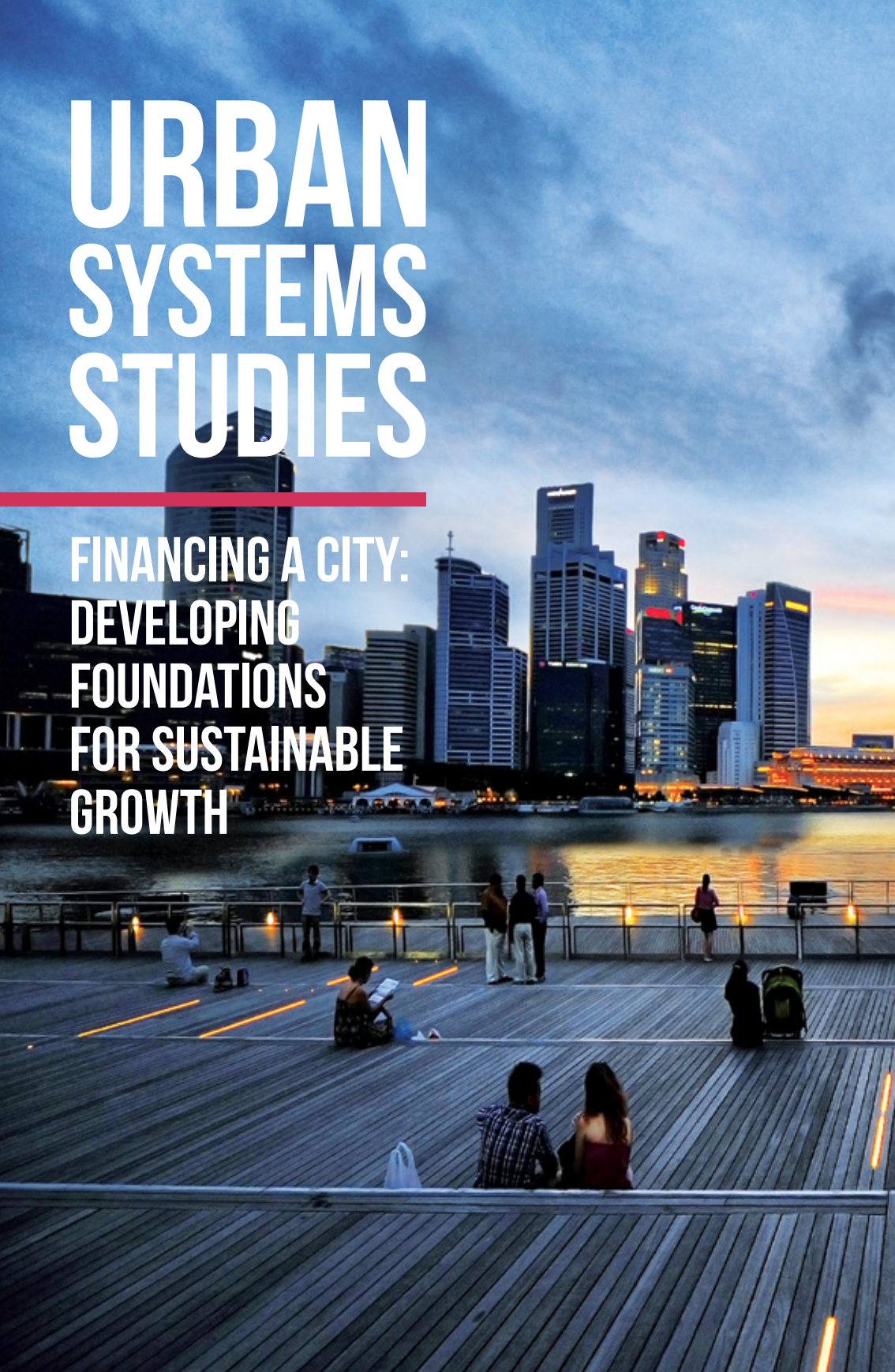


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# URBAN SYSTEMS STUDIES

## FINANCING A CITY: DEVELOPING FOUNDATIONS FOR SUSTAINABLE GROWTH

CENTRE for  
**LiveableCities**  
SINGAPORE

First Edition, Singapore, 2014

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Set up in 2008 by the Ministry of National Development and the Ministry of the Environment and Water Resources, the Centre for Liveable Cities (CLC) has as its mission “to distil, create and share knowledge on liveable and sustainable cities”. CLC’s work spans three main areas – Research, Capability Development and Promotion. Through these activities, CLC hopes to provide urban leaders and practitioners with the knowledge and support needed to make our cities better. [www.clc.gov.sg](http://www.clc.gov.sg)

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Cover photo:  
Sunset along Raffles Place, Singapore

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## FOREWORD

'Prudent' is a common word used to describe Singapore's approach to paying for its public infrastructure and services. I would suggest the phrase 'long-term thinking' in addition, as a long-term lens has clearly shaped our approach to developing and investing in the public infrastructure and services of our city-state.

I think we are able to be prudent over how we spend money because we decided, rather early on, to always have a long-term view when planning for Singapore.

In the 1960s, Singapore faced many of the problems foisted upon newly independent countries. Our public purse was tight, but the demands were many: public transport, roads, water supply, drainage and sewerage, public housing and other urban infrastructure needs. Therefore, we prioritised investments in economic infrastructure during the early days to address the challenges of high unemployment and a rapidly growing population.

Over the next five decades, Singapore systematically put in place extensive and efficient urban infrastructure that has played a crucial part in our nation's success. Today, our city-state ranks highly as a liveable city in global surveys.

Borrowing the words of Singapore's founding Prime Minister, Mr. Lee Kuan Yew, Singapore has been able to create a virtuous cycle of providing public services on financially sustainable terms because we made the difficult decisions early. For example, we took early measures to price water right, rather than to subsidise it broadly, so as to encourage water conservation.

For a country without significant natural resources, Singapore has remained disciplined in its management of public finances. We have, in our Constitution, fiscal rules to protect our reserves. Our government financial policies also sensitise public agencies to the cost of providing public services.

As Singapore matures as a nation and as its population ages, we are now faced with an evolving set of new challenges in public finance. Spending on social areas is expected to rise as the government works to enhance social safety nets to provide greater assurance for Singaporeans, including ensuring access to affordable healthcare services. At the same time, there is a need to remain globally competitive in order to grow the economy, and also to preserve a low tax burden for middle-income Singaporeans.

Singapore can be confident in addressing the challenges of the future. We are starting from a position of strength that successive generations have built upon over the past five decades. Nonetheless, we must continue to apply our minds to finding innovative and sustainable ways to meet our future needs.

I hope that *Financing a City: Developing Foundations for Sustainable Growth* will help many spur new ideas on financing infrastructure and services needed by a city. Singapore is happy to share our journey.

**Peter Ong**

Head of Civil Service  
Permanent Secretary, Ministry of Finance  
Permanent Secretary (Prime Minister's Office) (Special Duties)  
Singapore

## PREFACE

The Centre for Liveable Cities' (CLC) research in urban systems tries to unpack the systematic components that make up the city of Singapore, capturing knowledge not only within each of these systems, but also the threads that link these systems and how they make sense as a whole. The studies are scoped to venture deep into the key domain areas the CLC has identified under the *CLC Liveability Framework*, attempting to answer two key questions: how Singapore has transformed itself to a highly liveable city within the last four to five decades, and how Singapore can build on our urban development experience to create knowledge and urban solutions for current and future challenges relevant to Singapore and other cities through applied research. *Financing a City: Developing Foundations for Sustainable Growth* is the latest publication from the Urban System Studies (USS) series.

The research process involves close and rigorous engagement of the CLC with our stakeholder agencies, and oral history interviews with Singapore's urban pioneers and leaders to gain insights into development processes and distil tacit knowledge that have been gleaned from planning and implementation, as well as governance of Singapore. As a body of knowledge, the Urban Systems Studies, which cover aspects such as water, transport, housing, industrial infrastructure and sustainable environment, reveal not only the visible outcomes of Singapore's development, but the complex support structures of our urban achievements.

CLC would like to thank the Ministry of Finance, the Central Provident Fund Board, the Housing & Development Board, Land Transport Authority, PUB, Singapore's National Water Agency, Singapore Land Authority and all those who have contributed their knowledge, expertise and time to make this publication possible. I wish you an enjoyable read.

**Khoo Teng Chye**

Executive Director  
Centre for Liveable Cities



## **ACKNOWLEDGMENTS**

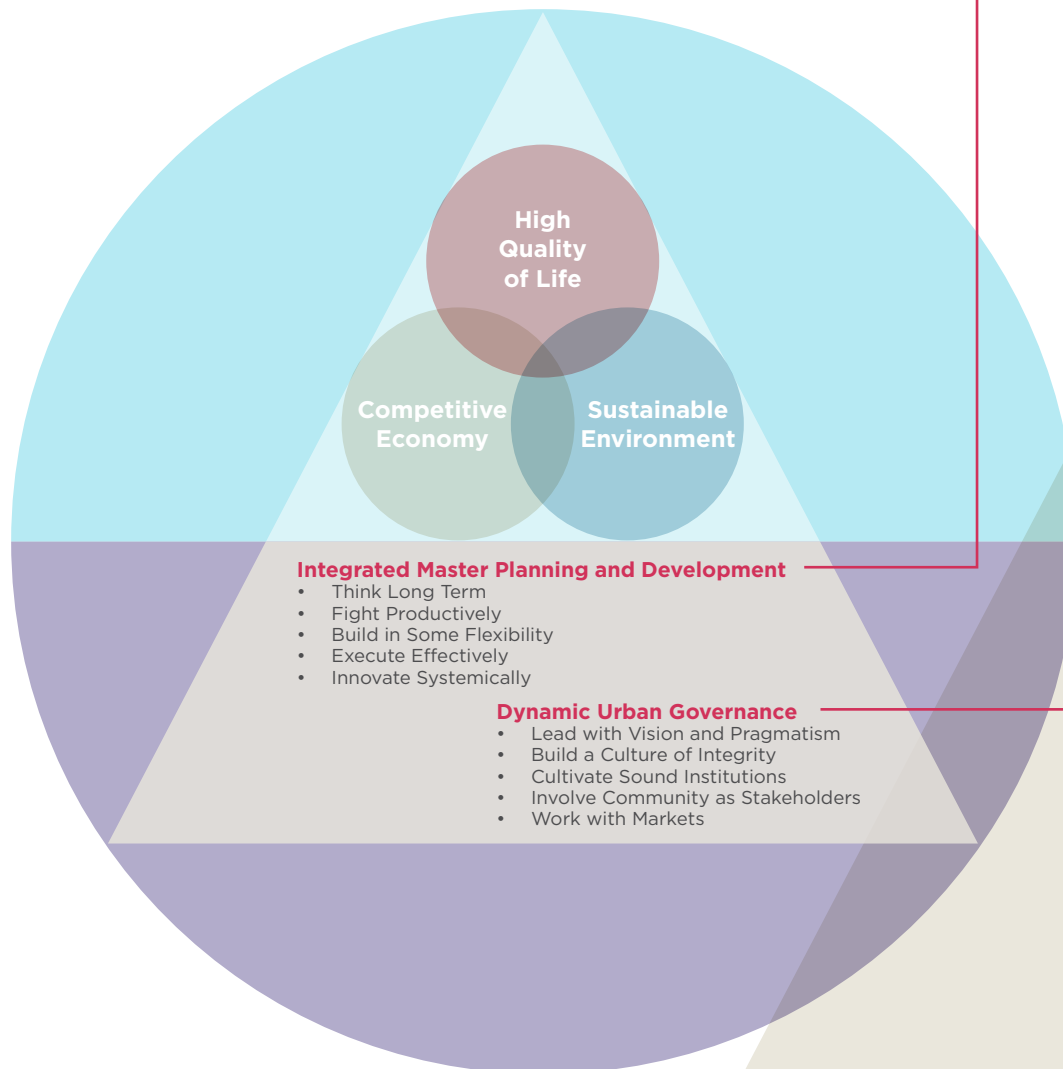
CLC is grateful for the assistance provided by the Central Provident Fund Board, Housing & Development Board, Land Transport Authority, PUB, Singapore's National Water Agency, Ministry of Finance and Singapore Land Authority in the preparation of this study.

The researcher, Jean Chia, would like to thank the following people: Donald Low, Yap Shih Chia and Nadia Yap, who provided advice and encouragement throughout.

# THE CLC LIVEABILITY FRAMEWORK

The CLC Liveability Framework is derived from Singapore's urban development experience and is a useful guide for developing sustainable and liveable cities.

The general principles under **Integrated Master Planning and Development** and **Dynamic Urban Governance** are reflected in the themes found in *Financing a City: Developing Foundations for Sustainable Growth*, detailed on the opposite page.



## Integrated Master Planning and Development

### Build in Some Flexibility

The budgeting system has changed over the years to allow ministries greater flexibility. This means that ministries have more autonomy to make micro-budgetary decisions and respond flexibly to circumstances.

(see *The Budgeting Process — Moving Towards Greater Autonomy*, p. 32)

### Execute Effectively

Selected public sector organisations were privatised in the 1990s to reap better operating efficiencies. These included the Telecommunications Authority of Singapore and the Public Works Department.

(see *Privatisation*, p. 18)

### Innovate Systematically

To keep costs low and build flats quickly, HDB opened its own granite quarries in Pulau Ubin when quarry workers went on strike, and employed prefabrication technology from the 1980s to increase on-site productivity.

(see *Keeping Development and Building Costs Low*, p. 56)

## Dynamic Urban Governance

### Lead with Vision and Pragmatism

When Dr. Goh Keng Swee helmed the Ministry of Finance (MOF) in 1959, the practice of fiscal prudence became institutionalised. Revenue always had to exceed expenditure, paving the way for debt-free development.

(see *Central Principle — Fiscal Prudence*, p. 8)

### Cultivate Sound Institutions

Fiscal responsibility and sustainability are supported by constitutional safeguards. Land sales and capital receipts go directly to past reserves, and past reserves can only be used with presidential approval. These rules instil fiscal discipline.

(see *Institutionalising Fiscal Prudence through the Reserves Protection Framework*, p. 16)

### Work with Markets

The pricing and provision of certain public services is undertaken by private companies to allow for cost and operational efficiencies.

(see *Public-Private Partnership*, p. 19)

**INTRODUCTION:  
BUILDING THE  
BEDROCK  
FOR SINGAPORE'S  
DEVELOPMENT**



In the 1960s, Singapore was confronted with a problem that many developing countries face — it was in great need of urban infrastructure but had little ability to raise sufficient funds to invest in key urban systems such as public transport, roads, drainage and sewerage, and public housing. A small third-world country without natural resources, Singapore relied solely on its population of 1.6 million with a per capita income of S\$1,310<sup>1</sup> (US\$428 in 1960 dollars) to drive development. Although it was a thriving entrepôt and commerce was the mainstay of the economy, it had few industries and received little direct foreign investment.

