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Public Housing In Singapore: A Success Story In Sustainable Development

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Public Housing in Singapore: A Success Story in Sustainable Development

Lye Lin-Heng¹

1. INTRODUCTION

The 17 Sustainable Development Goals (SDGs) adopted in 2015 by the United Nations General Assembly emphasize a holistic approach to achieving sustainable development for all. They include good health and wellbeing (SDG 3); clean water and sanitation (SDG 6); affordable and clean energy (SDG 7); and sustainable cities and communities (SDG 11). The provision of good-quality housing with piped water and modern sanitation at affordable cost is an important first step in resolving issues of pollution and ensuring good public health, and is a strong move towards sustainable development.

Singapore – a tiny and densely populated² city state at the crossroads of Southeast Asia – has won numerous awards for its public housing, which is among the best in the world.³ Eighty-two per cent of its nationals live in apartments that are subsidized by the state and purchased on 99-year leases from a statutory board, the Housing and Development Board (HDB). Due to constraints in land space, these apartments (called ‘HDB flats’) are in high-rise buildings. What is different from most other public housing schemes is that public housing in Singapore caters for the needs of not only low-income families, but also the middle-income group. While HDB flats were extremely basic in the early years, today they range from simple apartments to beautiful landscaped communities with swimming pools, tennis courts and other facilities. The focus today is on ‘smart homes of the future’⁴ and efforts are also made to ensure that they are environmentally friendly. Singapore also has one of the highest rates of home ownership in the world (92 per cent). In 2010, the HDB received the UN-HABITAT Scroll of Honour Award ‘for providing one of Asia’s and the world’s greenest, cleanest and most socially conscious housing programmes’.⁵ The HDB also won a UN Public Service Award in 2008 for its Home Ownership Programme, which has housed over 80 percent of the population and helped more than 90 per cent of those it houses to own their own homes.⁶ The World Bank in its annual World Development

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² Singapore has a land area of 720 square kilometres and a population of 5.6 million (2017); its population density is 7796 per square kilometre.

³ A Jhas, “‘But what about Singapore?’ Lessons from the ‘best public housing program’ in the world”, *World Bank* (31 January 2018), <http://blogs.worldbank.org/sustainablecities/what-about-singapore-lessons-best-public-housing-program-world>.

⁴ See HDB, Annual Report (2017–18), www20.hdb.gov.sg/fi10/fi10221p.nsf/client/hdb/ar2017-18/index.html#.

⁵ See HDB, ‘Past Achievements’, www.hdb.gov.sg/cs/infoweb/about-us/achievements-and-accolades/achievements/past-achievements.

⁶ See HDB, ‘Public Housing – A Singapore Icon’, www.hdb.gov.sg/cs/infoweb/about-us/our-role/public-housing--a-singapore-icon.

Report for 2009 held up Singapore as a model country that had transformed itself from a slum-infected colony to a world-class city.⁷

Singapore's transformation from a squalid third-world Crown colony in the 1950s to a first-world hub in the space of some 40 years is remarkable, to say the least. Colonized by the British in the early nineteenth century, it was conferred self-government in 1959, joined Malaysia for a brief period (1963–65) and became an independent state on 9 August 1965. Today, its per capita income (which in 2017 stood at S\$76,863 (US\$56,248))⁸ exceeds that of Japan (US\$48,557 in 2017)⁹ and it is one of the richest countries in Asia.

In the context of environmental management, Singapore has achieved the rare distinction of successfully cleaning up its environment while simultaneously pursuing economic development.¹⁰ As Singapore's rivers were cleaned up and a sound system of waste collection and incineration was established, Singapore's leaders placed great emphasis on the provision of modern housing for its citizens. Indeed, the provision of housing with modern sanitation is an important step towards sound environmental management and governance. The best water pollution control laws will not work if the population continues to defecate into rivers and streams because they have no alternatives.

This chapter examines the provision of public housing in Singapore; the challenges that were faced and overcome; and the policies and strategies effectively designed and implemented by the HDB.

2. THE EARLY YEARS

When Singapore attained self-government in 1959, it faced the serious problems of a rapidly growing population, a high unemployment rate and a critical shortage of sanitary housing. Most of the population were housed in slums and informal settlements with poor sanitation and no piped water or basic facilities. Fires often broke out in these squatter colonies;¹¹ and malaria, tuberculosis, typhoid and cholera were common. Indeed, the housing problem had become very acute at the start of the twentieth century; but it was only in 1927 that the Singapore Improvement Trust (SIT) was established.¹² The SIT built some 20 907 units of public housing flats in the 12 years from 1947 to 1959. However, this was not sufficient to house Singapore's 1.6 million population at that time and some 750 000 were still without proper homes.¹³ There was thus an urgent need for sanitary and affordable housing. At the same time, steps were taken to discourage large families, with the passing of the Singapore Planning and Population Board Act in December 1965. The Board launched campaigns advocating family planning,

⁷ See World Development Report, *Reshaping Economic Geography* (World Bank 2009) 215.

