service after the Economic Planning Unit of the Prime Minister's Department met with Johor Officials. In the same month, the licence to operate water supply in Johor state was granted to the new company for 21 years. The Water Supply Enactment 1993, Water Supply (Successor Company) Enactment 1993 and Vesting Order 1994 were all enforced on 1st February 1994.

The aims of corporatization of water supply in Johor are in line with the national objectives. The state government aspires to achieve the following:

1. Relieving the government of financial and administrative burden;
2. Reducing the size and presence of the public sector;
3. Raising efficiency and productivity;
4. Providing all round improvement in the level of service to consumers;
5. Accelerating economic growth;
6. Heading for full privatization by floating the water corporation.

Indeed, corporatization is a transition period for Syarikat Air Johor Sdn Bhd, whereby commercial practices have been introduced and adopted. From our observation, the managers, many of whom were former civil servants, have not shed their former bureaucratic style They are struggling to adjust to a different work culture in which

performance is dictated by efficiency and productivity. Seen in a different light, executives are given an opportunity to turn around the company, making it more profitable and saleable.

Before the state enterprise was corporatized, the state had to introduce changes. The four changes that were introduced include the change in legal framework, institutional framework, transferring of assets and human resources, and instituting structures and systems to enhance the performance of the new corporation.

The change in the legal framework involved introducing legislations to transfer the operation of the water department to the successor company and amending the current Water Supply Rules to set up a regulatory authority to monitor the performance of the company. The change in institutional framework involved establishing the company and the regulator.

Asset and liability transfer from the state enterprise to the private firm was a painful process as a transfer carried with it negative impact on the financial performance. Hence, alternative arrangements such as lease and rents were explored. Human resource transfer, however, is governed by a central policy based on a "no less favourable" principle.

Finally, the coporatized firm had to adopt commercial accounting, carry out tax and corporate planning as well as organisational restructuring to survive well in the commercial world.

While laying the infrastructural foundation for corporatization, it was also necessary for the state government to convince the Federal Government, employees, consumers of the benefits brought about by corporatization. A consensus from all parties was obtained.

But while under the state department regime, privatization of parts of the state's water supply took place. For instance, in 1992, the state privatised a RM500 million Johor Bahru Water Supply (BOT) project to Equiventure Sdn Bhd, a consortium of local Pilecon Engineering Bhd, Kembagan Dynamics Sdn Bhd and Lyonnaise Des Eux Dumez of France. This is a typical example where only a portion of the state's water supply system was privatised.

This project, which involves the construction of 100 mgd treatment plants, a dam and distribution network, has to ensure that there is adequate water supply to Johor Bahru for 20 years (NST,29/6/92). In the concession agreement, Equiventure will sell treated water to the state at rates which will be reviewed every five years. For the first five years, the state government will pay 27 sen per cubic metre of treated water to the firm. At the end of 20 years, the company will sell all facilities and fixtures to the state government for RM1.

5.9 Concluding Remarks

Hence, if this study has anything to contribute to the issue of privatization it is that there appears to be room for capital investment into the water supply system. That investment should be directed into several channels, not least would be to invest in upgrading the existing infrastructure as well as for expansion purposes. Water tariff and their existing structures reflect the current status of the water supply system. These tariff rates can be adjusted to reflect more fully the user pay principle, but the subsidy element in the block rate structure should be maintained.

Through privatization, the government will be able to address several issues at the same time: efficiency in water pricing, underinvestment and non-revenue water. There is no doubt that the government has to take care of those who are not able to pay for its real cost. In that regard, the present water tariff structure provides for that, and should be continued. Periodic adjustment may be needed to bring costs and benefits up to date. Privatization is expected to bring about both technical as well as managerial efficiency.

In all this, it is important for the government to continue maintaining a good regulatory framework, since the element of competition cannot be incorporated into the Malaysian context. The regulator's job is to ensure that monopolistic behaviour by the private sector is kept in check.

As the Johor case study shows, there are a number of legal and administrative procedures involved in privatising water supply, since constitutionally water is the state's rights. However, the issues involved are related to how rights to water are defined in any country. Another country may face a different set of issues with regards to water privatization. However, the government will have to establish the important principles by which water supply distribution, costs and benefits are to be distributed in their own country.