However, over the next four decades, Singapore systematically managed to put in place an extensive and effective urban infrastructure that has played a crucial part in the city's success. Today, the city, with a resident population of almost 5.2 million and a per capita GDP of \$65,000 at current market prices in 2012 (US\$52,000)<sup>2</sup>, consistently ranks highly as a liveable city in global surveys.

This study reviews the development of public infrastructure and services in Singapore to identify the broad principles the city adhered to in financing infrastructure development and ensuring its long-term sustainability. It includes three examples drawn from the sectors of public transport, public housing and water supply to help give some insight on how the financing principles evolved and were applied in specific cases.

## CHAPTER 2

# FROM CROWN COLONY TO INDEPENDENT COUNTRY



“ I was convinced our people must never have an aid-dependent mentality. If we were to succeed, we had to depend on ourselves.”<sup>3</sup>

Lee Kuan Yew, first Prime Minister of Singapore

Prior to attaining self-government in 1959, Singapore was administered by the British as a Crown Colony. The Municipal Council, and later the City Council of Singapore (1951-1965), was in charge of providing public utilities and infrastructure. However, much of the infrastructure was damaged or destroyed during the Japanese occupation of Singapore from 1942 to 1945. In October 1951, the City Council announced an ambitious \$51 million plan for electricity schemes, waterworks extensions, gasworks extensions and other new developments. However it ran into difficulties raising all the funds needed.<sup>4</sup>

In 1959, Singapore became self-governing. As such, the new government led by the People's Action Party (PAP) had inherited some hard infrastructure in the form of roads, public utility infrastructure and military facilities. However, these were not enough to serve a fast-growing population and catalyse economic development. Towards the end of 1967, news came that the British had brought forward the timeline for the complete withdrawal of troops based in Singapore to December 1971. At that time, the British military base provided over 30,000 jobs in direct employment and another 40,000 in support services in Singapore.<sup>5</sup> There were fears that the withdrawal would not only cause a 20% loss in GDP, but also compromise national security and confidence. To make matters worse, when the pound devalued without warning on 18 November 1967, Singapore lost \$5157 million or 14.4% of its reserves overnight.<sup>6</sup>

To cushion the effects of their departure, the British provided aid to Singapore in the form of a £50 million package. However, Singapore's first Prime Minister Lee Kuan Yew had already been stung by the early withdrawal of the British forces. “I was determined that our attitude to British aid, indeed any aid, should be the opposite of Malta's,” Lee said. “I was shaken by their aid-dependency, banking on continuing charity from the British... This nurtured a sense of dependency, not a spirit of self-reliance.” This philosophy of self-reliance has been translated into the policies governing different facets of Singapore's development story, in particular, its principles of public finance.<sup>7</sup>



City Hall, 1960.  
*Singapore began the process of building her financial institutions and policies within the walls of this national monument.*

Photo courtesy of Peter Forster from Centobuchi, Montepredone, Italy. (Singapore, 1960)



Marina Bay Financial District, 2013.

*Developed in phases, the Marina Bay Financial Centre was completed in late 2012 and officially opened by PM Lee Hsien Loong in May 2013.*

Photo courtesy of William Cho



## CHAPTER 3

# SHAPING THE FINANCING PRINCIPLES, FRAMEWORK AND INSTITUTIONS FOR PUBLIC INFRASTRUCTURE AND SERVICES





...first grow the economy – earn your money first – then think in terms [of] how to spend it.<sup>8</sup>

Lim Siong Guan, former Permanent Secretary, Ministry of Finance

During the early years of self-government in Singapore, the state focused on building physical infrastructure required for economic and social development. Improvements to transport and communications, as well as the provision of public utilities, were important for economic development, while improvements and expansions to housing, health, education and sewerage systems had to keep pace with a fast-growing population. In financing these projects, the new government stuck to the principle of self-reliance, creating the necessary financing frameworks and institutions along the way.

## CENTRAL PRINCIPLE — FISCAL PRUDENCE

Fiscal prudence is the central principle guiding Singapore's approach to financing the development of its economic and social infrastructure. 'Not spending more than one earns' was the philosophy of Singapore's first Finance Minister Goh Keng Swee (see *Dr. Goh says "No" — Fiscal Discipline, Goh Keng Swee Style*, p. 14). The practice of fiscal prudence became institutionalised when he was at the helm of the Ministry of Finance (MOF) in 1959. He realised they had to do much more to create jobs and wealth.<sup>9</sup> "I have often told my fellow permanent secretaries that my revenue-taking right hand, out of necessity, not caprice, always has to be longer than my expenditure-giving left hand," Ngiam Tong Dow, a former permanent secretary of the Ministry of Finance, recalled. "In plain language, our current revenue was enough to pay for both operating, as well as development expenditure. Had the government been a private corporation, it would have financed all capital expenditure without a cent of debt."<sup>10</sup>

Singapore's first Development Plan, which covered the period from 1961 to 1964 (later extended to 1965), recommended an acceleration of infrastructure development and improvements to kick-start industrialisation in Singapore. Capital investments totalling \$871 million

were proposed over the four-year period, with 58% of the total being taken up for economic development.

Four sources of funding were identified in the Plan — government revenue surpluses, domestic loans, foreign loans/grants, transfers from the government account and other reserve funds belonging to statutory boards such as the City Council Consolidated Rate Fund, Public Utility Departments of the City Council, and Singapore Harbour Board Reserve Fund. The government revenue surpluses and realisation of government assets would provide \$304.5 million (in 1961 dollars), while the reserve funds of statutory boards would yield another \$56.9 million (in 1961 dollars). The Plan projected that a substantial part of the loans required would be raised from internal sources through subscription to long and medium term government loans of about \$230 million by the public and public sector agencies.<sup>11</sup> The government would also have to borrow about \$271 million from foreign institutions such as the World Bank and the UK government to bridge the remaining gap. The UK government was also expected to provide a grant of \$8.6 million. In short, Singapore would still have to rely on foreign lenders for about a third of its financing requirement.

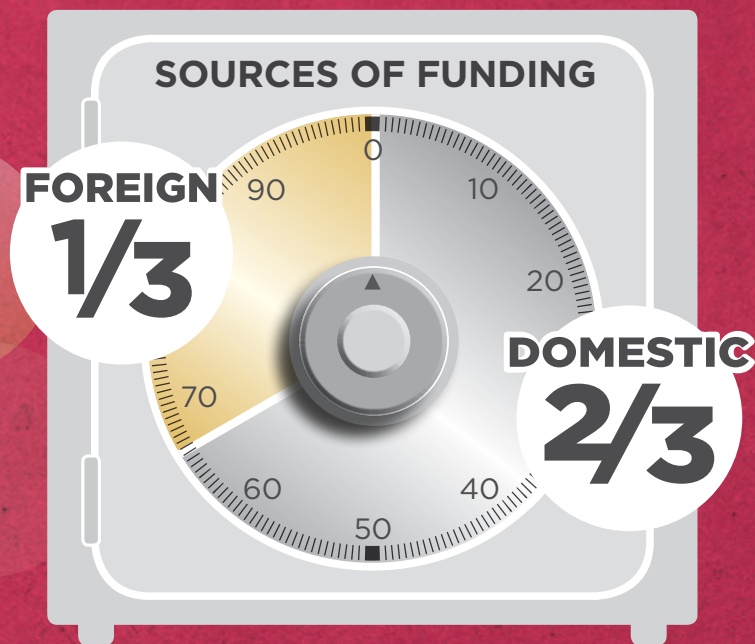
While initial financing would be needed, the Plan projected that more than half of the development expenditure (\$330.5 million in 1961 dollars), such as investments into power, water, gas, housing and port development should yield additional revenue and be self-supporting.<sup>12</sup> By 1964, the total investment in capital expenditure had increased to \$1.055 billion (in 1964 dollars).

Discipline also resulted from Singapore opting to retain its colonial-era currency board system after separation from Malaysia in 1965. Every dollar issued by the Singapore government had to be fully backed by foreign exchange reserves. "This [currency board system] calls for the tightest economic and social discipline from the people of Singapore," Lim Kim San, the Finance Minister at that time, explained in his statement to Parliament in August 1966. "The 100% backed currency system that we will be operating means that if Singapore wishes to spend more, then we must first earn more. Productivity of labour, efficiency of management and the strength of our economic infrastructure have to be maintained and improved continuously."<sup>13</sup> The automatic convertibility, guaranteed both in law and fact, obligated the government to balance its budget for both recurrent and capital development projects.



# SINGAPORE'S FIRST DEVELOPMENT PLAN (1961 - 1965)

## The Four Sources of Funding



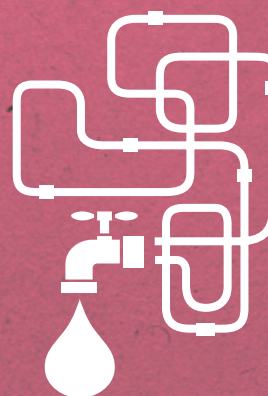
## DEVELOPMENT EXPENDITURE



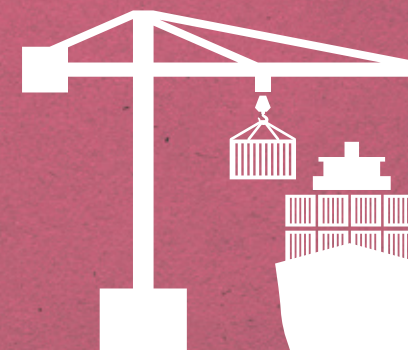
HOUSING



POWER & GAS



WATER



PORT DEVELOPMENT

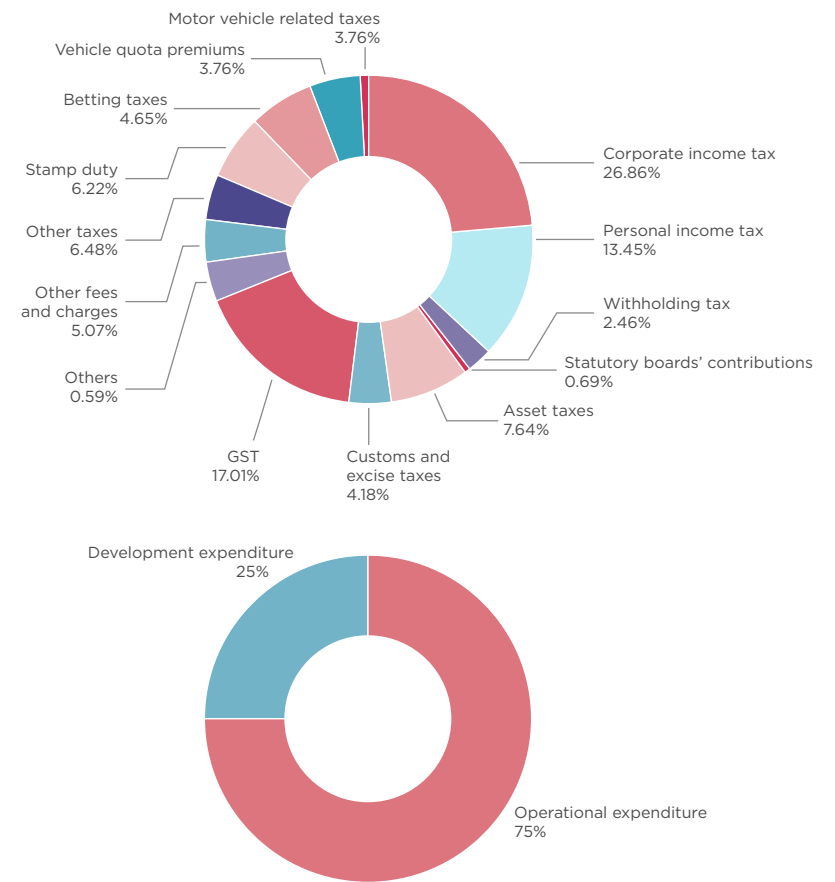


When the economy started to take off, with GDP growth rates hitting double digits, the government was able to support higher expenditures without having to resort to extensive deficit financing, or raising taxes substantially. Former Finance Minister Hon Sui Sen, in his 1974 Budget Statement, spelt out the approach: “For the growth of revenue to meet rising government expenditure, it is our policy to rely mainly upon a rapid expansion of the economy and upon efficient machinery for enforcement and collection of the taxes which such an economy can afford to pay.”<sup>14</sup>

One challenge the government had was raising sufficient revenue to finance both operating and development expenditure while still having a tax structure that was internationally competitive. Over the years, the composition of the government’s operating revenues has changed to adapt to circumstances. “In 1984, direct taxes accounted for two-thirds of our total tax structure. We progressively reduced income tax, both personal and corporate, until direct taxes in 1996 made up about half of total tax revenue, compared to three-quarters in the G7 economies,” Lee Kuan Yew explained in his memoirs. “We moved from taxing income to taxing consumption. The top marginal income tax rate for individuals was reduced from 55% in 1965 to 28% in 1996. The corporate tax rate of 40% was reduced to 26% in the same period.”<sup>15</sup> In 1994, the government introduced the Goods and Services Tax (GST), in part to improve economic competitiveness and also to reduce reliance on income tax revenues. The GST has been raised progressively to reach its current rate of 7% and is now one of the three largest components of government operating revenue, alongside corporate and personal income tax. Statutory boards of the government also make annual contributions to the government operating revenue as a form of taxation in lieu of corporate taxes. **Exhibit 1** presents a breakdown of the government’s operating revenue of \$55.178 billion and total expenditure of \$50.105 billion in FY2012.