⁸ See *Singapore in Figures 2018* at p 2, www.singstat.gov.sg/-/media/files/publications/reference/sif2018.pdf at the exchange rate of SGD\$1 to USD\$0.73

⁹ Trading Economics, 'Japan GDP per capita' (2018), <https://tradingeconomics.com/japan/gdp-per-capita>.

¹⁰ See Ministry of the Environment, *Singapore – My Clean and Green Home, 25th Anniversary Book* (Ministry of the Environment 1997).

¹¹ See W Fernandez, *Our Homes – Fifty Years of Housing a Nation* (HDB 2011) ch 1.

¹² The SIT was established by the colonial government to improve the infrastructure of Singapore. Stephanie Ho, 'Singapore Improvement Trust' (Singapore Infomedia 2016),

http://eresources.nlb.gov.sg/infopedia/articles/SIP_2016-03-14_142655.html.

¹³ 'Public Housing – A Singapore Icon' (n 6).

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and in the early 1970s it began urging families to have only two children.¹⁴ In February 1960, the newly elected government set up a new housing authority, the HDB.¹⁵

The HDB is a statutory board constituted under the Housing and Development Board Act.¹⁶ It replaced the SIT. The HDB was tasked with building large quantities of low-cost housing (flats or apartments) with modern sanitation and facilities. At least 15 000 new homes were needed each year. The HDB first had to obtain the land on which to build these flats. This was facilitated by provisions in the Land Acquisition Act, which will be examined below, and well-crafted policies to clear the land of squatters. In five years, by 1965, the HDB had built 54 000 flats; and in ten years, by 1970, it had built a total of 121 000 flats.¹⁷ The HDB obtains its operating funds in the form of low-interest loans from the government. It also receives a substantial annual subsidy from the government's budget. In the early years, this was between 1 and 2 per cent of the government's main operating expenditure.¹⁸

The early HDB flats were designed to be simple and utilitarian, to optimize space usage and keep costs low. Ease of construction was another important factor, as homes had to be completed quickly to rehouse those who were still living in unhygienic squatter settlements.¹⁹ They were one, two or three-roomed flats with the barest of necessities (electricity, piped water and modern sanitation). They were high-rise apartments, but not all floors were provided with lifts. However, each flat had piped water and modern sanitation facilities, and the housing crisis was largely resolved within ten years of the creation of the HDB. It was only in the mid-1960s that the HDB began planning and working on new satellite towns, starting first with Toa Payoh. These satellite towns were envisioned as self-contained communities with their own housing, offices, schools, hawker centres²⁰ and transport facilities. Less than half (41 per cent) of the land would be used for housing, thus allowing for space to be set aside for facilities that would be required in an integrated town.²¹ In the 1970s, neighbourhoods were subdivided into smaller units called 'precincts' of about 700 to 1200 flats each. In 1978, residents' committees were set up, to encourage HDB residents to be more involved in their estates and serve as a means of communication between residents and the HDB. One residents' committee would be set up for every five to ten blocks, or about 1500 flats. The residents' committees sought to capture the village or '*kampong*' spirit of integration and community self-help. In 1986, town councils²² were set up to take over the running of HDB estates. Later, community development councils were set up, led by members of Parliament and community groups.

¹⁴ See 'Singapore Planning and Population Board is established', <http://eresources.nlb.gov.sg/history/events/0b5c578a-f160-4958-97b0-;> 'Two child policy', http://eresources.nlb.gov.sg/infopedia/articles/SIP_2016-11-09_103740.html.

¹⁵ See AK Wong and SHK Yeh, *Housing a Nation – 25 Years of Public Housing in Singapore* (HDB 1985). See also WJM Ricquier, 'Public Housing Law in Singapore' (1987) 8 *Urban Law and Policy* 313; Tan Sook Yee, *Private Ownership of Public Housing in Singapore* (Times Academic Press 1998).

¹⁶ Singapore Statutes, c 129 (formerly the Housing and Development Ordinance) (Ord 11 of 1959).

¹⁷ 'About Us' (HDB), <https://hdb.gov.sg/cs/infoweb/about-us>.