Chapter 6 Sewerage Privatization: Indah Water Konsortium (IWK)

6.0 Background

Malaysia's sewage system, before it was privatized, was managed by local governments. For a number of reasons, of which the major one must be finance, there was considerable underinvestment in sewerage systems. The situation became intolerable when tourists complained of raw sewage floating in famous beaches. Generally, the use of rivers nearer the coast is closer to that of a sewer, and therefore impacts on human health especially through water contact has been substantially reduced. Instead, the government has invested in rural water supply projects which has helped in that respect.

Nonetheless, the underinvestment in sewerage systems is picked up by the Department of Environment, which monitors the ambient quality of some rivers. In the various reports since the mid-1980s, it was becoming clear that BOD was becoming a very serious problem in river water quality.

At the local government level, their finances are so poor that they can barely make ends meet, except for a few of the larger municipalities. Even for the larger ones, they would have not been able to invest adequately in a proper sewerage system.

Ironically, it was a JICA project which studied and subsequently funded (with soft loans) the Seberang Perai central sewerage system, that showed that it was incapable of repaying the full costs of that system. Had the entity been a private body, it would in all likelihood have collapsed financially. Such is then the scale of the financial capability of local governments and the scale of investments that were needed to replace the sewerage system.

Hence, the government had been interested in replacing the sewerage infrastructure, and was probably planning to implement the replacements over the years, living within the budgets that was available. Thus, when the privatization idea cropped up, this would have interested the government, especially when it was to be financed privately.

So, would a privatized national sewerage system work, when one which was financed by technical assistance and soft loans, with the full support of the federal government, and the resources of a local government, had not been successful?

It may have escaped notice but household sewage is only one of the many pollutants of water in Malaysia. The other big contributor of BOD is animal or livestock wastes, and this sector is not covered by the national sewerage privatization. A third BOD contributor are the agricultural mills. However, Malaysia has had a fairly successful

attempt at combating pollution from both the oil palm and rubber mills[1]. Neither are other forms of water quality degradation, e.g. suspended solids and sedimentation, heavy metals and nutrients. As such, the privatization of sewage addresses only one of the many sources of water pollution in Malaysia. As such, to discuss the impact of privatization on water quality may be rather inadequate given the incompleteness of the coverage of sources of pollution.

6.1 Economics of Water Pollution

The nature of sewage treatment allows for an economies of scale approach, as compared to air pollution, where the most logical point of control is a control on point sources. In any case, the principal source of pollution as far as the national sewerage privatization is concerned is contamination by human sewage. In environmental economics terminology, BOD[2] is classified as a degradable fund pollutant. It is degradable because bacteria will breakdown the polluting elements of human sewage. In the process, oxygen is consumed, and that affects riparian life, and eventually the ecology of the river changes dramatically. In many parts of urban Malaysia, it is not uncommon to find rivers being used as if they were sewers. If the quantities of discharge are small compared to the water body, then its absorptive capacity may break down the pollutant faster than it can accumulate. In that regard, then no pollution occurs.

In Malaysia, we do not have a safe drinking water or clean water legislations, and hence, water rights not well defined. Hence, court action for damage claims (mandamus or class action cases) are also seldom successful; the damage connection have to be established by the plaintiff, unlike in the cases in Japan[3].

However, Malaysia has established water effluent standards for discharges into inland waters of catchments and outside, known generally as Standard A and B respectively. Apart from effluent standards, meant initially for controlling the effluent discharge of point sources, it also monitors the ambient quality of major rivers, and publishes yearly an index of most polluted, polluted and clean rivers (see DOE's Environmental Quality Reports). Although Malaysia had conducted studies to set out various water use standards, these have not yet been implemented.

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1 For an economic analysis of this effort of combating water pollution, see Jeffrey R. Vincent (1993) "Reducing Effluent While Raising Affluence Water Pollution Abatement in Malaysia", Harvard Institute for International Development, research paper partially funded by the Asia Bureau of the United States Agency for International Development

2 BOD or biochemical oxygen demand is the measure of oxygen demand in a water body A large BOD will mean a low level of dissolved oxygen (DO) Dissolved oxygen is essential for fish and other living organisms

3 See discussion in this report on Toxic Wastes on the nature of Japan's court actions

As such, the principal means of water pollution control is still via compliance with standards. And because the main enforcement agency with regards to sewage lies with another Ministry (Housing and Local Government), the DOE can only point to the pollutant loads in rivers, but in practise would be unable to take action against households for sewage pollution.