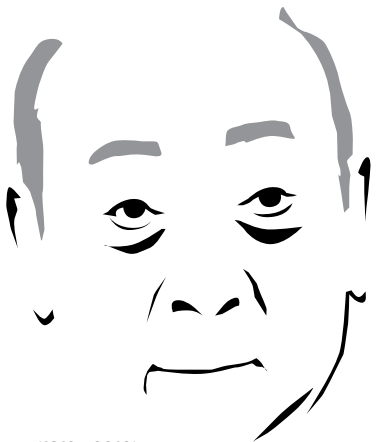
Singapore has enjoyed a budget surplus in most years since 1988, running relatively small budget deficits in some years when the global economic environment was particularly difficult.<sup>16</sup> The government has not had to raise loans for development expenditure since 1989. However, if needed, public sector agencies have access to relatively low borrowing costs because Singapore has been able to maintain a strong international credit standing — since 2003, it has consistently achieved the top short-term and long-term credit ratings from the three main credit-rating agencies.<sup>17</sup>

**Exhibit 1:**  
**Government Operating Revenue and Expenditure, FY2012 (Revised)**



Source: Ministry of Finance, Singapore  
(Singapore Budget 2013, Revenue and Expenditure Estimates)

## DR. GOH SAYS “NO” FISCAL DISCIPLINE, GOH KENG SWEE STYLE



(1918 - 2010)

When he was the Finance Minister, Goh Keng Swee was known to be a hard man to convince when it came to spending requests. Ngiam Tong Dow, a former Permanent Secretary at the Ministry of Finance (MOF), recalled how the practice of fiscal discipline was inculcated in MOF officers: “Goh told young officers that when a ministry asked for a budget, however laudable the purpose, the treasury officer should instinctively look away and say “no”. He said that the supplicant ministry would not take “no” for an answer and would come back a second time. Again, the answer would be a resounding “no.” He would come back a third time. This time you approve half of what he wants. You reward him for his tenacity. He goes away feeling grateful and relieved.”<sup>18</sup>

Ngiam also recalled a funding request from then Public Works Department (PWD) to re-engineer the Bukit Timah Canal to alleviate flooding along Bukit Timah Road in the 1960s, which had affected motorists and left bus commuters stranded. Goh refused the request as he felt “there was no justification spending millions of dollars just to enable folks to go home on time for dinner!”<sup>19</sup> On another occasion, Goh rejected funding requests to build swimming pools as he argued that it would be cheaper for people to swim in the sea. He even said that he was prepared to give children bus fare to go to the beach.<sup>20</sup>

In the 1980s, Goh raised his objection to building the Mass Rapid Transit rail network even though it was a project championed by the Prime Minister and supported by many in the Cabinet. He argued instead, for an all-bus system. “I think Goh held his [negative] view because he was then Minister for Finance, and he had to finance the project,” recalled Ong Teng Cheong, who was then Minister for Communications. “He was not convinced. He said, ‘If you got to spend all this money and subsidise the system, why not spend the money and have an equally effective all-bus system? If an all-bus system is just as good as MRT, why have MRT if you have got to subsidise it?’ That was how the great debate started.”<sup>21</sup>

If some of Goh’s resistance could appear overly austere, Lim Siong Guan, a former Head of Civil Service, offered another perspective — that sometimes, a debate needed to be created in order to arrive at the best decisions. He assessed that on such occasions, Goh would spark debates intentionally “[He] objected to the MRT because the case for having the MRT was that ‘you have no alternative’,” Lim explained. “You can run an all-bus system so we should not be giving the argument that we need the MRT simply because there is no alternative .... That’s not to say he objected to the MRT, but he objected to the logic, which is not a frivolous matter. He objected to people who don’t think deeply enough and argue deeply enough.”<sup>22</sup>

## INSTITUTIONALISING FISCAL PRUDENCE THROUGH THE RESERVES PROTECTION FRAMEWORK

Singapore's reserves are divided into two portions — “past reserves” refers to reserves accumulated in previous terms of government while “current reserves” refer to that accumulated by the current term of government. The Constitution contains two rules that promote fiscal responsibility and sustainability: (i) the current government cannot draw on past reserves unless agreed to by the President; and (ii) the current government is only allowed to use up to 50% of the net investment returns from the past reserves. These rules impose fiscal discipline on the current government to balance its budget over its term of office (typically five years). At the same time, past reserves serve as a fiscal buffer, allowing the government to manage times of crisis.<sup>23</sup> The distinction between past and current reserves also means that some government revenues and collections such as land sales and capital receipts are locked up as past reserves and cannot be spent by the government of the day.

This need for constitutional safeguards for spending the reserves was discussed in Cabinet as early as 1982. In 1991, Singapore's Constitution was amended to include an Elected President who, among other responsibilities, would have financial responsibilities regarding Singapore's reserves.<sup>24</sup> The President has given approval for past reserves to be used to fund land reclamation since 2001, and land acquisition for the redevelopment of older public housing estates under the Selective En-bloc Redevelopment Scheme (SERS) since 2002. Past reserves are used on the basis that it involves a conversion of past reserves from one form (financial assets) to another (state land). The proceeds from the sale of land that is reclaimed or acquired for SERS accrue to past reserves to avoid depleting past reserves.

Between 2000 and 2008, the net investment returns to the yearly government budget — Net Investment Income Contribution (NIIC)<sup>25</sup> — were generally below \$4 billion. As of 1 January, 2009, a revision to the Constitution allowed the government to spend up to 50% of the expected long-term real returns on reserves invested by the Government Investment Corporation (GIC) and Monetary Authority of Singapore (MAS). Since FY2009, the Net Investment Return Contribution (NIRC)<sup>26</sup> has reflected the total amount of investment returns taken into the budget for spending based on this broader definition of investment return and has hovered at around \$7 billion.

## A MARKET APPROACH TO PRICING PUBLIC SERVICES

The government has consistently subscribed to a philosophy of long-term financial sustainability by aiming for cost recovery as far as possible. Co-payment for the use of public services discourages excessive and unnecessary use, and market pricing is generally used where there are existing markets, in order not to introduce unwarranted market distortions. At an operational level, many public utilities and services had been, and had been, and still are, delivered through autonomous public sector agencies or statutory boards. Statutory boards drive infrastructure investment in non-subsidised sectors such as water supply, waste disposal, electricity and gas. The supply of potable water in Singapore using market pricing is an example of a self-funding approach.

MOF is responsible for the guidelines used to set government fees and charges. Goods and services provided by ministries and statutory boards are priced at full cost recovery. Exceptions are made in cases where fees are set higher than cost price to support social policies and discourage usage, or where fees are set at below cost in order to subsidise a merit good or service. Direct costs such as labour, materials and other operating costs, and indirect costs such as utilities, rental, supporting services, and cost of capital may be considered in determining the full cost of a particular good or service. The fee setting framework has three key principles, namely: (i) the “user pays” principle, where fees and charges should be recovered from the user directly and cross subsidies should be avoided; (ii) the “yellow pages” rule, meaning that the public sector should assess the necessity of providing goods and services that are already provided by the private sector; and (iii) the “keep pace with cost changes” rule, where fees and charges should be adjusted in line with cost changes while striving to keep costs as low as possible.

These guidelines apply to all public sector organisations which retain revenue from fees and charges while the government has acted to freeze or cap increases when necessary. For example, fees and charges were frozen from 2007 to 2009 due to an increase in GST from 5% to 7% from 2007, inflation concerns in 2007 and 2008, and the economic downturn in 2008 to 2009.

## PRIVATISATION

The 1987 Public Sector Divestment Committee produced a report that triggered a wave of privatisation in the 1990s. (See **Exhibit 2** for details) One of the government’s stated objectives for privatisation was to withdraw from commercial activities that it felt the public sector no longer needed to undertake, and to make the private sector the engine of growth in those areas. Another reason was to broaden and deepen the stock market through the privatisation exercise. There was also an element of cost savings associated with the move, as corporatised or privatised entities were expected to reap better operating efficiencies.

### Exhibit 2: Wave of Corporatisation in Singapore

Year	Public Sector Organisation	Resultant Entities
1994	Telecommunication Authority of Singapore (TAS)	- SingTel (SingTel was listed in 1993) - Singapore Post - TAS <sup>27</sup> remained as the regulator.
1995	Public Utilities Board (PUB)	- The electricity and gas components of PUB were corporatised in 1995. - The Energy Market Authority was created in 2001 to regulate the electricity and gas markets. - PUB was reconstituted in 2001 to become a comprehensive water agency.
1997	The Port of Singapore Authority (PSA)	- PSA Corporation Limited - Maritime and Port Authority (regulatory)
1999	The Public Works Department (PWD)	- Portions of PWD were corporatised in 1999 under Temasek Holdings. The corporatised components were grouped and renamed CPG Corporation in 2002 before being sold to Downer EDI Limited a year later. - The regulatory functions were merged into other statutory boards, namely: Building and Construction Authority, Land Transport Authority, and the National Parks Board.

## PUBLIC-PRIVATE PARTNERSHIP

While the provision of public services through public-private partnership (PPP) tends to be seen as a more recent trend, the private sector had been involved in urban redevelopment in Singapore as early as in the 1960s through the Government Land Sales (GLS) programme. More recently PUB awarded its first PPP contract in 2003 for the country’s first desalination plant. In the following year, MOF formally introduced PPP as a mode of procurement under its Best Sourcing framework with its first “Public-Private Partnership Handbook.” Traditionally, a public sector agency would contract private sector companies to construct facilities and supply equipment to provide public services. The agency would then own the facilities or equipment and remain responsible for the actual delivery of services. With PPP, the public sector focuses on acquiring services at the most cost-effective basis, rather than directly owning and operating assets. The private sector organisation typically takes on design, construction and financing risks in the project, while the public sector agency typically manages the political and regulatory risks.

The emphasis of the PPP is not on achieving the lowest cost but rather on optimising benefits against costs. “The whole logic of PPP was [that] it brings in the maintenance and the operation part of [the project] hopefully, therefore creating the cost efficiencies, a greater, a better optimisation of the results ... although it did have an effect on the government in the sense [that] instead of having to pay the whole capital sum upfront, actually the payments got spread out,” explained Lim Siong Guan, who introduced the PPP model for public sector procurement.<sup>28</sup> Public sector agencies are encouraged to work with the private sector to deliver non-core services, particularly those that require the development of new physical assets. So far, only eight contracts have been awarded (See **Exhibit 3** for details). One reason posited for the slow take-up is the fact that statutory boards have largely been able to achieve satisfactory results through direct contracting.<sup>29</sup>

### Exhibit 3: PPP Projects in Singapore

No.	PPP project (Public Sector Agency / Private Sector Partner)	Project Description
1	Singapore Sports Hub (Singapore Sports Council / Singapore Sports Hub Consortium)	<ul style="list-style-type: none"> <li>Landmark PPP deal with a 35-hectare site earmarked for the development of a replacement for the National Stadium for a period of 25 years.</li> <li>Expected to be ready by June 2014.</li> </ul>
2	ITE College West (Institute of Technical Education / Gammon Capital)	<ul style="list-style-type: none"> <li>Contract to design, build, maintain and operate the education facility for a period of 27 years.</li> <li>Officially opened in July 2010.</li> </ul>
3	SingSpring Desalination Plant (Public Utilities Board / SingSpring Pte. Ltd.)	<ul style="list-style-type: none"> <li>Supply 136,000 cubic metres (30 million gallons) of water per day for a 20-year period from 2005 to 2025.</li> <li>Officially opened in September 2005.</li> </ul>
4	Tuaspring Desalination Plant (Public Utilities Board / Tuaspring Pte. Ltd.)	<ul style="list-style-type: none"> <li>Supply 318,500 cubic metres (70 million gallons) of water per day for a 25 year period from 2013 to 2038.</li> <li>Officially opened in September 2013.</li> </ul>
5	Keppel Seghers Ulu Pandan NEWater Plant (Public Utilities Board/ Keppel Seghers NEWater Development Co Pte. Ltd.)	<ul style="list-style-type: none"> <li>Supply 148,000 cubic metres (32 million gallons) of NEWater per day for a 20-year period from 2007 to 2027.</li> <li>Officially opened in March 2007.</li> </ul>
6	Sembcorp NEWater Plant (Public Utilities Board / Sembcorp NEWater Pte. Ltd.)	<ul style="list-style-type: none"> <li>Supply 228,000 cubic metres (50 million gallons) of NEWater per day for a 25-year period from 2010 to 2035.</li> <li>Officially opened in May 2010.</li> </ul>
7	Incineration Plant (National Environment Agency / Keppel Seghers Engineering Singapore Pte. Ltd.)	<ul style="list-style-type: none"> <li>Design, build, own and operate a new incineration plant next to the Tuas South Incineration Plant, which can incinerate 800 tonnes of refuse per day, for a 25-year period from 2009 to 2034.</li> <li>In operation since January 2009.</li> </ul>
8	TradeXchange (Singapore Customs / CrimsonLogic Pte Ltd)	<ul style="list-style-type: none"> <li>Contract to create a one-stop integrated logistics information port. Develop, operate and maintain software for the system for a period of 10 years, from 2007 to 2017.</li> </ul>

Source: Singapore, Ministry of Finance. *Public-Private Partnership*.

## BORROWING EXTERNALLY TO GROW

In the initial years following independence, Singapore, like many other developing countries, borrowed from the World Bank and the Asian Development Bank to finance the construction of power stations, reservoirs, the new airport at Changi and the National University of Singapore.<sup>30</sup> But Singapore was also clear that external borrowing would be primarily to develop the economy and used for productive purposes rather than for consumption.<sup>31</sup>

Before it was a member of the World Bank, Singapore had already obtained its first loan, backed by Great Britain and Malaysia, of US\$15 million in May 1963 for the construction of the first phase of the Pasir Panjang 'B' Power Station. After achieving independence in 1965, Singapore needed to become a member of the World Bank to be eligible for further loans. The subscription rate for the World Bank was US\$32 million, of which Singapore was required to pay 10%.<sup>32</sup> While the cost of membership was considered relatively high, it was a necessary expenditure. Singapore formally took up membership in the World Bank and International Monetary Fund (IMF) in August 1966.<sup>33</sup>

The World Bank loaned Singapore US\$6.8 million (\$20.5 million in 1965 dollars) to finance the Johor River Water Project in 1965 to develop freshwater supplies<sup>34</sup> and another US\$23 million in 1967 to expand the power transmission and distribution system and water supply facilities. The World Bank praised Singapore for being a "good debtor" and that the Singapore government "has done as much as a government can to create a favourable investment climate."<sup>35</sup> Up until 1970, Singapore received eight loans amounting to US\$92.4 million from the World Bank for various projects.<sup>36</sup> Singapore's port, electricity supply and distribution, sewerage development as well as telephone network all benefited from the financial support of the World Bank.