¹⁸ See Wong and Yeh (n 15) 6.

¹⁹ 'Public Housing – A Singapore Icon' (Housing and Development Board), <https://hdb.gov.sg/cs/infoweb/about-us/our-role/public-housing--a-singapore-icon>.

²⁰ These are places that sell cheap cooked food, catering to the diverse population of Singapore who live in HDB estates. They house persons who used to 'hawk' food along the streets. For reasons of sanitation, this itinerant method of selling food has not been allowed for many years. Instead, these sellers are brought together in a 'hawker centre' and are subject to careful health checks by the Ministry of Environment.

²¹ See Fernandez (n 11) 67.

²² See the Town Council Act, c 329A, 2000 Rev Ed.

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In the early years, the flats were not sold, but rented to families at low rents. A fundamental change in policy was initiated in 1964: the Home Ownership Scheme.²³ This aimed to forge nation building and community development for a multi-racial society. The assumption behind it was that citizens who owned their homes would fight and defend their country. The year 1968 saw another major policy change: allowing buyers of flats to use their savings in the Central Provident Fund (CPF)²⁴ to pay for their flats. The CPF is a compulsory comprehensive savings plan for working Singaporeans and permanent residents, primarily to fund their retirement, healthcare and housing needs. It is an employment-based savings scheme, with employers and employees contributing a mandated amount to the CPF each month. The amount that each party must contribute depends on the age of the employee.²⁵ As an example, an employee aged 55 or below must contribute 20 per cent of his or her wages, while the employer contributes 17 per cent. This means that a total of 37 per cent of the employee's wages goes into the CPF. Home owners are allowed to use their CPF savings to pay for their flats. This has greatly facilitated home ownership, of both private and public housing.²⁶

2.1 Land Tenure and Land Acquisition

To facilitate the development of new homes, land had to be acquired by the state and consideration given to the nature of tenure. In these areas Singapore has not followed the conventional path of short-term public housing or promoted long-term private land ownership. Instead, the government established a public housing authority (the HDB), which sold apartments (called 'HDB flats') to citizens and permanent residents on 99-year leases. Short-term tenancies of two years' duration (renewable) are also available for families that cannot yet afford to purchase 99-year leases.²⁷ In this section, the relatively unusual approach to land tenure and acquisition taken by the Singaporean government is explored.

As a Crown colony, Singapore received English law as it existed on 26 November 1826, via the Second Charter of Justice.²⁸ Thus, the concepts of freehold and leasehold land were imported into Singapore. The early grants from the Crown were grants in fee simple and the State Lands Act introduced the estate in perpetuity. However, the state also sells leasehold land –often for 999 years or 99 years for commercial or residential property, and 30 or 60 years for industrial properties. Since 1967 all lands sold by the state are on 99-year leases.²⁹

²³ 'HDB begins selling flats under Home Ownership Scheme', http://eresources.nlb.gov.sg/infopedia/articles/SIP_2016-11-09_103740.html. See also Wong and Yeh (n 15) 251.

²⁴ Central Provident Fund Act, c 36, 2013 Rev Ed; original enactment Ordinance 34 of 1953. See CPF Board (29), <https://www.cpf.gov.sg/members>.

²⁵ 'CPF Contribution and Allocation Rates' (CPF Board), www.cpf.gov.sg/Employers/EmployerGuides/employer-guides/paying-cpf-contributions/cpf-contribution-and-allocation-rates.

²⁶ Per Lee Kuan Yew, in Fernandez (n 11) 57: 'The aim was to give everybody a stake in the country – 100 per cent home ownership, whether it is HDB flat, condo or landed property.'

²⁷ These are called 'rental flats' to distinguish them from flats that are purchased on 99-year leases.

²⁸ See Ricquier (n 15) 314; Yee (n 15) 5.

²⁹ NJ Sen, 'A 99-year leasehold flat is an owned asset, not a rental: Lawrence Wong', *The Straits Times* (21 August 2018), www.straitstimes.com/singapore/a-99-year-leasehold-flat-is-an-owned-asset-not-a-rental-lawrence-wong.

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Singapore's Constitution has no provision on the environment; nor is there any provision on the protection of property. When Singapore was part of Malaysia (1963–65), there was constitutional protection for property, as Article 13 of the Malaysian Constitution states:

No person shall be deprived of property save in accordance with law. . .

No law shall provide for the compulsory acquisition of property without adequate compensation. . .