And it is clear that such pollution has economic costs which are borne by the rest of society. Privatization's principal motive in this regard is to establish a user pay policy. Although it has not been clearly established what is the cost of that pollution[4] the present sewage tariff imposes user cost on households.

In that regard, the tariff rate and structure should be set such that the behaviour of households will be changed from the present where they pay a one-time charge (in house assessments, and even this pays for many other municipal services besides sewage), and hence there is no marginal cost for further discharge. This is clearly inefficient and has no user charge.

The new tariff rate and structure under the privatized system addresses these inadequacies, although, as noted earlier, we are unable to say whether the rates are efficient without further studies being conducted. As things stand, there is a flat rate structure for household consumption, with a floor (RM2/month) and ceiling rate imposed (RM10/month). Charges are pegged to water usage, not to how much water is used in the sewage system. However, for commercial and industrial properties, there is no ceiling, and its a user charge all the way. Exemption has been given to certain firms, presumably on a case by case basis, where they have established their own water treatment plant, and are not connected to the public sewers or drains.

The impact of the privatized sewerage charges will be felt most by laundry operations, hotels, restaurants, and coffee shops.

Because of the standard design for all areas, consumers have to pay for it. This is really quite inefficient, since the rural areas will require less sewerage facilities since they are less populated. In effect, the design that will solve urban problems are imposed on them, which would be overdesigned since their contribution to the sewage problem is likely to be much less.

However, that, as we indicated earlier, could be the administrators wish to have a standardised system throughout the country. That is administratively neat, but is not likely to be economically efficient.

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[4] Studies will have to be conducted to establish what set of charges are optimal, i e balance the marginal costs of discharge with marginal benefits

6.2 The Privatized Initiative

The privatization of Malaysia's national sewerage services is a monopoly given to Indah Water Konsortium. Indah Water Konsortium (IWK) comprises five shareholders -- North West Water (M) Sdn Bhd (subsidiary of Britain's North West Water Group PLC), Berjaya Industrial Bhd, Aims Worldwide Sdn Bhd, Lembaga Tabung Angkatan Tentera and Polis diRaja (M) Bhd. However, its promoters were North West and Berjaya (Indah Water Begins Operation, newspaper supplement on Indah Water).

A 28-year concession agreement was signed with Indah Water in December 1993. The mode of privatization used is a BOT mixed with management contract. This effectively means the concessionaire will take over the present facilities and manage them, and to build new ones to cater for the rise in demand.

The concession requires Indah Water to manage and operate public sewerage systems and to refurbish, upgrade and build new sewerage facilities to increase capacity and improve efficiency.

Under the concession agreement, Indah Water is required to implement a capital works programme to be incurred in 6 phases. Out of the total capital investment planned, Indah Water is required to spend RM3.5 billion (US$1.4 billion) to upgrade existing treatment plants and to build 300 new plants. It is also required to lay 15,000 km of new sewer pipelines and maintain more than 2,000 treatment plants.

Indah Water's technology is a "multi-point sewerage system" whereby decentralised high priority areas at strategic locations, can be amalgamated into a regional centralised system in future.

Apart from sewage, Indah Water is also required to treat sullage from households. Presently, many houses have their household pipes discharging sullage (waste water from the kitchen and bathrooms) into drains and then into public waterways. The Government wants the households to eventually channel all their sullage into sewers for treatment. Existing houses may be required to renovate their plumbing system to connect to the sewers while new building plans will be required to ensure that all sullage is channelled into sewers.

Besides increasing the capacity of treatment plants to meet the increased volume of sullage and sewage, more houses must be connected to the public sewerage system to ensure more efficient disposal of sullage and sewage. Over time, the number of septic tanks should decrease while connections to the sewerage system should increase. Indah Water is also required to desludge the septic tanks of households regularly, carried out previously by local authorities or private contractors.

At the end of the 28-year concession period, Indah Water is to return all the existing and new assets to the federal government in good condition and free of charge.