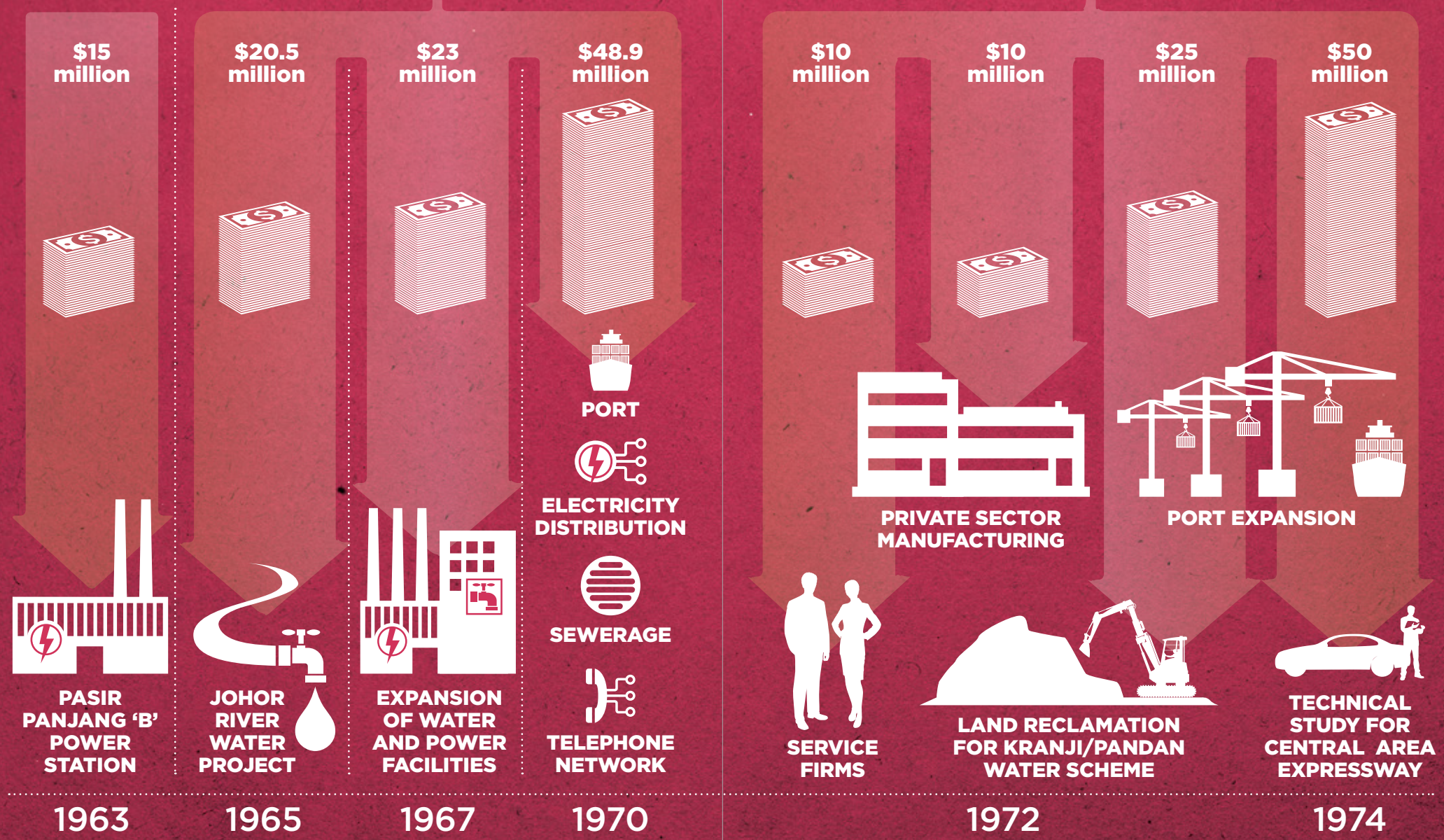
# FINANCING SINGAPORE'S INFRASTRUCTURE IN THE EARLY YEARS (1963 - 1974)

## Borrowing Externally to Grow

### GREAT BRITAIN + MALAYSIA

### WORLD BANK

### ASIAN DEVELOPMENT BANK





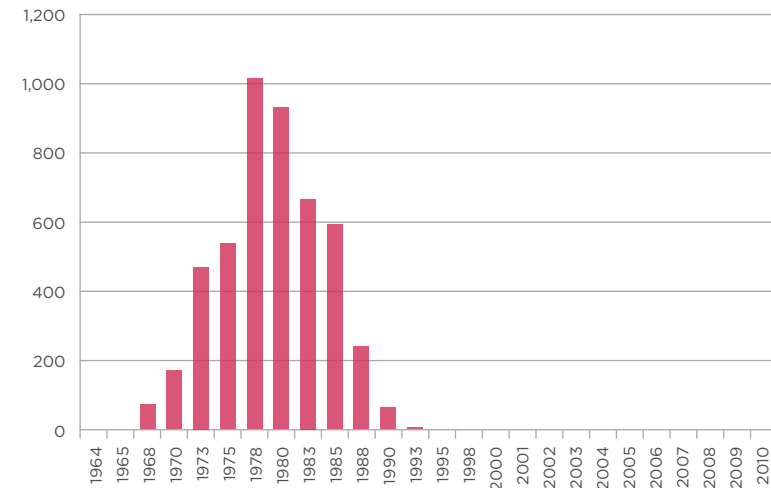
The Development Bank of Singapore (DBS) was the first public sector organisation in Singapore to obtain a loan from the Asian Development Bank (ADB) in 1969. This was a 14-year loan of US\$10 million used to finance private-sector manufacturing and service firms. The ADB would go on to provide another US\$10-million loan to DBS in 1973. The ADB also financed about half the cost of a \$51-million, three-year reclamation project in Kranji undertaken by PUB in 1972 to establish the Kranji/Pandan Water Scheme.<sup>37</sup> This was the bank's first loan involving a private commercial bank (Bank of America) which co-financed US\$5 million. It was seen as a vote of confidence for the Singapore government's credit standing that PUB was the first borrower under this new co-financing method.<sup>38</sup> By 1974, the ADB had extended US\$104 million in loans to Singapore for ten projects, including the PSA port expansion and warehousing, Jurong Port expansion and a technical study of a central area expressway<sup>39</sup>.

Other external sources of development loans included the Commonwealth Development Corporation (CDC) which provided a loan of £4 million in 1973 (\$25 million in 1973 dollars) to finance about one-third the cost of PUB's Upper Pierce Reservoir and ancillary water treatment plant.<sup>40</sup>

In 1980, Singapore's public external debt stood at \$937 million.<sup>41</sup> However, the need for external financing to fund development expenditure diminished as the fiscal situation improved. Public external debt declined to \$68 million in 1990 and \$5 million in 1994. Singapore has not carried any public external debt since 1995.<sup>42</sup> **Exhibit 4** shows Singapore's external debt levels.

External borrowings had helped Singapore kick-start a virtuous cycle of public investment and economic growth. Borrowing from the multilateral development banks also enabled a new nation like Singapore to establish credit-worthiness internationally. "It was about establishing that the World Bank has found this project that we are trying to do in Singapore worthy of support and therefore, it was seen as credit enhancing," Lim Siong Guan explained. "So actually that was the motivation. It wasn't money. It was about trying to establish the standards."<sup>43</sup> In addition, fulfilling the borrowing conditions imposed and repaying the loans promptly helped to build confidence in the fiscal discipline and stability of Singapore.

#### Exhibit 4: Government External Debt (as Percentage of GDP)



Source: Singapore, Department of Statistics. Yearbook of Statistics, various years.  
Singapore: Department of Statistics, Ministry of Trade & Industry.

## THE ROLE OF DOMESTIC DEBT

Singapore's high domestic private savings rate allowed the government to borrow from domestic sources at relatively stable interest rates to invest in infrastructure development and improvements in the early years. For example, many Singaporeans had voluntary savings in the Post Office Savings Bank (POSB), which was a national savings bank with the aim of promoting thrift and mobilising domestic financial resources for national development. From 1971 to 1976, deposits grew from \$91 million to \$996 million.<sup>44</sup> "All these helped the government pay for infrastructure: roads, bridges, airports, container ports, power stations, reservoirs and a mass rapid transit system. By avoiding wasteful expenditure, we kept inflation low and did not need to borrow foreign funds," Lee Kuan Yew noted.<sup>45</sup>

During Singapore's formative years, POSB and other public sector entities held government securities which were used to finance various public investments and capital expenditure. POSB, for example, used \$634 million or 45% of its deposit funds to purchase government securities in 1977.<sup>46</sup> However, the role of POSB in public infrastructure financing diminished over the years, and it was later corporatised (and renamed POSBank) before being acquired by DBS Bank in 1998.

Since 1998, statutory boards have been encouraged to tap the capital markets in Singapore directly for their infrastructure financing needs, in line with the government's efforts to develop Singapore's bond market. A few statutory boards have issued bonds denominated in Singapore dollars. By one estimate, the quasi-government sector accounted for 6% of corporate bond issuers in 2004.<sup>47</sup>

Currently, Singapore does not borrow to fund government expenditure, but the government issues two types of debt securities — Singapore Government Securities (SGS) and Special Singapore Government Securities (SSGS) for specific purposes. SGS are marketable debt instruments issued to help develop Singapore's debt markets, while SSGS are non-tradable bonds issued through the Monetary Authority of Singapore to meet the statutory requirements of the CPF Board which administers the compulsory social security savings plan. Under the Reserves Protection Framework and the Government Securities Act, the government cannot fund its budget through monies raised through SGS and SSGS, and all borrowing proceeds are invested.

## LAND ACQUISITION

The government's land acquisition policy was a crucial instrument in enabling the development of public infrastructure at an affordable cost. After a fire in Bukit Ho Swee destroyed a squatter settlement and made thousands homeless in 1961, the Land Acquisition Ordinance was amended to allow the government to acquire the fire sites without giving a windfall to the landowners. Later, through the Land Acquisition Act of 1966, the government was empowered to acquire land for public use or purposes such as public housing, industrial estates, port development and educational institutions. The state is the largest landowner in Singapore today, controlling more than 80% of all land, up from about 44% in 1960.<sup>48</sup>



POSB Centre at Bras Basah Road, 1990.  
Banner outside celebrating 25 years of nation building in Singapore. POSB was Singapore's first national savings bank.

Photo from Ministry of Information and the Arts Collection,  
Courtesy of National Archives of Singapore



Two broad principles have guided the government's approach to land acquisition particularly in the early years of development, as explained by Lee Kuan Yew at the Legislative Assembly in 1964: "First, that no private landowner should benefit from development which had taken place at public expense; and, secondly, that the price paid on the acquisition for public purposes should not be higher than what the land would have been worth had the Government not contemplated development generally in the area."<sup>49</sup>

The Act excluded the potential land value in determining the compensation to landowners. "We saw no reason why landlords should benefit from public infrastructural investment in roads, drainage, sewerage, power and water pipelines, etc." said Ngiam Tong Dow, who had been asked by Goh Keng Swee to draft a Cabinet paper to propose the enactment of the Land Acquisition Act in 1966. "We would pay only the market value of raw land before public development. Our policy discouraged land speculation. Very few governments are electorally strong enough to implement such a robust policy."<sup>50</sup> The government was able to push through such a policy at that time partly because there were relatively few large landowners. In addition, land costs were low, as the rent control regulations at that time had not given landlords the incentive to improve their properties.

The key obstacles to development then were the lack of land and the high cost of compensation for coastal land. As the government embarked on land reclamation along the coast of Singapore in the 1960s, it amended the Foreshores Act in 1964 to prevent landowners from seeking compensation on account of the loss of sea frontage. Lee Kuan Yew recalled, "the market was at an all-time low at that time and large tracts of land ... were lying fallow by investors who were waiting for the climate to change [so that] they [could] manipulate and sell it at a big price. We just acquired as many large pieces of land as possible and claimed the right to reclaim coastal areas."<sup>51</sup>

In 1973, the Land Acquisition Act was amended to make compensation for acquired land independent of market conditions and the landowner's purchase price. Compensation was assessed at market value as at 30 November 1973 (or the date of gazette notification, whichever was lower). Administered by the Singapore Land Authority (SLA), the statutory date for pegging compensation has been amended a number of times. In 2007, the Land Acquisition Act was further amended to allow the use of prevailing market rates for subsequent acquisitions, instead of pegging compensation rates to 1995 prices.

Then Minister for Law, Professor S. Jayakumar, acknowledged that the compensation provisions in the law had been "a source of contention" with landowners.<sup>52</sup> There were also concerns that the government was seen as unfairly profiteering by using out-dated prices to its advantage. The government counterbalanced this by updating the statutory date and through *ex gratia* payments.

The government has been careful to prevent abuse of the Land Acquisition Act through implemented controls. For example, the executive ministry proposing the land acquisition has to seek the concurrence of the Ministry of Law, which has to be satisfied that the proposed acquisition is clearly for a public purpose. Only then, can the proposal be tabled to Cabinet for decision. Landowners who are dissatisfied with the compensation can appeal to the Appeals Board (Land Acquisition).

## CHAPTER 4

# FISCAL PRUDENCE IN PRACTICE



...to be able to focus the discussions on what are the real trade-offs...<sup>53</sup>

Lim Siong Guan, former Permanent Secretary, Ministry of Finance

Singapore's public finance system institutionalises the principle of fiscal prudence through a few key laws, policies and processes. The 1960s and 1970s saw economic expansion at a real gross domestic product (GDP) growth rate that was in excess of 8%. Supported by efficient collection machinery, the government could then leverage the growing revenues to meet rising expenditures. As the economy matured towards the early 1990s, the Reserves Protection Framework was put in place to foster fiscal prudence and financial sustainability.

## THE DEVELOPMENT FUND

Under Singapore's public budgeting system, financial resources for capital or development expenditure are accumulated in the Development Fund. The colonial government created the Development Fund in 1953 to finance development as far as possible from current revenue, but the Development Fund could draw on reserves of the colonial government when necessary. The PAP government retained the framework of the Development Fund. Under the Development Fund Act, the fund may be used for: (i) construction, improvement, acquisition or replacement of capital assets; (ii) land acquisition; and (iii) grants, loans and investments made to any public authority or corporation for such purposes.

## THE BUDGETING PROCESS — MOVING TOWARDS GREATER AUTONOMY

Singapore inherited the line-item budgeting approach from the colonial government. However, line-item budgeting proved too rigid to cope with the city's rapidly changing priorities and circumstances. As such, over the years, greater autonomy in the budgeting process has been

devolved to public sector organisations. Lim Siong Guan explained that spending departments "always know more than the Ministry of Finance (MOF) about their operations, their real needs and where they can improve".<sup>54</sup>

Towards the end of the 1970s, MOF moved to Programme Budgeting. This marked a major shift from traditional line-item budgeting towards performance-based evaluation of projects or programmes. This new approach provided more flexibility by allowing money budgeted for one part of the programme to be moved to another without the approval of the MOF. However, the approach did not have an effective mechanism to prevent overall expenditure from outgrowing revenue collection.

At the end of the 1980s, MOF further devolved budgetary control to the ministries through a Block Vote Budgeting System. This system combined the budget for different programmes under a particular ministry into one block. Cabinet approved each ministry's budget priorities and aggregate funding allocations, but the Permanent Secretaries were responsible for how their respective ministries spent the money allocated to them. Each ministry's expenditure was also fixed as a percentage of GDP so as to balance total expenditure and operating revenues.

MOF further developed the block budgeting system in the 1990s. Introduced in 1996, the Budgeting for Results framework allocated funding to each ministry to achieve pre-specified outputs, deliverables and performance targets. Greater accountability was achieved by auditing ministries against the outputs and targets that had been set.

The current Block Budget framework was put in place in 2000 by Lim Siong Guan. "The idea of the block budget was simply to be able to focus the discussions on what are the real trade-offs in financing new projects or activities in Singapore," he explained.<sup>55</sup> Every five years, overall medium-term budget caps are set for each ministry, and goes through a process of negotiation with MOF. In this way, the government is able to balance the budget within each term of government. Ministries are guaranteed a certain baseline budget which can be allowed to increase by a 'budget growth factor'.<sup>56</sup> 'Above-the-block' funding can also be given separately to ministries to fund additional programmes, such as large development projects. Any remaining quantum resulting from revenue growth is partially set aside in a central pool known as the "Reinvestment Fund" and ministries can submit proposals to MOF to bid for these funds.



With greater autonomy, ministries and agencies are able to make micro-budgetary decisions and respond more flexibly to changes in the environment. They are also incentivised to use financial resources more efficiently.

## **COST MANAGEMENT OF DEVELOPMENT PROJECTS**

As public projects grew in terms of size and complexity, MOF, with a view to ensure better cost management, required that public sector development projects above \$80 million be reviewed by MOF and approved by the Ministerial Development Planning Committee (DPC), which comprises the Minister for Finance, Minister for Trade & Industry and the Minister of the proposing ministry. The DPC approval process helps ensure that project budgets are in line with general cost norms and that other 'value-for-money' alternatives are considered before a decision is made.