When Singapore separated from Malaysia on 9 August 1965, Article 6 of the Republic of Singapore Independence Act 1965 stated that Article 13 of the Malaysian Constitution 'shall cease to have effect'. In moving the second reading of the Constitution (Amendment) Bill, Prime Minister Lee said that:

land reforms were not possible, if the strict tenor of the words were to be complied with. . .
Once we spell out that no law shall provide for the compulsory acquisition or use of property without adequate compensation, we open the door for litigation and ultimately for adjudication by the Court on what is or is not adequate compensation.³⁰

It was also noted in Parliament that increases in land values may be due to improvements made by the government and thus should not be windfalls for the landowners. Instead, it was preferable for the benefits to be shared by all. The Land Acquisition Act³¹ was soon passed in 1966.³²

The power to acquire land is given by Section 5. This provides that whenever any particular land is needed for any public purpose, or by any corporation or statutory board, for any work or undertaking which, in the opinion of the Minister, is of public benefit, of public utility or in the public interest, or for any residential, commercial or industrial purposes, the President may declare a notification in the *Government Gazette* which 'shall be conclusive evidence that the land is needed for the purpose specified therein'.³³

Section 33 lists the matters that the Collector of Land Revenue (and, on appeal, the Appeals Board) will take into account in awarding compensation for land acquisition. In the early years, this would include, most significantly, 'the market value as on 30th November 1973. . . or the market value at the date of the section 5 declaration. . . whichever is lower.'³⁴ This was introduced by the Land Acquisition (Amendment) Act in 1973, to curb speculation. Thereafter, the Act was amended in 1988, 1993 and 1995, with each amendment changing the date of valuation to a date stated by Government Gazette (1 January 1986, 1 January 1992 and 1 January 1995, respectively), but always providing that compensation was to be pegged to the value of the acquired land at that particular date or the market

³⁰ Singapore Parliamentary Debates, 1965 Vol 25 Col 1051. See also a discussion in Parliament to pass a new Bill on Land Requisition in 1963, when Singapore was part of Malaysia. Prime Minister Lee stated: 'The two broad principles behind this Bill would be: Nobody should benefit from development at public expense; and the price paid should not be higher than what the land would have been worth had there been no government development.' It was acknowledged that 'the constitutional hitch would be the Malaysian constitutional provision that no land or property can be acquired or requisitioned without adequate compensation'; <http://eresources.nlb.gov.sg/newspapers/Digitised/Article/straitstimes19631217.2.52>.

³¹ Act 41 of 1966, Cap 152, 1985 Rev Ed (Singapore).

³² For a more detailed account of land acquisition, see Fernandez (n 11) 40–44.

³³ S. 5, Land Acquisition Act

³⁴ Land Acquisition (Amendment) Act, No. 66 of 1973 (emphasis added). See Bryan Chew et al, "Compulsory Acquisition of Land in Singapore – A Fair Regime?" (201) 22 SAclJ 166-88 at 171-2.

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value at the date of acquisition, ‘whichever is lower’.³⁵ Effectively, these dates were the dates of the last property depression.

The market value is determined on the basis of its existing use or its zoning under the master plan of the land, whichever is lower. No account is taken of any potential value of the land for any other more intensive use, thus ignoring the potential value of the land for future development. In the early years, most of the private lands acquired contained dilapidated properties, were occupied by small-scale farmers or were ‘neglected land where squatters had mushroomed’.³⁶ The HDB established a Resettlement Department, which administered a system for clearance of all occupants. This system was preceded by a careful census survey of the site detailing the particulars of all persons on that site, who were then resettled into public housing.³⁷

Thus, through these provisions, the government was able to acquire lands – including lands for public housing – for less than the market value at the time of acquisition.³⁸ It has thus been emphasized that ‘the powers bestowed by the Land Acquisition Act greatly facilitate the work of bodies such as the HDB’.³⁹

By 1985, the government had become Singapore’s biggest landowner, owning 76.2 per cent of the land, compared with 31 per cent in 1949. However, since April 2007, landowners whose lands are acquired are paid market value compensation under the Act.⁴⁰

3. HOME OWNERSHIP IN SINGAPORE – A TOOL TO SHAPE SOCIETY

The objectives of public housing have changed over the years. While in the early years, it was intended to provide basic shelter to the poor, this has since evolved to the provision of good housing for both lower-income and middle-income groups. The emphasis is on home ownership.⁴¹ This has been achieved with great success through the implementation of several major policies, which will be examined below.