The government has had to introduce a Sewerage Services Act, 1993 to enable Indah Water to collect sewerage charge, since these powers were formerly under the jurisdiction of local authorities.

6.3 Issues

The principal issue with regards to this privatization is its nature. It is a virtual monopoly, transferred from the public to the private sector. As such, there is a very clear case where the regulatory framework has to be very well established to ensure that abnormal economic rents are not extracted from helpless consumers.

At this stage, there are worrying concerns because the new department of Sewerage Services under the Ministry of Housing and Local Government is understaffed and does not have adequate resources to monitor and oversee the implementation of the privatization[5]. This is thus a very serious issue as there are a number of implications involved: ensuring that the privatized body delivers on its concession requirements, that there are no monopolistic practises in that regard, that price and tariff structures are efficient and continue to be so, and also that the environmental situation is monitored closely.

The second issue is the fact that the present privatization deals only with past problems, and has very little to say about the new developments taking place. In that regard, the previous approach using sewerage masterplans to anticipate problems may be a more practical means to complement the current privatization attempt. But here, the privatization and concession agreement is silent on this matter. Indeed, the concession agreement leaves open the question of further works to be negotiated. This gives the government flexibility, but only if it is in a position to negotiate with full facts and information; at the moment, this is not yet possible.

The third large issue is the way in which the entire sewerage privatization seems to have been oversold. As we highlighted above, household and human sewage constitutes only one of the many forms of water pollution. Even if we were to reduce the contribution of this source to zero (which would be illogical), there will be still be severe pollution in the river systems. Indeed, the problem seems to be that this approach will introduce user pay principle, but neglects the larger issue of water pollution, and overall deterioration of the environment.

Fourth, the implementation of the sewerage system needs to have certain priorities incorporated This is partially satisfied at the moment, since out of the 144 local authorities, there is a first (48 local authorities) and second priority (96). It would appear to be the case where all the large local authorities are in the first priority list.

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[5] For instance, Indah Water provides all technical details to the Director General, and he does not have an independent means to verify such information

However, even here, the priorities seem to be those who can lobby most aggressively, rather than those that need them most. Again, this is one issue that the regulator must enter into the picture, so ensure that the places which need treatment works most, are provided early. It is feared that interference other than on a needs basis will determine the setting of priorities.

Fifth, would the cross subsidy structure of the tariff undermine the costs of production for firms which have to pay full rate? Would it undermine the industrialisation process? At the moment, the discussion has been very much a closed door basis, and very little of the outcomes could be anticipated. However, the rates are so much higher for commercial and industrial enterprises that some concern has been raised. The only resolution has been for a postponement of the full implementation, not a renegotiated rate.

6.4 Concluding Remarks

This privatization appears to have been pushed through with political backing, and is based on the user pay principle. Although in theory this kind of approach is welcomed, the nature of its implementation is suspect. The most critical issue surrounds that of the regulatory framework and the regulator. If these issues are cleared up, and the economic basis for the privatization clearly established, it would be another feather in the cap of Malaysia's privatization.

For the moment, this privatization has been mainly seen as an increase in cost without a concomitant increase in services and decrease in environmental pollution. These issues are not of immediate concern in the economics realm (more in the social and political ones). Nevertheless, on the economics front, the issue of competition, and efficiency must be clearly addressed, before the system can be evaluated as performing well. At the moment, this has yet to be demonstrated.

Chapter 7: Privatization of the Medical Services: Remedi Pharmaceuticals Sdn Bhd

7.0 Background

The privatization of the Government Medical Stores (PJMUS) has been floated around, and discussed for many years. Dr Effendi Tenang, the General Manager of Remedi Pharmaceuticals Sdn Bhd, thinks that this idea of floating the medical stores had been around for 10 years.

Southern Task Sdn Bhd, a subsidiary of the Renong group, won the privatization contract in December 1994. However, we were not able to establish whether the final award was made under a competitive bidding mechanism[1]. Also it is not clear why there was a change from Southern Task to Remedi Pharmaceuticals.

However, the government's intention to launch into privatization actually begins with a peripheral service -- i.e. drugs supply rather than a core service, say hospitals. As such, lessons learnt in this privatization could be passed on.