In 2010, MOF introduced a more stringent "gateway" approval process for projects with a value greater than \$500 million or are complex in nature, with staged approvals for concept and design. MOF also formed a new Development Projects Advisory Panel (DPAP) in 2010, comprising current and former senior public servants and industry practitioners to examine the specifications and designs of mega development projects at the early stages of project conceptualisation and design development. A separate committee, the Public Sector Infocomm Review Committee provides inputs in the evaluation process for infocomm projects.

In 2011, a new Centre for Public Project Management (CP2M) was set up as a department under MOF to provide advisory services on project design and management to public sector agencies, especially those lacking in-house capabilities.

# **CHAPTER 5**

# **THREE CASES: MODELS OF PUBLIC INFRASTRUCTURE AND SERVICES**

“ [W]e believe in self-reliance.”<sup>56</sup>

Dr. Goh Keng Swee, first Finance Minister, 1969

We will now look at three examples showing how the Singapore government managed the financing aspects of three urban systems that have been critical to making Singapore a liveable city, namely, the rail transit system, public housing programme and water supply.

Significant policy decisions in public finance and sector-specific policies in these three areas have been illustrated in a timeline on p.38. The governance tools and institutions which support the financing framework for infrastructure and services in Singapore are summarised in Appendix A.

## THE RAIL TRANSIT SYSTEM: EXPERIMENTATION WITH A PUBLIC-PRIVATE PARTNERSHIP

As early as 1967, the government was already looking into a mass rapid transit solution. Assisted by the United Nations Development Programme (UNDP), Ministry of Law and Ministry of National Development embarked on a State and City Planning (SCP) project between 1967 and 1970, which was to be a precursor to the 1971 Concept Plan. Predicting that Singapore would face chaotic traffic by 1992 if no demand management measures were in place, the SCP project incorporated an option for a mass rapid transit (MRT) system. The decision whether to build an MRT system or not was intensely debated, because of the huge expected capital investment involved and the uncertainty surrounding the operating costs involved. The \$5-billion price tag (in 1982 dollars) was equivalent to about a fifth of Singapore's GDP in the early 1980s. The government did not want to be saddled with a public transport system dependent on continued operating subsidies.

### Cost-Benefit Assessment of the MRT System

Several feasibility studies on the MRT system were carried out over more than a decade to the tune of \$10 million. Consultants from Wilbur Smith and Harvard University argued on opposite sides of the debate, with the former making the case for a rail system and the

latter, an all-bus system. The cost estimates for the MRT system varied widely, depending on, amongst other things, the extent of the rail and/or bus system proposed and whether it would be above ground or underground. The Ministry of Communications was tasked with evaluating the two mass rapid transit alternatives proposed.

Between 1975 and 1978, Wilbur Smith estimated the cost of MRT to be \$1.75 billion (in 1975 dollars) based on a rail system 44.5 kilometres long, complemented by buses serving as a feeder network for the rail system<sup>58</sup>. The World Bank, which was supervising the Wilbur Smith consultants, felt that they had overestimated operating costs of the bus system while underestimating rail construction costs by 30%.

Prime Minister Lee Kuan Yew visited Hong Kong in January 1976 to study the economics of their US\$1 billion railway system launched in 1973.<sup>59</sup> In June 1976, the Ministry of National Development produced its own study, the Land Use/Transport Planning Review (LUTPR). This report recommended that a limited MRT system of 23.8km could support up to 12% of total daily public transportation trips at a cost of \$788 million, but over 3,000 buses would still be needed.<sup>60</sup>

By the next phase of the Wilbur Smith study, completed between 1979 and 1980, the expected cost of the MRT system increased to \$4 billion (in 1979 prices). This figure excluded land costs.<sup>61</sup>

The government finally decided in 1982 to proceed with the MRT system with a budget of \$5.3 billion (in 1982 dollars). The government assessed that a rail system could provide a more efficient and reliable connection between suburban and central areas. This could then boost long-term investor confidence in Singapore, attract higher value-added investments, maximise the use of scarce land resources, as well as help to decentralise economic activity and create more compact suburban areas. Property values in parts of Singapore could also be expected to increase, resulting in higher land premiums. In short, the MRT system was reframed from being just a transport issue, to one of economic development.

The turning point came with the development of Marina South, a newly-created area on reclaimed land that was adjacent to the city centre. As there was only one road connecting the two areas, commuter traffic would be limited without the MRT. “If there is no MRT, Marina South will remain predominantly an open space,” Ong Teng Cheong, then Minister for Communications, explained. “If you have [the] MRT going to Marina South, then that open space can be developed.”<sup>62</sup>

# TIMELINE: Significant Policy Decisions in Housing, Transport and Water



## 1953

- ▶ Development Fund created by colonial government to allow for the accumulation of funds for its development plans when current resources were inadequate. Subsequently retained by PAP government.

## 1955

- ▶ Central Provident Fund (CPF) introduced by colonial government as compulsory pension fund.

## 1950

## 1961

- ▶ Singapore's first and only Development Plan, which spanned from 1961 to 1965, emphasised that domestic financial resources should contribute to more than two-thirds of the overall financing needs identified in the Plan. Provision of water, as well as other public utilities, was seen as a self-funding public utility service.



Establishment of Public Utilities Board (PUB) and mandate for operating and development cost recovery.

## 1963

- ▶ First loan from World Bank of US\$15 million for construction of power station.

## 1964



Home Ownership Scheme launched by Ministry for National Development (MND).

- ▶ Amendment to Foreshores Act to prevent landowners from seeking compensation for loss of sea frontage.

## 1966

- ▶ Land Acquisition Act enacted (to replace Land Acquisition Ordinance) to allow the government to acquire private land for public use and purposes at relatively low prices.
- ▶ Post Office Savings Bank (POSB) re-organised into a national savings bank to promote thrift and mobilise domestic financial resources for national development.
- ▶ Singapore took up membership with the World Bank.

## 1968

- ▶ PAP government raised CPF employer and employee contribution rates from 5% to 6.5%. CPF contribution rates would undergo several changes over the years.



CPF Public Housing Scheme introduced to allow CPF members to use CPF savings to finance purchase of HDB flats.

## 1960



1970



Waterborne Fee implemented as one of the conditions from World Bank for sewage project.

1971



State and City Planning project incorporated a transport plan including options for mass rapid transit system.

1972

- ▶ POSB made a statutory board under Ministry of Communications.

1973



Government introduced four-tier domestic water tariff system to encourage water conservation.

1978

- ▶ Government shifted away from traditional line-item budgeting to the Programme Budgeting System, which allowed Ministries greater flexibility to move resources within programmes, and allowed the evaluation of programme results against its stated intent.
- ▶ Government external debt peaked to support infrastructure development before steadily declining.

1981



Use of CPF savings extended to financing of private residential property purchase through CPF Residential Properties Scheme.

1982



Decision taken to build MRT system (North-South and East-West lines) with budget of \$5 billion, with the notional concept that land sales in the reclaimed Marina South (which would benefit from improved connectivity) as a means of funding upfront investment for MRT system.

1984

- ▶ Land acquired by the government reached the equivalent of about 30% of Singapore's total land area.

1987

- ▶ Public Sector Divestment Committee report issued. Objectives of privatisation were to withdraw from commercial activities to allow private sector to take the lead; and to broaden and deepen the Singapore stock market.



MRT was partially operational in 1987. Government funded the first set of operating assets and incorporated Singapore MRT Limited (later renamed SMRT Corporation). Commuter fares were expected to cover day-to-day operating expenses and asset replacement.

1989

- ▶ Ministry of Finance (MOF) introduced the Block Vote Budgeting Framework to devolve more responsibility for micro-budgetary decisions to the respective ministries.
- ▶ Role of Permanent Secretary (PS) for Budget Division combined with PS for Revenue Division, limiting propensity to spend more than was collected.

1970

1980

1991



Water conservation tax introduced.

1994

- ▶ Goods and Services Tax (GST) introduced at 3% to shift the tax burden from direct to indirect taxes. GST was gradually raised to 7% by 2007.

1995

- ▶ Singapore ceased to carry any public external debt. Domestic borrowings increased but only so far as to develop the domestic debt market and meet the CPF's investment needs.

1996

- ▶ Budgeting for Results adopted by MOF.



Land Transport Authority (LTA) issued white paper on "A World Class Land Transport System".

1997



PUB reviewed water pricing. Concept of marginal cost pricing introduced and benchmark cost of "next drop" pegged to desalination. Domestic water tariff raised.

1998

- ▶ POSB corporatised and acquired by DBS Bank.
- ▶ Statutory boards encouraged to tap on capital markets for financing needs in line with the government's efforts to develop Singapore's bond market.

2000



SMRT listed on the Singapore Exchange.

2002



Introduction of NEWater. This treatment method replaced desalination as benchmark for the cost of the "next drop" of water.

2003



First public-private partnership (PPP) contract awarded by PUB for Singapore's first desalination plant.

2004

- ▶ MOF formally introduced PPP as mode of government procurement.

2007

- ▶ Land Acquisition Act (LAA) amended to allow use of prevailing market rates in assessing compensation.

2008



LTA's Land Transport Master Plan launched. Financing framework for rail transit system refined to allow for a network approach as opposed to a line approach. New lines would be deemed economically viable as long as the entire rail network remained so, rather than having to be individually viable.

2010

- ▶ New Development Projects Advisory Panel formed to examine specifications and designs of infrastructure projects at early stage of conceptualisation.

- ▶ Rail financing regime changed further in 2010 with the Downtown Line (operated by SBS Transit) being the first rail line subject to the new framework. LTA would own rail infrastructure and operating assets and be responsible and pay for timely replacement and upgrading.

2011

- ▶ Three-tier project approval process instituted by MOF. Mega projects above \$500 million are subject to more stringent and multi-stage, they are subject to more stringent and multi-stage gateway process of approval for concept, design and implementation, in addition to Development Planning Committee (DPC) approval.

- ▶ Centre for Public Project Management (CP2M) set up in 2011 as a department under MOF to provide advisory services on project design and management to public sector agencies.

1990

2000

2010



# THE GREAT MRT DEBATE

## A “PRODUCTIVE FIGHT”



(1936 - 2002)

Ong Teng Cheong, who was then Communications Minister, explained that Prime Minister Lee Kuan Yew was in favour of the MRT from the start, but Finance Minister Goh Keng Swee had been adamantly against it. However, the reclamation of Marina South helped to tilt the debate in favour of the MRT:

*“The Prime Minister was in favour of MRT from the start. His view was that MRT was inevitable. The question was when to start, and how to finance it. I think Goh held his [negative] view because he was then Minister for Finance, and he had to finance the project... he was not convinced. He said, ‘If you got to spend all this money and subsidise the system, why not spend the money and have an equally effective all-bus system? If an all-bus system is just as good as MRT, why have MRT if you have got to subsidise it?’*

*“The breakthrough came with the reclamation of Marina South.... If there is no MRT, Marina South will remain predominantly an open space. Right? If you have MRT going to Marina South, then that open space can be developed. And all that you need is to sell only part of that developable land to pay for all your MRT costs.... So that settled all the arguments about financing.... Without the MRT, Marina South would have no hope for development.”<sup>63</sup>*

Ngiam Tong Dow, who was Permanent Secretary of the Ministry of Communications at the time, gave his perspective on Goh’s approach.

*We really had a public debate because the sum involved in those days was tremendous — \$5 billion. So I think [Prime Minister Lee Kuan Yew] wanted to be dead sure that we were right in investing this sum of money... But Dr. Goh’s view was that it was a very lumpy investment and if we are wrong, we can be very wrong. He thought that by adding buses, you add one bus at a time. If you are wrong, then you just write off one bus.*

*But I disagreed with Dr. Goh. I told him that this MRT is a way of providing access to the whole of Singapore, and our land prices were bound to appreciate .... So I looked at it as an economic development project. But Dr. Goh looked at it as just a pure traffic project .... He nearly overturned it. MINCOM [Ministry of Communications] put up a paper [saying] the benefits of all this. So he said, “Okay, what are you aiming at? You want to bring the MRT into the city. How many more new jobs can you accommodate in the city with the MRT?” I think we gave some figure .... Then he said, ‘Okay, \$5 billion divided by this number. You mean to tell me that you’re going to spend a hundred or two hundred thousand dollars just to be able to bring one more worker into the city?’”<sup>64</sup>*



SMRT train approaches Yio Chu Kang MRT station. With close to 154 kilometres of lines running on elevated tracks and underground, it is instantly recognisable as an iconic feature of public transport in Singapore.

Photo courtesy of alantankenghoe

## Financing the MRT System

The MRT system started out as a 67-kilometre system consisting of 42 stations with 19-kilometre of track underground in a North-South and East-West configuration.<sup>65</sup> In October 1983, the new Mass Rapid Transit Corporation (MRTC) was established as a statutory board. Work started in October 1983, and the system was partially operational by 1987. The full system was completed in July 1990, two years ahead of schedule and 15% below the initial \$5-billion budget.

Toa Payoh MRT Station on its Official Opening Day, 1987.  
*Commuters line up to head down towards the underground platform.*  
Photo from Ministry of Information and the Arts Collection,  
Courtesy of National Archives of Singapore



When the go-ahead for the MRT system was announced in May 1982, the government recognised that it was not possible to build and run an MRT on purely commercial grounds. The cost of building the MRT could be subsidised by selling the 255 hectares of reclaimed land that make up Marina South, an idea which Ong Teng Cheong attributed to Teh Cheang Wan, then Minister for National Development. The proceeds would be used to pay for the full one-time cost of building and equipping the system. “The underlying logic is that since the MRT is, in the first instance, responsible for the enhanced land premiums, it is reasonable that part of this be creamed off to help pay the capital cost,” Ong said. “Such financing will help relieve the MRT authority of the burden of having to repay large loans. MRT operations can then be self-financed as MRT fare revenues would be sufficient to meet all operating costs. This will include providing the necessary surplus for eventual replacement of depreciable assets such as rolling stock.”<sup>66</sup>

However, in practice, the capital expenditure for the MRT was drawn from the government’s development fund, which was deemed sufficient at the time.<sup>67</sup> Subsequently in 1985, Ong clarified that the sale of land in Marina South to pay for the MRT system was just a notional concept. The government could wait until the MRT was built, and then sell the land at an enhanced value. The estimated financial impact of the MRT was substantial — he indicated that the presence of the MRT could potentially raise the prices of land in Marina South from \$200 per square metre to \$2000, as the MRT would allow a higher density of development.<sup>68</sup> Eventually, revenue from total land sales over the six-year construction period of the MRT project exceeded \$12 billion.<sup>69</sup>

## Balancing Needs and Profits

A new wholly government-owned company, Singapore MRT Limited, was incorporated in 1987 (later renamed SMRT Corporation) to operate the MRT line, and was granted a 10-year License and Operating Agreement (LOA). This was later extended to 31 March 1998. Under the lease, the non-operating and operating assets such as tunnels, tracks, stations and rolling stock were owned by MRTC, and then its successor, the Land Transport Authority (LTA). SMRT paid a licence fee on the annual fare and non-fare revenues for the lease of the train fleet as well as accumulated funds under an Assets Replacement Reserve for the replacement or overhaul of major capital assets required to operate the MRT system. The government also funded the first set of operating assets, which were expected to be replaced after about 30 years of operation. The expectation was for the system to be able to continue running without further financial support from the government.