Today, more than 1 million flats have been completed in 23 towns and three estates. HDB flats house over 80 per cent of Singapore’s resident population and some 90 per cent of these resident households own their homes on 99-year leases from the HDB. New flats continue to be built. They are sold only to persons who qualify to own a HDB flat – there are citizenship requirements as well as income limitations. HDB flats can also be purchased from existing owners (the ‘resale’ market). This is explained below. HDB flats are also leased on short-term leases for those who cannot afford to purchase a 99-year lease, but continuing efforts are made to assist them towards purchasing a flat.

The HDB also strives to ensure that it meets changing needs and circumstances. Through renewal and upgrading programmes, older estates and towns are improved and revitalized to ensure their vibrancy

³⁵ See Legislative History of the Land Acquisition Act at ‘Land Acquisition Act’ (Singapore Statutes Online 2016), <https://sso.agc.gov.sg/Act/LAA1966>.

³⁶ Fernandez (n 11) 41.

³⁷ See Wong and Yeh (n 15) ch 9.

³⁸ ‘Land Acquisition Act is enforced’ (History SG), <http://eresources.nlb.gov.sg/history/events/1f669eff-bc82-49d1-a27c-2624e4cab8c6>.

³⁹ See Ricquier (n 15) 318.

⁴⁰ Act 19 of 2007 (Singapore).

⁴¹ ‘Application Procedure’ (HDB), www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/new/application-procedure.

and continued relevance. The HDB also reviews its policies and schemes regularly, to ensure that they meet changing needs and aspirations, and support national objectives such as maintaining racial harmony, strengthening family ties, taking care of the elderly and low-income families, and encouraging upward social mobility by providing opportunities for home-upgrading. These policies will now be examined.

3.1 Types of Flats

Conscious of the fact that it is providing flats for the vast majority of Singaporeans, the HDB provides a variety of flats for purchase. New flats – which are sold at subsidized prices and are mostly located in non-mature estates – come in a wide variety of flat sizes, ranging from a two-room ‘flexi’ flat (36–45 square metres) to a five-room flat (three bedrooms, 110 square metres), as well as a ‘three-generation’ flat (for multi-generation families; four bedrooms, 115 square metres) and an executive flat (130 square metres). There are also executive condos, which are built and sold by private developers – these are the most costly. These flats are purchased directly from the HDB. It is also possible to purchase resale flats on the open market; these can be found in any location.

3.2 Eligibility

Eligibility criteria must be met for the purchase of all flats, regardless of whether they are purchased from the HDB or on the open market. New flats can only be sold to Singapore citizens, as they are highly subsidized. Other criteria – such as age, income and property ownership – also apply.⁴² A basic requirement is a family nucleus: spouse (and children if any); parents (and siblings if any); and children under the applicant’s legal custody, care and control (if widowed or divorced). Other schemes including the Fiancé/Fiancée Scheme and the Orphans Scheme. The Fiancé/Fiancée Scheme allows a couple to apply for a flat before they are married, but the marriage must be solemnized within three months of getting the keys to the flat. The Orphans Scheme applies to siblings whose parents have both passed away. At least one of the deceased parents must have been a Singapore citizen or Singapore permanent resident.

There is also an income ceiling. For a four-room flat or larger, the combined income must not exceed S\$12 000 a month;⁴³ but the ceiling is raised to S\$18 000 if the purchase is with an extended or multi-generation family. For a three-room flat, the income ceiling depends on whether it is in a mature or non-mature estate. For non-mature estates, the ceiling is S\$6 000 or S\$12 000, depending on the project. For mature estates, the ceiling is S\$12 000. Another requirement for applicants for new flats is that all the listed owners and essential occupiers must not own, dispose or have an estate or interest in any other local or overseas property in the 30 months before the date of the new flat application, and up to the date of taking possession of the new flat. For executive condos, the income ceiling is S\$14,000.⁴⁴

For resale flats, the requirements are less stringent. There must be at least one Singapore citizen or two Singapore permanent residents listed in the flat application. There is no income ceiling, unless the

⁴² See ‘HDB Flat’ (HDB), <https://hdb.gov.sg/cs/infoweb/residential/buying-a-flat/new/hdb-flat>.

⁴³ As at 1 July 2019, the exchange rate is S\$1 : US\$0.73; www.xe.com/currencyconverter/convert/?Amount=1&From=SGD&To=USD.