Before the privatization, the PJMUS performed this service for all government hospitals. The Ministry of Health was in the process of restructuring the supply system and mechanism when the privatization interrupted that exercise. In this case, the privatization entailed Remedi to take over both the drug supply from the HQ but also the regional store in Bukit Mertajam, and the manufacturing facilities (IV fluids, panadol) Thus, this extends to all functions undertaken by PJMUS, i.e. procurement, purchase, storage and distribution.

And during this period, PJMUS was ruled by government regulations and budgets and also the supply of medicines was done by civil servants who did not have a true sense of customer service.

As such, privatization could make a difference in terms not just in ensuring that drugs and supplies arrived, but they came when they were needed, in the right quantities, and wastage was reduced and minimized.

In economic terms, the drug market is estimated to be about RM750 million annually. Out of that about 70% or more than RM500 million worth of drugs is imported. Overtime, the market for drugs has increased, reflecting greater demand and affordability.

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[1] Dr Effendi said that he had no knowledge of this matter

7.1 Terms of the Privatization

The function of Remedi Pharmaceuticals is to procure, purchase, store and then distribute medicines, drugs, supplies to government hospitals. Only hospitals are involved (up to district level) but not rural health centers or clinics by the Ministry. Altogether, it has to service 116 hospitals in Malaysia.

Remedi has a 15 year concession, starting from December 1994. During this period, all drugs, medicine and supplies needed by government hospitals will be provided by Remedi. There is a 700 item list of which any item must be ordered via Remedi.

All the 300 staff of the former PJMUS, and also the non-moveable assets as well as the manufacturing plant and their staff were taken over in the privatization exercise. The distribution of medicines and drugs is now located in the Bukit Raja Industrial Estate in Klang.

Remedi still procures drugs, medicine and supplies from various multinational supplier or manufacturers. Hence, they are unable to control the supply of export drugs and medicines. They therefore also cannot control price, and bear the risk for any adverse price changes.

A review the price of medicines and supplies every three years is scheduled every three years. In the interim period, the price of supply is held constant. And the government has so far bargained from a position of strength, in that they think that a private company can supply cheap medicines because it buys in bulk.

Remedi is required to give a performance guarantee bond of RM10 or 15 million to ensure that it is serious in terms of the privatization. Additionally, it has to give a delivery deposit of RM15 million; this latter amount will be disbursed if Remedi fails to provide the medicines and supplies as ordered by the hospitals. However, the regulatory framework does not appear to have any measurable indicators. If this were the case, then Remedi is probably not fully covered in terms of its liability, and the government retains the flexibility to determine whether they have performed satisfactorily or not.

However, it has a monopoly supply of narcotics, specifically morphine and pentidine. All purchases of these narcotics, whether by private or government hospitals, clinics, etc., must be made through Remedi. The monopoly is legislated through the Dangerous Drugs Act.

Remedi did not pay anything to the government for the privatization of GMS.

However, for future privatization, especially hospitals or hospital services, these new entities will still have to make their 100% purchases with Remedi, or else to negotiate further.

7.2 Performance

It has only been a year since Remedi took over from the GMS. As such, the price of drugs and medicines has been held constant, with the exception of an outcry by the doctors and specialists that the price of narcotics (specifically pentidine and morphine) has increased by 60 times (Star, September 1995).

Remedi's reply is that drugs and medicines have been subsidized by the government, to the tune of 107% (Dr Effendi, per comm., Dec. 27, 1995), meaning that drugs are supplied at half of the true cost. And this has come about because the government does not include in the cost, the wage cost nor the depreciation of its assets and equipments, insurance, utilities. It calculates the price based on a cost plus on raw materials.

Therefore, after privatization, this has to change. Prices not only have to reflect full cost, but also profit. For instance, it cost RM20 million annually to run Remedi. And the operation is self-financed with private borrowings.

And in the case of the narcotics, Dr. Effendi said that the drug was initially supplied by GMS at RM0.16/vial. Remedi increased that to RM0.54/vial. Retailers probably market that for RM5, while specialists charge RM15. So although there has been an increase, huge profits are still being made by the many layers of suppliers, retailers and doctors/specialists. Remedi does not see this as anything but business, and they just want a share of the cake.