LTA assessed the financial viability of each proposed rail line, comparing the expected operating costs, such as manpower and maintenance costs, against the expected revenue from fare-box revenues and commercial facilities in the train stations (e.g. space rental, advertising) over the appraisal period. LTA also did a separate cost-benefit analysis of the system to ensure that the investment was worthwhile from a broader public perspective.

Once the decision to build the MRT system was taken, the government adopted what Ngiam Tong Dow called a “fail-safe position.”<sup>70</sup> Trunk bus services to the city centre which ran parallel to the MRT route were removed, ensuring that the new MRT system faced less competition. Minister for Communications, Mah Bow Tan described the MRT and bus situation as one where “[if] there was nothing done about reducing or rationalising and removing the wasteful duplication of capacity between bus and MRT, we would have had a situation where neither the bus nor the MRT would be able to meet their operating cost.”<sup>71</sup>

Ngiam felt that this was one instance where the government had failed to take a hard decision early on to peg MRT fares at its fair economic value. He recalled that then Prime Minister Lee Kuan Yew made the point to his Cabinet, that MRT fares needed to be much higher than bus fares as the MRT system offered better service. Otherwise, the MRT system would be trapped by uneconomic fares, and it would be politically harder to make adjustments subsequently. However, the fares were eventually set only marginally higher than bus fares.

Commuter fares were expected to cover the day-to-day operating costs of the MRT including provisions for rolling stock (trains) replacement and yet be low enough to reassure commuters that MRT fares would remain equitable alongside bus fares.<sup>72</sup> Ong Hui Guan, director of policy at LTA, explained that the government’s main challenge was to ensure that, over time, the distribution of benefits between commuters and operators remained fair and contributed to the sustainability of the financing system.<sup>73</sup>

In 1996, the government’s white paper on “A World Class Land Transport System” marked a significant shift in the government’s financing approach for the rail system, stating: “the government provides transport infrastructure, commuters pay for the operating cost, while operators extract efficiency dividends within the service standards and fare structure approved by PTC (Public Transport Council).”<sup>74</sup> The white paper outlined three basic financing principles to support the public transport sector, namely: (i) fares have to be

realistic and regularly revised to account for justifiable cost increases; (ii) services must at least recover operating cost; and (iii) provision for depreciation and asset replacement must be adequate. Mah Bow Tan explained that the transport system had to be “affordable not just from the point of view of the commuters but also from the point of view of the nation and the taxpayers.”<sup>75</sup>

Prior to this, public transport operators had to cover operating expenses and full operating asset replacement through fare revenues deposited with the Assets Replacement Reserve. As such, present commuters were paying not only for the cost of direct rail operations, but also for the replacement of assets, an amount that was expected to grow from \$1.6 billion in 1987 to \$6.9 billion by 2017 when the assets on the two existing lines are due for replacement.

The white paper proposed that the government pays for replacement costs above the historical cost of the first set of operating assets, which would continue to be covered by fare revenues from commuters. This revised concept ensured that each generation of commuters would only be paying for the operating assets they consumed. This change also lowered the hurdle for rail projects. Now that LTA was willing to fund the capital costs for projects which would at least break even on operating expenditures, other rail projects became viable, or could be built earlier than previously intended.<sup>76</sup> LTA proposed to apply the evaluation process on a project-by-project basis in order to keep cross-subsidies on operations to a minimum, and that each major project should recover its own operating costs from fares and other revenues.<sup>77</sup> The criterion was applied for all MRT extensions and tilted the balance in favour of economically borderline projects such as the North East Line (NEL), which was expected to cost \$5 billion.<sup>78</sup> However, there remained some concern in the government that the revised definition of operating cost could disguise the fact that there was a subsidy in the MRT system.<sup>79</sup>

On the basis of the 1996 white paper, SMRT was granted a new 30-year LOA for the North-South and East-West Lines as of 1 April 1998. Under the LOA, LTA charged SMRT an annual licence fee of 0.5% of the annual passenger revenue (net of GST and rebates) for the first five years of the LOA, and subsequently 1% from 1 April 2003 to 31 March 2028.<sup>80</sup> SMRT acquired the operating assets<sup>81</sup> from LTA at net book value of approximately \$1.2 billion on 1 April 1998, which was fully paid over five annual instalments by April 2002.<sup>82</sup> At the same time, LTA provided SMRT with an asset-related grant of \$480 million for the replacement of eligible operating assets.<sup>83</sup>



Chinatown MRT Station  
*One of the stations on the North East Line, and  
 as of 2013, also part of the Downtown Line.*  
 Photo courtesy of Khalzuri Yazid

LTA retained ownership of the infrastructure of the North-South and East-West Lines including tunnels, tracks, viaducts and station structures, which SMRT leased for use at a nominal annual fee. SMRT trains have to comply with performance standards on service quality, safety assurance and key equipment performance under the LOA. SMRT is also obliged to repair and maintain the infrastructure under a separate lease and maintenance agreement. SMRT was subsequently privatised through its listing on the Singapore Exchange in 2000 and has grown into a multi-modal public transport service provider, running buses and taxis in addition to its rail operations. A similar LOA to operate the North East Line was awarded in 1999 to SBS Transit, the

largest bus operator in Singapore, creating a duopoly in the rail transport system.

A licence was granted to SMRT to operate the Circle Line for a period of 10 years starting in 2009, with the possibility of extending the license for 30 years. SMRT will be obliged to purchase the operating assets of the Circle Line from LTA at book value on 4 May 2019. In addition, prior to the purchase of the operating assets, SMRT is required to set aside annually \$30 million or 75% of the post-tax surplus derived only from the operation of the Circle Line System (whichever is lower) in a reserve fund account for capital expenditure.<sup>84</sup> The Circle Line has been opened in stages since 2009.

### Adjusting the financing model

The updated Land Transport Master Plan (LTMP) of 2008 reiterated the principles of financial sustainability and affordability of fares to commuters in general.<sup>85</sup> However, it proposed that the financing framework adopt a network approach, instead of a line approach in evaluating new rail lines.<sup>86</sup> The LTMP recognised that future rail lines, being mostly underground, would be more costly to build, operate and maintain.

Mrs. Lim Hwee Hua, the Second Minister for Transport, explained in Parliament in 2010 that this approach would help bring forward the implementation of new rail lines that may not be financially viable on their own, but would fulfil the viability criteria when evaluated on an overall network basis. As the new lines serve the less mature corridors with lower ridership, they would be less profitable than existing lines initially. "Yet, when new lines are added," she pointed out, "they generate positive externalities which benefit the rest of the existing RTS (rapid transit system) network."<sup>87</sup>



# DEVELOPING SINGAPORE'S MRT LINES

YEAR OF OPERATION

1987

**NORTH-SOUTH AND EAST-WEST LINE**



DISTANCE

**93.2** km

COST

**\$5** billion

OPERATOR



2003

**NORTH EAST LINE**



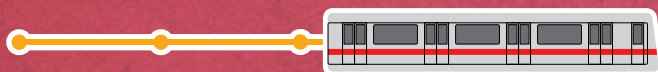
**20** km

**\$4.6** billion

*SBS Transit*

2009

**CIRCLE LINE**



**33.3** km

**\$10** billion



2013

**DOWNTOWN LINE**

Stage 2 - 2015 • Stage 3 - 2017



**42** km

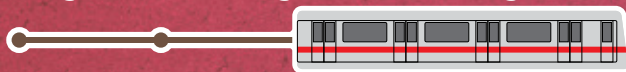
**\$12** billion

*SBS Transit*

2019

**THOMSON LINE**

Stage 1 - 2019 • Stage 2 - 2020 • Stage 3 - 2021



**30** km

**\$18** billion

To be awarded

## EXPANDING OUR RAIL NETWORK (Total distance)

2013 **146.5** km



2016 **215** km



2030 **360** km



Source: Govt approves S\$12b MRT Downtown Line to be built by 2018. Channel NewsAsia, April 27, 2007; Circle Line could cost taxpayers \$10 billion. The Straits Times, August 18, 2009; New MRT, LRT stations opening. The Straits Times, June 18, 2011; Thomson Line to open from 2019 with 22 stations. Channel NewsAsia, August 29, 2012



The Rapid Transit Systems Act was amended in 2010 to implement the LTMP and the Downtown Line became the first rail line under the new regime where LTA, rather than the rail operator, would own the rail infrastructure and operating assets and be responsible and pay for timely replacement and upgrading of operating assets. “If you owned the asset, then you may have a bit more flexibility ensuring that your capacity is more responsive to demand,” explained Ong Hui Guan.<sup>88</sup> The operating assets would be leased to the licensed rail operator and the licence period halved from the previous 30 years to about 15 years starting from 2017, to keep rail operators on their toes as other operators could bid at the end of the licence term.

SBS Transit, which won the tender, would pay LTA an annual licence charge estimated to total \$1.6 billion over a 19-year period, commencing from 2013 when the Downtown Line Stage One was expected to be opened.<sup>89</sup> The licence charge collected would be placed in a Railway Sinking Fund managed by LTA to meet future expenditures on operating assets.

More than \$20 billion (in nominal dollars) has been spent to build up Singapore’s existing 149 kilometres of rail network. Development and capital cost of the various rail lines since 1987 are illustrated in page 52. At the end of 2012, the MRT system was carrying an average ridership of 2.525 million passenger-trips per day.<sup>90</sup>

In December 2011, two major rail service breakdowns occurred on the North-South line, followed by other service disruptions. SMRT and LTA announced in April 2012 a \$900-million systematic upgrade to the oldest North-South and East-West lines to replace and upgrade rail infrastructure components, systems and trains over eight years, including a new signalling system for better reliability and frequency.<sup>91</sup> This would come on top of an annual \$30-million maintenance programme for the two lines.

The government continues to invest heavily in the rail transit network, having committed another \$28 billion to expand the coverage of the rail network by more than 50% to 215 kilometres by 2016.<sup>92</sup> Another \$18 billion has been set aside for the 30-kilometre new Thomson Line<sup>93</sup> to be completed in three stages in 2019, 2020 and 2021. Additional rail lines and extensions will double the city’s rail network from the current 178 kilometres to about 360 kilometres in 2030.

## PUBLIC HOUSING: AFFORDABLE TO HOMEOWNERS AND TO THE STATE

Today, more than 80% of the resident population in Singapore live in public housing. When the PAP government came into power in 1959, the lack of suitable housing had been a key election issue. The government estimated that 250,000 people in the city centre and another 200,000 to 250,000 in squatter settlements around the city fringes would have to be re-housed.<sup>94</sup>

The Housing & Development Board (HDB) was formed in 1960 and quickly got down to the work of providing low-cost public housing. Given the political climate and significance of the housing issue then, Lim Kim San, the first Chairman of HDB (1960-1963), could count on strong backing from the Ministry of Finance (MOF). Capital expenditure on public housing between 1955 and 1960 had totalled \$80 million, with 12,410 flats constructed by Singapore Improvement Trust (SIT) under the colonial government over the 6-year period.<sup>95</sup> In the Development Plan of 1961, the government almost doubled the budget for housing to \$153 million from 1961 to 1964, with a further \$41 million set aside the following year to complete housing projects started in 1964. Housing development accounted for 43% of the total allocated for social development, compared to only 36% set aside for the period from 1955 to 1960.<sup>96</sup> “I didn’t have to worry about cash,” he said. “And I was promised by Goh that money was no problem.”<sup>97</sup>

Even so, Goh believed that a public housing programme should be financially self-supporting, stating: “There are certain principles on which the public housing scheme should be managed if it is not to be a liability to the nation. First, because it is not intended to be profit-making, the scheme should be undertaken by a government authority. But it is essential that, while not making profits, it should give a reasonable return to capital invested. The scheme should not be run on a subsidised basis. Next, it should cater to a large number of people ... to reduce costs to a minimum, design and finishing must be functional and reduced to austere standards. But all the necessities of water, electricity and modern sanitation should be provided. Fourth, an essential factor to cost reduction is mass production of standard types of apartments.”<sup>98</sup>

HDB’s target was to build 51,000 low-cost flats at a cost of \$194 million from 1961 to 1965. Towards the end of 1964, HDB was building a flat every 45 minutes. Having already completed some 40,000 flats, HDB was on its way to surpassing its target.<sup>99</sup>

The public housing programme benefitted from the strong economic growth in the 1960s where GDP grew almost 2.5 times from \$1.968 billion in 1959 to \$4.833 billion in 1969, at a compound annual growth rate of 9.4%.<sup>100</sup> Goh explained: “The government was able to provide adequate funds for public housing without resort[ing] to inflationary methods of financing. The total number of apartments in Housing Board estates increased from 23,091 at the end of 1959 to 211,282 at the end of 1975.”<sup>101</sup>

The government paid particular attention to two aspects of the housing programme, namely, accessibility and affordability. In February 1964, the government announced its policy to encourage Singapore to be a home-owning democracy.<sup>102</sup> The scheme was particularly targeted at the lower- to middle-income groups who were priced out of the private property market. In this context, it was important for HDB to control the cost of building the flats so that the housing programme was affordable to the government, and to devise pricing and payment schemes to make the flats affordable to Singaporeans.

### Keeping Development and Building Costs Low

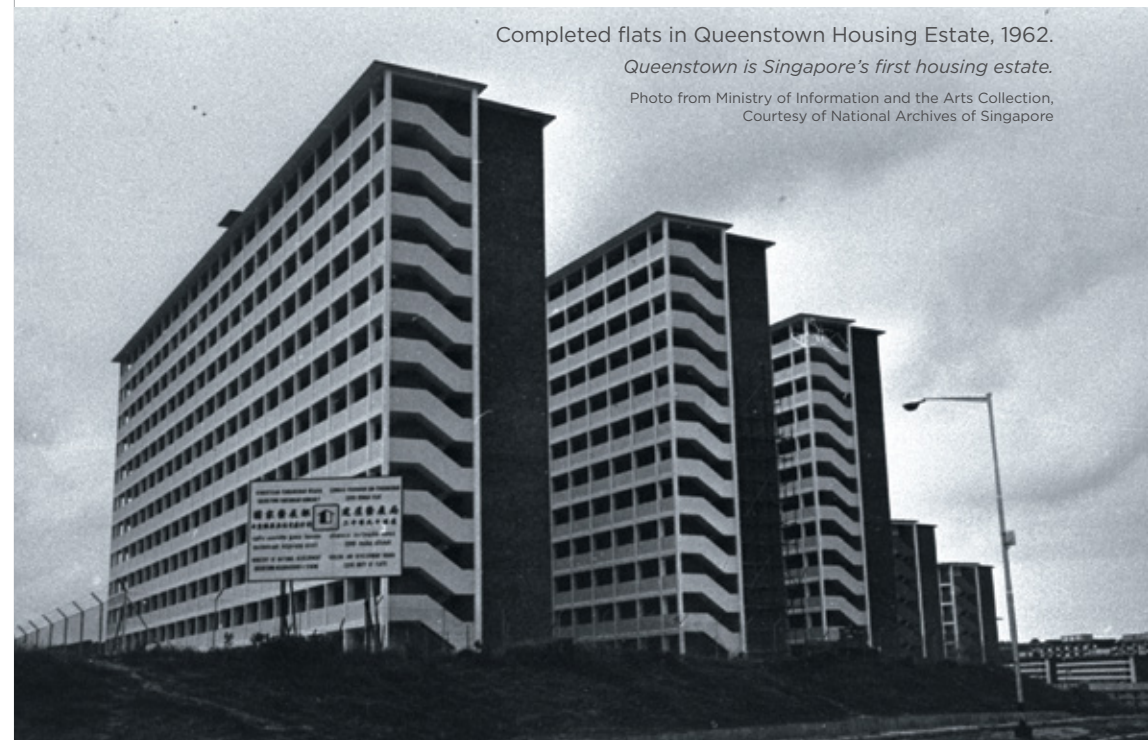
Under the leadership of Lim Kim San, HDB sought to weed out uncompetitive practices in the construction industry, such as cartels for public housing projects, and keep construction costs low. HDB made it known to the construction industry that while the private sector would be allowed to make a profit in the public housing programme, it would not tolerate profiteering and corruption.