⁴⁴ The executive condo scheme was launched in 1995. These are condominium-style flats designed and built by private developers, but sold with initial eligibility and ownership restrictions such as an income ceiling for buyers. Owners must live in them for five years before they can be resold. The development will attain full private housing status after ten years.

applicant is applying for CPF housing grants and HDB housing loans. Singles may buy resale HDB flats if they are 35 years old and above, but they must be citizens. Two to four singles may jointly buy a HDB resale flat if they are 35 years old (unmarried or divorced), or 21 years old if widowed or an orphan. All these conditions are spelled out on the HDB's website.⁴⁵

3.3 Policies

As the biggest real estate developer in Singapore, the HDB is uniquely placed to help support national objectives such as strong family ties and racial harmony. It must also be sensitive to the hopes and aspirations of its residents, who are at different stages of their lives. Thus, through the years, policies have been developed to cater to the special needs (as we have seen above) of couples planning to get married, singles, siblings without their parents, widows and multi-generational families.⁴⁶ Some of these policies include the following.

3.1.1 Living close to parents/multi-generational families

Applicants who wish to live together with their parents or in separate flats near each other get priority in flat allocation, as well as a grant, through the Married Child Priority Scheme⁴⁷ and the Proximity Housing Grant (PHG), which started in August 2015. These policies reflect the Asian culture of looking after parents and are encouraged. Applicants are given twice the number of opportunities in ballots for allocations of flats than other applicants. They also get a financial grant. Similarly, singles who buy a resale flat to live with their parents also get a grant. Early in 2019, at the Budget Debate, Finance Minister Mr Heng Swee Keat announced that the PHG would be enhanced with immediate effect: singles now get a grant of S\$10 000 if they buy a HDB resale flat near their parents. Previously, the grant was limited to singles who bought a flat to live with their parents and families who bought a flat to live with their parents or married children. The grants for these groups of people will also be increased by 50 per cent. The singles now get S\$15 000 and the families receive S\$30 000. Families buying a resale flat to live near their parents continue to get a grant of S\$20 000.⁴⁸

3.1.2 The elderly

In 1997 the Studio Apartment Scheme was introduced, allowing elderly citizens to purchase a HDB flat on a 30-year lease instead of a 99-year lease. These apartments are considerably more affordable, as the lease is much shorter. This is now embodied in the two-room Flexi Scheme, where elderly citizens have the flexibility of choosing the length of lease on their two-room flat, based on their age, needs and preferences.⁴⁹ This applies to persons aged 55 and above – they can take up a lease of between 15 and 45 years in five-year increments, as long as it covers them and their spouse up to the age of at least 95.

⁴⁵ 'Housing and Development Board' (HDB), www.hdb.gov.sg/cs/infoweb/homepage.

⁴⁶ J Heng, 'HDB focus on couples, needy and elderly folk', *The Straits Times* (22 January 2016), www.straitstimes.com/singapore/hdb-focus-on-couples-needy-and-elderly-folk.

⁴⁷ 'Priority Schemes' (HDB), www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/new/eligibility/priority-schemes.

⁴⁸ R Au-Yong, 'Singapore Budget 2018: Bigger grants to buy HDB resale flat with parents, singles to get grants to live near parents', *The Straits Times* (19 February 2018), www.straitstimes.com/singapore/housing/singapore-budget-2018-bigger-grants-to-buy-resale-flat-with-parents-singles-to-get.

⁴⁹ '2-Room Flexi Flats' (HDB), www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/new/2room-flexi-flats.

Under the two-room Flexi Scheme, elderly citizens have the flexibility of choosing the length of lease on their two-room flat, based on their age, needs and preferences.

There is also a Lease Buyback Scheme,⁵⁰ where an owner can sell part of the flat's lease to the HDB and choose to retain the length of lease based on the age of the youngest owner. The proceeds from selling part of the flat's lease will be used to add to the owner's CPF retirement account. He or she can then use his or her CPF retirement account savings to join CPF LIFE, which will provide him or her with a monthly income for life. To qualify for this scheme, all owners must reach the qualifying age (65 and above) and at least one owner must be a citizen; the monthly income ceiling is S\$12 000 (approximately S\$3000 more than the Singaporean median monthly income).⁵¹ This applies to all flat types and there must be at least 20 years left to sell to the HDB.

3.1.3 Young couples

Young couples buying a HDB flat for the first time get special priority, so that they can set up home earlier.⁵² At least 90 per cent of flats are set aside for first-time applicants who, like those wishing to live close to their parents, are given twice as many chances as other applicants in the ballot for new flats. The balloting process can be complicated, as there are different balloting schemes.⁵³

3.1.4 Poor families – short-term rental flats

The HDB also leases its flats to those who cannot afford to purchase their homes, and there is a continuous effort to help these citizens own their own homes through various incentives and helplines. HDB flats for rental are let on terms of two years. The monthly household income ceiling to rent a HDB flat is S\$1500. The rental rates charged by the HDB are highly subsidized, starting from as low as S\$26 a month. The rates are also tiered according to household income, so that more help is extended to those in greater need.⁵⁴ In order not to discourage tenants who receive salary increases which may warrant an increase in rent, the HDB exercises flexibility and suspends the rental increase for one tenancy term of two years. This ensures that tenants will not be made worse off after an income increase. At the end of the two years, if the income increase is still insufficient relative to the rent increase, the HDB will continue to suspend the rent increase for another tenancy term of two years.