For 1995, Remedi charged the government RM195 million for the service and cost of drugs, medicines.

The manner in which Remedi could make decent profits is in inventory control, supply reliability, put price caps on drugs and supplies, and also over the longer term to engage in manufacturing themselves. Inventory control is necessary in order to keep stocks to the minimum, but not short such that the deliveries cannot be met. It must establish just in time supply mechanisms with drug and medicine suppliers to ensure supply reliability. It must also be able to forecast price increases, and establish long term buying contracts. Without price caps, they will not be able to supply drugs at prices frozen for three years. Looking for reliable partners who can supply quality medicines at reasonable costs is something that Remedi is constantly looking out for.

And in the long run, if they are to escape from supply shortages and price fluctuations, diversifying into manufacturing will solve some of that problem. However,

manufacturing is not that easy. Dr. Effendi claims that the current crop of Malaysian drug and pharmaceutical suppliers do not have the manufacturing quality that is needed for global or international standards. In that respect, they are looking to foreign partners to provide that leading edge in manufacturing and technology. They recognize that leading edge research is necessary for this industry, and are seeking genuine partners especially in what is considered as high value items.

7.3 Regulatory Framework

The Ministry of Health has been credited by the World Health Organization as a leader in medical and health care for developing countries. And that credit is earned through the hard work of those in the Ministry's service through the years since independence. As such, they can be said to be very knowledgeable about their work.

Remedi has claimed that the government bureaucracy does not understand how private sector run their business, and therefore the operations have not been all that smooth. Dr. Effendi sees it as a Jekyll and Hyde situation, where half the organization is private sector operating under one set of rules, having to report to another creature which is operating under a different set of rules. He probably means that negotiating with the Ministry on price and delivery terms is probably more difficult than was envisaged. Or that despite a near monopolistic situation there is no room for economic rent. Since we do not have any firm figures, we are unable to make any further assessment.

Remedi has had to come to terms with this situation.

7.4 Competition

This is privatization where a government monopoly has been continued during private hands. However, it does not affect the private hospitals nor even the National Heart Institute, which is regarded as a private hospital, corporatized before Remedi or Southern Task came into the picture.

Outside of the government hospitals, we are not sure if Remedi has any clients. Perhaps it is still learning to take over the full functions required in the privatization. Once that is done, it will have a strong enough base, but whether that is strong enough to give other suppliers a run for their money is another question. Remedi still buys drugs and medicines from MNCs or large suppliers, and they retain considerable control over its supply.

7.5 Success or Failure

In so far as the supply of drugs, medicines and supplies to government hospitals is concerned, the measure of performance could be in various forms. First, a simple measure would be to monitor whether there has been any drawdown on the performance and delivery bonds. Second, a simplistic comparison between the costs to government of the supply of drugs and medicines in the pre- and post-privatization periods; such comparisons should be conducted as a special exercise, since full economic costs must be established and compared rather than in the nominal price of medicines alone. As rightly pointed out by Dr. Effendi, the price of medicines and drugs must include not just raw materials but manufacturing, wage, depreciation, utility and insurance costs all counted in.

So far, a casual observation by one district hospital in Negri Sembilan has it that drug and medicine supplies has improved. Prior to the privatization, delivery was always late, and never enough. After Remedi took over, there is a scheduled 6 time delivery per year, and they will entertain emergency requests both on a private or own delivery basis. The difference comes in the costs. The cost of medicine and drug supplies has escalated; the final numbers are not in for the year as yet (year is not yet over).

As for Remedi, they see the need to become more efficient, since their client is probably very demanding both in terms of delivery as well as in ability to bargain for bulk purchase costs.

If that were the case, then this case would be surely a showcase of Malaysian privatization. The government will have been able to get rid of subsidies in its medical and health care services. It will be able to dictate and control the supply of medicines and drugs and deal with only one party, rather than many. It will also have hived off the sections of its service which is probably best run by a private sector, i.e. inventory control and logistic distribution, procurement and purchase. It will also have capped the long term price of drugs and medicines. In effect, having done that in a periphery service, it has set standards for other sections of the Ministry to be hived off for privatization.

However, such preliminary assessment should nevertheless be reviewed after at least one price revision, and be based on a more quantitative examination of the accounts and data than the present exercise.

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