HDB dismantled uncompetitive practices such as the restriction of tendering for public housing projects to a small group of registered contractors — tendering was opened up to any company with the ability and track record to do the work. Lim also gave contractors his personal assurance that they would be paid by the first and fifteenth of every month, and that they could raise payment delay issues to him directly. The increased transparency and timeliness in the payment system helped to cut costs. At the same time, HDB did not tolerate poor workmanship and building defects. When Lim saw a block under construction in Margaret Drive which “appeared crooked,” something later confirmed by HDB technicians, the contractor had to re-build the whole flat. “That gave an indication to the contractor that ... we don’t want any fooling around.”<sup>103</sup>

The designs of early HDB flats were deliberately kept simple and standardised so that they could be built quickly (although these

designs later were criticised for lending a monotonous landscape to the early housing estates). HDB kept a tight watch over the prices of building materials such as granite, steel, cement and sand which mostly had to be imported. Building material suppliers were warned against profiteering or collusion. The industry soon realised HDB would take serious action to secure its supply of building materials — in 1963 when quarry workers went on strike, HDB promptly opened its own granite quarries on Pulau Ubin. HDB also actively looked out for innovative ways to keep construction costs low. For example, prefabrication technology was introduced in the early 1980s for the three- and four-room flats in townships such as Hougang, Tampines, Yishun and Woodlands, which reduced the dependence on manual labour and increased on-site productivity.

One other important tool that helped keep costs low was the Land Acquisition Act discussed earlier. Over a 25-year period between 1959 and 1984, the government acquired a significant amount of land — 17,691 hectares<sup>104</sup> or about 30% of Singapore’s total land area (excluding reclaimed land). Of the total land acquired, about half went to HDB.



Completed flats in Queenstown Housing Estate, 1962.

*Queenstown is Singapore's first housing estate.*

Photo from Ministry of Information and the Arts Collection,  
Courtesy of National Archives of Singapore



## Encouraging Home Ownership — Financing Schemes for Housing Purchase

In the early 1960s, HDB offered low interest-rate housing loans with long repayment periods of up to 15 years to encourage more Singaporeans to own their homes. Two- and three-room HDB flats in Queenstown — Singapore's first new town — were priced at \$4,900 and \$6,200 respectively to target the lower-income groups. However, the scheme met with limited success due to the difficulty of financing the housing purchase. Sales of flats did not exceed 2,000 units each year between 1964 and 1967.

Home ownership only started to take off in 1968 when a landmark policy change allowed homeowners to use funds in their CPF social security account for the down payment and monthly instalments towards the purchase of public housing flats under the Home Ownership Scheme. In 1968, the government raised the CPF contributions by employers and employer from 5% to 6.5% to support the national home ownership drive. Then Minister for Foreign Affairs and Minister for Labour, S. Rajaratnam, described the changes to the CPF as “an exercise in social innovation and social transformation ... [which would] revolutionise the pattern of living of our people for the better.”<sup>105</sup> With this, annual CPF collections increased more than four-fold from S\$46.9 million to S\$223.6 million between 1965 and 1971.<sup>106</sup>

Upgrading of HDB estate along Short Street.

*The government continues to undertake upgrading costs in order to keep public housing affordable.*

Photo courtesy of William Cho



In the year the policy was announced, HDB received 8,455 applications for flat purchases, of which 70% came after the new policy kicked in.<sup>107</sup> Between 1965 to 1970, the number of home-ownership flats sold increased to 40,013 units, and the gap with rental flats was fast closing. From 1970 to 1975, more than two flats were bought for every flat rented out. Home ownership of HDB flats continued to outpace rental flats steadily over the next few decades. HDB has built over one million flats in the last 50 years and today, more than 80% of the resident population in Singapore live in HDB flats, of which about 90% own their homes.<sup>108</sup> In 1981, the scheme was extended to the purchase of private residential properties under the CPF Residential Properties Scheme.

The HDB also served as a housing financier by providing mortgage loans to purchasers of new and resale HDB flats. The maximum loan quantum was originally 80% and given on a 15-year term. The maximum loan repayment period was subsequently raised to 20 years in 1970, then to 25 years in 1986, and further to 30 years in 1997. In 2013, the maximum loan quantum was 90% of the flat's price or market value, whichever is lower, and the maximum repayment period was 30 years. Subject to certain conditions, eligible flat purchasers can apply for an HDB concessionary mortgage loan at an interest rate currently pegged at 0.1% point above the prevailing CPF ordinary account savings interest rate.



The HDB concessionary interest rate is revised every quarter, in line with the CPF interest rate revision. To finance its mortgage lending, HDB receives government loans at an interest rate pegged to the prevailing CPF interest rate. The conceptual flow of funds is illustrated in **Exhibit 5**. In more recent years, HDB has also turned to bonds issued in the capital market to finance its housing development programmes.

### Pricing for Affordability and for Financial Sustainability

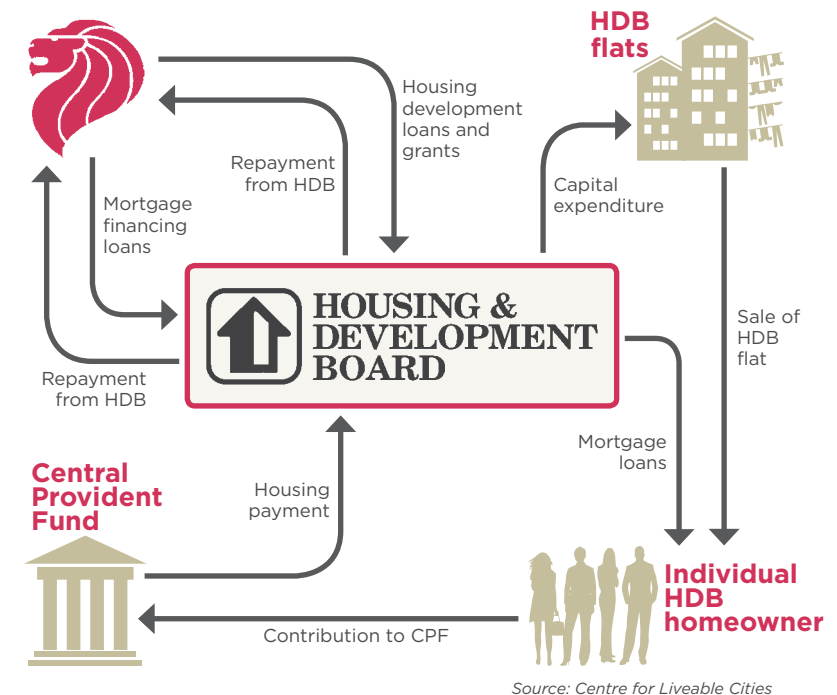
While the government's premise is that public housing is a social good, it has been cautious of over-subsidising HDB flats. The pricing of public housing takes into consideration not just development costs, but also the affordability of these flats to buyers and renters.

Given the scale of the public housing programme, HDB soon realised in the 1960s that it had to adjust the subsidised rental rates for units built in earlier years, such as in Kallang estate, or HDB could go bankrupt.<sup>109</sup> Rents were subsequently pegged at 20% of the average monthly income to ensure that rental remained accessible to the lower income population but did not overburden the government with heavy subsidies.<sup>110</sup> It was not a popular move as Lim Kim San, who had to explain why rent had increased for Kallang estate, recalled. "No matter how you explain why and the rationale behind all this, they [the general public] won't see because their pockets are affected."<sup>111</sup>

In 1994, the government introduced the CPF Housing Grant to assist first-timer families to buy resale HDB flats to set up their homes. The grant is not given in cash but credited into the eligible applicant's CPF Ordinary Account. Subsequently, other housing grants became available to buyers of new and resale HDB flats, subject to the eligibility criteria.

To ensure that the smaller HDB flats in particular remained affordable to Singaporeans, the government priced three-room flats to be affordable for 90% of households in Singapore in terms of income and four-room flats to 70% of households. In this way, the prices of new HDB flats would not rise if incomes did not increase. "When we price our flats, we don't just price them based on our costs," Lim Hng Kiang, then Minister for National Development said. "We price them with an eye on the affordability for those who are purchasing them, and we try to keep that level of affordability the same over the years."<sup>112</sup>

### Exhibit 5: Financing Flow for HDB Flats



HDB measures affordability based on a number of parameters. One measurement is the proportion of household income used to service the housing loan instalment. Internationally, the "rule of thumb" is that this proportion should be below 30% to 35%. Currently, first-time flat buyers of new HDB flats use about a quarter of their incomes to service their monthly loan instalments.

## WATER: PUBLIC PROVISION WITH MARKET PRICING

The Singapore government sets the water tariff at a level that allows full cost recovery, including capital costs. This includes costs incurred in various stages of supplying water, for instance, the collection of rainwater, treatment of raw water and distribution of treated water to customers.

### How the Model for Cost Recovery Developed

An adequate water supply was viewed as part of industrial development infrastructure in the Development Plan and the capital expenditure of \$54.23 million for water over the four-year period (1961 to 1964) was expected to be fully self-funded from the collection of water tariffs.<sup>113</sup> At that time, the water sector was split into three distinct categories — water supply, flood alleviation and sewage — with different potentials for cost recovery.

The Public Utilities Board (PUB) was created in 1963 to take over the functions of water, electricity and gas from the City Council. The loan Singapore took from the World Bank to build the Pasir Panjang 'B' Power Station came with a condition that precipitated PUB's creation and its operating principle of being self-funded — Singapore was required to pass legislation to create a statutory authority to implement the project<sup>114</sup> and “operate on sound commercial basis to annex a return of profits not only to cover maintenance and loan repayments but also to provide for future expansion”.<sup>115</sup> The principle of being self-funding to cover operating and development costs of the water supply is laid out in Section 14 of the Public Utilities Act.

To support the heavy infrastructure investments and promote water conservation, a succession of water tariff increases were implemented from 1966 to the mid-1980s. In November 1966, water tariffs which had remained constant over the past decade, were raised to from 60 cents to 80 cents per 1,000 gallons.<sup>116</sup> Over the next two decades, revisions in the water tariffs came at a steady pace, amidst reports of PUB's hefty capital expenditures and growing profits. For instance, in the early 1970s, PUB had two major projects in progress — the Kranji-Pandan and Upper Pierce schemes — with a combined cost of close to \$150 million.<sup>117</sup> This was triple the four-year capital expenditure budgeted for water supply in the first Development Plan. The sizeable capital outlay was reflected in the increasing cost of water production from 84.5 cents per thousand gallons to 111.8 cents per thousand gallons in 1975 when the two schemes would be completed.<sup>118</sup>

By 1977, capital expenditure incurred by PUB was at \$402 million, a jump of 96% from the previous year.<sup>119</sup> Against a backdrop of growing profits in 1981, Goh Chok Tong, then Minister in charge of PUB, stressed that the surplus was needed to repay outstanding loans (which stood at \$1.2 billion in 1979) and used to finance future capital expenditure, expected to amount to \$2.2 billion over the next five years.<sup>120</sup>

A US\$18 million loan was taken out in 1969 to cover the foreign exchange components of sewerage projects that the World Bank had stipulated, as a condition for the loan, that Singapore had to undertake in order to ensure sustainable investment returns.<sup>121</sup> As a result, a Waterborne Fee began to be levied in 1970, whereby domestic users paid an additional 20 cents per thousand gallons of metered water on top of an existing fee of \$2 per sanitary fitting per month, while non-domestic users were charged 50 cents per thousand gallons of metered water.<sup>122</sup>

Prior to this, revenues collected did not adequately cover the capital and operational costs of the sewerage department, and general tax revenue had to be used to cover the losses. Poorer households were given some relief through exemption from the PUB sales tax which was imposed on bills below \$12 (instead of previous \$10) per month. Despite the new charges, the rate of return on investment was projected to be a modest 2%, but the revenue collected was expected to cover operating expenses plus interest on capital amortisation by 1972. In conjunction with the increase in water charges, the government worked to make modern sanitation available to every home within economic reach.<sup>123</sup> In 1965, only about 45% of the population had access to proper sanitation; by 1997, it was 100%.<sup>124</sup>

When the electricity and gas sectors were privatised, PUB was reconstituted as the national water agency responsible for managing all of Singapore's water assets, merging with the sewerage and drainage departments under the Ministry of Environment in 2001.<sup>125</sup> With this new set up, there was the issue of financing capital and operating costs for the used water network (PUB's term for sewage), as well as the transfer of drainage and used water assets from the government to PUB at market value. This could have potentially resulted in hefty increases in the used water tariff. However, the government eventually decided that work of a developmental nature carried out by PUB on the sewerage networks would be deemed as a public good and, therefore, would be funded by government grants from general tax revenues.<sup>126</sup> On the other hand, the operating and maintenance cost of treating used water would continue to be funded through the Waterborne Tax<sup>127</sup> collected by PUB.

## Pricing Water Right

Water consumption, which had averaged 88 million gallons per day in 1966, had risen by 30% to 114 million gallons by 1972. Domestic users consumed about half of the water supply, but more worryingly for PUB, 10% of domestic consumers used more than 36% of total domestic water consumption. The existing tariff structure was unsustainable, as it priced water at a flat rate of 80 cents per thousand gallons, which meant that PUB was effectively subsidising every consumer rather than incentivising prudent use.