The HDB assiduously seeks to help rental flat tenants become home owners. If they move from being tenants to being home owners, buying a flat for the first time, they are eligible for the Special CPF Housing Grant and Additional CPF Housing Grant in their flat purchase. They may obtain up to S\$60 000 in grants, which can help to significantly reduce the loan amount required and the mortgage repayments for the flat purchased. There is also the Fresh Start Housing Grant,⁵⁵ which aims to help

⁵⁰ 'Lease Buyback Scheme' (HDB), www.hdb.gov.sg/cs/infoweb/residential/living-in-an-hdb-flat/for-our-seniors/lease-buyback-scheme.

⁵¹ In 2017, the median household income was S\$9023 per month; see *Key Household Income Trends* (Singapore Department of Statistics 2017), www.singstat.gov.sg/-/media/files/publications/households/pp-s24.pdf.

⁵² 'Priority Scheme' (HDB), www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/new/eligibility/priority-schemes.

⁵³ 'Balloting Process for Build-to-Order (BTO) Flats' (HDB), [www.hdb.gov.sg/cs/infoweb/hdbspeaks/balloting-process-for-build-to-order-\(bto\)-flats](http://www.hdb.gov.sg/cs/infoweb/hdbspeaks/balloting-process-for-build-to-order-(bto)-flats).

⁵⁴ 'How is HDB helping low-income households with a roof over their head?' (Singapore Government), www.gov.sg/factually/content/how-is-hdb-helping-low-income-households-with-a-roof-over-their-head.

⁵⁵ 'Fresh Start Housing Scheme' (HDB), www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/new/schemes-and-grants/fresh-start-housing-scheme.

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families (who had previously enjoyed a housing grant) with young children, who are currently living in public rental flats, to buy a two-room flexi flat. They can buy the flat on a shorter lease, which is more affordable than a flat with the standard 99-year lease. The lease options range from 45 years to 65 years, but the lease must cover all owners and spouse-occupiers minimally until they are 95 years old. There is a 20-year minimum occupation period.

3.1.5 Singles

Initially, HDB flats could only be purchased by married couples or persons who can form a family unit. However, this has been eased to allow single persons to buy resale HDB flats. Single persons also enjoy grants and subsidies.⁵⁶ As noted above, in order to encourage unmarried children to take care of their parents, singles who buy a resale flat with their parents will obtain an enhanced grant.

3.1.6 Affluent families

As Singaporeans became more affluent, and as the HDB also caters to the middle-income group, more sophisticated projects are now offered. The executive condo has a monthly income ceiling of S\$14 000. Executive condos are comparable in design and facilities to private condominiums, as they are developed and sold by private developers. Another scheme established by private developers is the Design, Build and Sell Scheme (DBSS).⁵⁷ This was launched in 2005 to offer higher-income flat buyers homes with better designs and finishes. Built on government land, DBSS flats are designed and sold by private developers, and should typically come with better fittings and finishes than standard build-to-order (BTO) flats. However, unlike private and executive condos, these projects do not have facilities such as pools and gyms. That said, there have been complaints over defects and design issues, and it appears that after 13 such projects, the DBSS has been suspended.⁵⁸

3.1.7 Racial harmony

There is also a policy of ensuring a racial mix, with ethnic groups integrated through the allocation of new HDB flats. This Ethnic Integration Policy (EIP) also applies to resale flats, to ensure that the various races mixed together. The EIP was established to preserve Singapore's multicultural identity and promote racial integration and harmony. It ensures that there is a balanced mix of the various ethnic communities in HDB towns.⁵⁹ The EIP limits are set at block/neighbourhood level, based on the ethnic make-up of Singapore.⁶⁰

These are examples of Singapore's unique initiative of using public housing to achieve some degree of social engineering.

⁵⁶ 'Single Singapore Citizen Scheme' (HDB), www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/new/schemes-and-grants/cpf-housing-grants-for-hdb-flats/single-singapore-citizen-scheme.

⁵⁷ 'DBSS Flats' (HDB), www.hdb.gov.sg/cs/infoweb/residential/living-in-an-hdb-flat/renovation/dbss-flats.