In 1973, the government decided to introduce a four-tier domestic water tariff system to encourage water conservation:

Level of Water Usage	Cost per Thousand Gallons <sup>128</sup>
Up to 5,500 gallons	\$1.00
5,000 to 11,000 gallons	\$1.18
11,000 to 16,500 gallons	\$1.50
More than 16,500 gallons	\$2.00

In announcing the new tariffs, Lim Kim San, who was then Environment Minister and PUB Chairman, was careful to explain that the purpose was to encourage people to save water, rather than to collect more revenue.<sup>129</sup> To demonstrate this, the government raised the tax concession on PUB bills from \$12 to \$20. Tiered pricing was extended to the non-domestic sector eight years later. Water tariffs were subsequently revised upwards several times. Not unexpectedly, consumers found the hikes hard to swallow.<sup>130</sup>

However, the government realised that charging cost recovery rates, while covering the cost of meeting water demand, was not an accurate reflection of the marginal cost of supply, since water is a scarce resource. As such, in 1991, the Water Conservation Tax (WCT) was levied on top of the water tariff to reflect the scarcity value of water. Then, in 1997, PUB conducted a pricing review, which concluded that the full cost of production and supply of water should be recovered through the water tariff. The water price should also reflect the opportunity cost of supply by taking into account the cost of the “next drop” of water. The benchmark for the “next drop” in 1997 was set against the cost of water desalination. This concept of marginal cost pricing was to form the basis for the restructuring of the water-pricing framework in Singapore.

In 1997, the water pricing structure underwent a significant overhaul such that, by 2000, the tariff for domestic users was increased to be on par with that paid by non-domestic users. This restructuring exercise was also a step towards removing cross-subsidies between domestic and non-domestic users.

In 2002, Singapore successfully introduced reclaimed water — dubbed “NEWater” — as part of the country’s water supply. The challenge was to price NEWater low enough to attract industrial users such as wafer fabrication plants, but not too low that it would inadvertently encourage wastage. NEWater was eventually priced based on cost recovery at \$1.30 per cubic metre. When PUB ramped up NEWater capacity, cost benefits from improving operational efficiencies and economies of scale were passed along to consumers. The price of NEWater was lowered to \$1.15 per cubic metre in January 2005 and subsequently to \$1.00 per cubic metre in April 2007. In the most recent review carried out in 2010, the price of NEWater was gradually raised to \$1.22 per cubic metre in 2012.

The current water pricing formula in Singapore is based on: (i) the water tariff that accrues to PUB to fund operating expenditures, (ii) the Water Conservation Tax that accrues to the government’s revenue pool and can be used to fund national projects, and (iii) the Waterborne Fee and Sanitary Appliance Fee that are used to offset the costs of treating used water and for operating and maintaining the network. For potable water, domestic consumers face an increasing block tariff, while non-domestic and shipping consumers are charged a uniform volumetric rate. The Water Conservation Tax is imposed as a percentage of the total water consumption. The Waterborne Fee is charged based on the volume of water supplied to premises and the Sanitary Appliance Fee is a fixed component based on the number of sanitary fittings in each premise.

This pricing model for water has enabled PUB to largely self-finance its operating costs and some capital expenditures. In FY2012, PUB’s group operating income amounted to just above \$1 billion. In that year, PUB invested \$265.4 million in capital expenditure as it continued to replace, improve and grow its various water assets. This capital expenditure to develop Singapore’s water supply was funded out of PUB’s internal financial resources. However, capital expenditure for the used water network infrastructure and drainage was funded directly by the government. In FY2011, this amounted to \$348.8 million.



# PRICING WATER RIGHT

## Singapore's Water Pricing Formula

### The Four Components of Water Pricing

- 1 **Water Tariff**
- 2 **Water Conservation Tax**
- 3 **Waterborne Fee**
- 4 **Sanitary Appliance Fee**



### Pricing Mechanism

**MARGINAL PRICING BASED ON AMOUNT OF WATER CONSUMED**

**PERCENTAGE OF TOTAL WATER CONSUMED**

**FIXED FEE BASED ON VOLUME OF WATER SUPPLIED**

**\$0.30/m<sup>3</sup>**

**FIXED FEE BASED ON NUMBER OF SANITARY FITTINGS**

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### Recipient of Funds

**PUB'S OPERATING EXPENDITURE**

**GOVERNMENT'S REVENUE POOL**

**WATER PROCESSING FEES + MAINTENANCE OF WATER NETWORKS**



PUB also receives grants from the government for projects under the Active, Beautiful, Clean Waters (ABC Waters) Programme and for operating costs of certain water infrastructure assets. Approximately half the cost of the \$3.65 billion Deep Tunnel Sewerage System (DTSS) Phase I — specifically, the first of two long deep sewerage tunnels crisscrossing Singapore — was funded by grants from the government. The remaining costs for the centralised water reclamation plant were funded by PUB.

NEWater Visitor Centre.

*School children interacting with displays to learn about the desalination process.*

Photo courtesy of NEWater Visitor centre, via Shaun Wong



# CONCLUSION



Because we took the difficult decisions early, we have established a virtuous cycle – low expenditure, high savings; low welfare, high investments<sup>131</sup>

Lee Kuan Yew, First Prime Minister of Singapore

The Singapore government's commitment to long-term fiscal prudence has remained a consistent theme underlying its disciplined approach to the management of its finances for infrastructure development. This has manifested over time in the institutionalisation of fiscal rules in the Constitution, as well as in the development of government financial management policies that seek to sensitise public agencies to the full costs of providing public infrastructure and services and to incentivise efficiency gains, even in areas where significant government subsidies are provided.

In addition, public infrastructure, service provision and management have been devolved over time to statutory boards, which are given significant financial and operational autonomy. This has allowed for greater flexibility to respond to changes in the operating environment. Greater operational and cost efficiencies have also been reaped through the encouragement of private sector participation in the provision of public services.

Singapore faces an evolving set of challenges ahead in public sector infrastructure financing. Long-term demographic trends and economic imperatives will require the improvement and expansion of the public infrastructure. Spending on social areas is also expected to rise as the government works to address key issues such as income inequality and the ageing population. At the same time, there is a need to keep the overall tax structure competitive and preserve a low tax burden for lower- and middle-income Singaporeans. The government will thus have to continue to find innovative and sustainable ways to meet its future public infrastructure financing needs.

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- <sup>21</sup> Ong, Teng Cheong. *Oral History Interview by Ee Boon Lee, Political History in Singapore 1965-1985* (transcript), Accession number 00794/3, Oral History Centre, National Archives of Singapore, June 19, 1987, pp 27-28.
- <sup>22</sup> Lim, Siong Guan. *Interview with Centre for Liveable Cities* (unpublished transcript), November 26, 2012.
- <sup>23</sup> In 2009, the Singapore Government had sought and obtained the President's approval to draw \$4.9 billion from Past Reserves, to fund the Jobs Credit Scheme and the Special Risk Sharing Initiative under the Resilience Package. The actual amount drawn for these two schemes was \$4 billion, less than expected. In 2011, the Government decided to put this amount back into Past Reserves.
- <sup>24</sup> Refer to <http://www.istana.gov.sg/content/istana/thepresident.html> for more information on the responsibilities of the elected presidency.
- <sup>25</sup> Part of net investment income from Singapore's reserves are taken into the budget, comprising of dividends, interest and other income received from investing Singapore's reserves, as well as interest received from loans, after deducting expenses arising from raising, investing and managing the reserves.
- <sup>26</sup> Comprising up to 50% of the Net Investment Returns on the net assets managed by GIC and MAS, and up to 50% of the investment income from the remaining assets (which includes Temasek).
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## APPENDIX A

### Governance Tools of Singapore's Public Financing for Infrastructure and Services

#### (I) Legal Instruments

Tool	Description
Development Fund Act	<ul style="list-style-type: none"> <li>First enacted in 1953 to establish the Development Fund administered by the Ministry of Finance (MOF).</li> <li>Funds the government's direct development expenditure for the construction, improvement, acquisition or replacement of capital assets, land acquisition; as well as grants and loans to, or investments in, any public agency or corporation for such purposes.</li> <li>Sources of Development Fund include (i) moneys appropriated from the Consolidated Fund; (ii) proceeds of any loan raised for the purposes of the fund; (iii) interest and other income from investments of the fund and profits arising from realisation of any such investments; and (iv) re-payments of any loans made from the fund or payments of interest on such loans.</li> </ul>
Development Loan Act	<ul style="list-style-type: none"> <li>Enacted in 1959 as the Development Loan (Local) Ordinance, revised a number of times, the latest being in 1987.</li> <li>The Monetary Authority of Singapore (MAS) acted as the fiscal agent of the Singapore government and was empowered by the Development Loan Act to undertake the issue and management of government securities on behalf of the government. Proceeds of such loans raised were required to be paid into the Development Fund and applied to the purposes of the Fund.</li> </ul>
Land Acquisition Act	<ul style="list-style-type: none"> <li>Enacted in 1966 to replace the Land Acquisition Ordinance.</li> <li>Allowed the government to acquire private land for public use and purposes at relatively low prices.</li> <li>Amended in 1973 to set compensations to be assessed at market value as at November 30, 1973. Statutory date for pegging compensation subsequently amended a number of times.</li> <li>In 2007, the Act was amended to allow use of prevailing market rates for acquisitions.</li> </ul>
Constitution of the Republic of Singapore	<ul style="list-style-type: none"> <li>Singapore's Constitution was amended in 1991 to incorporate an Elected President with financial responsibilities in the safeguarding of Singapore's past reserves.</li> </ul>



**(II) Executive Policies**

Tool	Description
<b>Public Financing Tools</b>	
Government budgeting system	<p>The government shifted away from traditional line-item budgeting in 1978 to the Programme Budgeting System, which allowed ministries greater flexibility to move resources within programmes, and allowed the evaluation of results of the programme against its stated intent.</p> <p>MOF introduced the block vote budgeting framework in 1989 to give ministries greater flexibility to reallocate their operating budgets within the pre-determined ceiling. Under the framework, each ministry's expenditure was also fixed as a percentage of GDP so as to balance total expenditure and operating revenues.</p> <p>In 1996, the government moved to an extension of the block budgeting system - Budgeting for Results. Each ministry was allocated a certain amount of funding to achieve certain pre-specified outputs, deliverables and performance targets for greater accountability.</p> <p>In 2000, the government moved to the current Block Budget framework where overall medium-term budget caps are set for each ministry in a process of negotiation with MOF in order to balance the budget within each term of government. Ministries are guaranteed a certain baseline budget, and their budget growth is tied to Singapore's economic performance. This framework is combined with a focus on the strategic outcomes to be achieved by each ministry and cluster, while allowing ministries to manage the outputs needed to achieve the identified strategic outcomes.</p>
Financing through external borrowings and capital markets	<p>The bulk of Singapore's Development Fund was initially formed by domestic and external loans raised by the government and supplemented by government revenues. External borrowings from the UK government and development banks such as World Bank and Asian Development Bank were focused primarily on productive investments to support economic development. Government external debt peaked in 1978 to support infrastructure development before steadily declining. Statutory boards are encouraged to tap on capital markets for infrastructure financing needs, in line with government's efforts to develop Singapore bond's market.</p>
Government fees and charges framework	<p>Fees for goods and services provided by ministries and statutory boards linked to expenditure incurred in providing the good or service, and priced at full cost recovery. Exceptions are made in cases where fees are set higher than cost to discourage usage, or where fees are set at below cost to subsidise a merit good or service. MOF relies on three key principles namely "user pays" (fees and charges should be recovered from user/consumer directly and cross subsidies should be avoided); "yellow pages" rule (the public sector should review if it should provide goods and services already provided by the private sector); keeping pace with cost changes (fees and charges should be adjusted in line with cost changes while striving to keep costs as low as possible).</p>

Tool	Description
<b>Project Assessment</b>	
Development Planning Committee (DPC)	<p>Public sector development projects above \$80 million carried out by ministries, departments, or statutory boards are reviewed by the Ministry of Finance and must be approved by the DPC, which comprises the Minister for Finance, the Minister for Trade and Industry and the minister of the proposing ministry. The DPC approval process helps to ensure that project budgets are in line with general cost norms and that other value-for-money alternatives have been considered.</p> <p>In 2010, MOF introduced a more stringent "gateway" approval process for high value projects to further strengthen the cost management of mega development projects. Under the new approval process, projects with value greater than \$500 million or are complex in nature, are subject to staged approvals for concept and design.</p>
Development Projects Advisory Panel (DPAP)	<p>DPAP's role is to examine the specifications and designs of mega development projects at early stages of project conceptualisation and design development. It comprises senior current and former public servants and industry practitioners with deep infrastructure project development experience and expertise.</p>
<b>Others</b>	
Public-Private Partnership (PPP)	<p>Formally adopted by MOF as a procurement model only in 2004, with eight PPP contracts awarded so far.</p>

### (III) Institutions

Tool	Description
Ministry of Finance (MOF)	As a central agency, the MOF's mission is to build a better Singapore through finance as a key lever. The key strategic outcomes that it seeks to achieve are sound public finances, growth with opportunity for all, and a high performance government.
Central Provident Fund (CPF) Board	Statutory board under the Ministry of Manpower which serves as trustees for the CPF savings of members. CPF mandatory savings scheme is a social security scheme financed by payroll contributions from both employers and employees. CPF contributions are also used selectively to help meet Singapore's social and economic objectives.
Centre for Public Project Management (CP2M)	Department under MOF to provide advisory services on project design and management to public sector agencies, especially those lacking in-house capabilities. In addition to helping agencies scope their development proposals and identify project risks and put in place mitigating measures, CP2M also serves as a central repository of knowledge to help build project management capabilities in public sector agencies.
Public Works Department (PWD)	<p>Born out of the Public Works and Convicts set up by the colonial government in 1833, the Public Works Department was formally established in 1946 and was responsible for developing much of the public infrastructure in Singapore such as roads, expressways and bridges, street lighting, public buildings, and national infrastructure such as Paya Lebar International Airport and National Library Building, etc. Over the years, many of the functions of PWD were merged or hived off to various statutory boards, or corporatised.</p> <p>The PWD was broken up and portions of it corporatised in 1999. Many of the functions of PWD such as Building Control Division (later merged into Building and Construction Authority), Roads and Transportation Division (later merged into Land Transport Authority), Parks and Recreation Department (later merged into National Parks Board) were hived off to various statutory boards. The corporatised component was renamed CPG Corporation in 2002 before being sold to Downer EDI Group a year later.</p>
POSB	Established to promote thrift by the Singapore government in 1966 and formally become a statutory board in 1972. POSB was a source of domestic financing for national infrastructure projects. It was later corporatised and acquired by DBS Bank in 1998.





# FINANCING A CITY: DEVELOPING FOUNDATIONS FOR SUSTAINABLE GROWTH

The early years of self-government in Singapore were focused on building physical infrastructure for economic and social development, while improvements and expansions to housing, health, education and sewerage systems had to keep pace with a fast-growing population. In financing these projects, the government stuck to the principle of self-reliance, creating the necessary financing frameworks and institutions along the way. This study reviews the development of public infrastructure and services in Singapore, identifying the broad principles this city adhered to in financing infrastructure development and ensuring its long-term sustainability. It includes three case studies, drawn from public transport, public housing and water supply, to provide insights on the evolution of financing principles.

*“For a country without significant natural resources, Singapore has remained disciplined in its management of public finances. We have, in our Constitution, fiscal rules to protect our reserves. Our government financial policies also sensitise public agencies to the cost of providing public services... I hope that Financing a City: Developing Foundations for Sustainable Growth will help many spur new ideas on financing infrastructure and services needed by a city.”*

Peter Ong, Head of Civil Service