⁵⁸ M Heng, 'Pasir Ris One and other DBSS projects that made headlines after residents complained', *The Straits Times* (15 June 2015), www.straitstimes.com/singapore/housing/pasir-ris-one-and-other-dbss-projects-that-made-headlines-after-residents.

⁵⁹ As at end-June 2018, Chinese made up 74.3 per cent of the resident population, followed by Malays at 13.4 per cent and Indians at 9.0 per cent. See *Population Trends, 2018* (Singapore Department of Statistics 2018), www.singstat.gov.sg/-/media/files/publications/population/population2018.pdf.

⁶⁰ 'Ethnic Integration Policy and SPR Quota' (HDB), <https://www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/resale/ethnic-integration-policy-and-spr-quota>.

4. THE LEGAL NATURE OF OWNERSHIP OF A HDB FLAT

Recently, there was considerable disquiet as to the legal nature of the purchase of a HDB flat.⁶¹ Is the buyer the owner? The website of the Singapore government says yes.⁶² Minister of National Development Mr Lawrence Wong has also responded to emphasize that a 99-year leasehold flat is a valuable asset that is ‘owned’ for 99 years; and is fundamentally different from the month-to month HDB flats that are leased to very poor families.⁶³ This must be so, as there is a fundamental difference between the purchase of a leasehold estate, where the main consideration is the purchase price and the annual rent is evidence of the tenurial nature of the relationship; and short-term rentals, where the only consideration is the periodic rent. Indeed, as the author has noted elsewhere:

A clear distinction can be drawn between persons who *purchase* leasehold interests (such as purchasers of flats built by the Housing Development Board, who are given 99 year leases) and those who *lease* premises for various terms. In the former, the primary consideration is a substantial lump-sum payment (the purchase price), with rent only as a nominal sum to be paid periodically (usually annually). Concepts of real property law (such as the passing of risk to the purchaser upon the signing of the contract for sale) should and must dominate, since its essence is the purchase of real property. This is very different from the typical landlord and tenant relationship where rent is the primary consideration and the rights and obligations of the parties are usually spelt out in considerable detail in the tenancy agreement or lease. A strong case can be made out for viewing these cases separately as the considerations are different; the former focuses on the purchase (albeit of a leasehold estate), the latter focuses on the lease, its terms and conditions.⁶⁴

However, given that they purchase a leasehold estate for 99 years, the owners of HDB flats are effectively in a tenurial relationship with the HDB. A nominal rent is paid and terms and conditions apply. These include forfeiture of the interest in the flat in case of breach of the covenants. It is not the premise of this chapter to focus on the rights and obligations of the parties; these have been examined in considerable detail by other writers.⁶⁵ Suffice to say that there are considerable restrictions on what owners can do with their property – particularly on death, as the flat can only be passed on to persons who qualify for ownership under the HDB’s eligibility criteria. One prohibition deserves mention, as it continues to cause considerable unhappiness.⁶⁶ The HDB (Animals) Regulations⁶⁷ prohibit the keeping of cats, but allow the keeping of one small dog from a list of breeds contained in the Schedule. Despite

⁶¹ Property Asia Direct, ‘Do you own your HDB Flat? That’s not the real issue’, *The Online Citizen* (9 August 2018), www.theonlinecitizen.com/2018/09/08/do-you-own-your-hdb-flat-thats-not-the-real-issue/; Gui, ‘You don’t own your flat. The government does’, *The Online Citizen* (21 August 2018), www.theonlinecitizen.com/2018/08/21/you-dont-own-your-flat-the-government-does/; ‘Yes, you own, not rent, your HDB flat’ (Home and Decor 2018), www.homeanddecor.com.sg/articles/112099-yes-you-own-not-rent-your-hdb-flat.

⁶² ‘Do HDB flat buyers own their flat?’ (gov.sg 2017), www.gov.sg/factually/content/do-hdb-flat-buyers-own-their-flat.

⁶³ Ng (n 29).

⁶⁴ LH Lye, *Landlord and Tenant* (Butterworths 1990) 5 (quoted with approval by W Khoo J in *Tan Soo Leng David v Lim Thian Chye Charles* [1998] 2 SLR 923, 928).

⁶⁵ See TH Wu and KFK Low, *Tan Sook Yee’s Principles of Singapore Land Law*, 4th ed (2019) Lexis Nexis, chapter 24.

⁶⁶ TH Yi and AN Wy, ‘Is it time for HDB to allow... Cats in flats?’ *The Straits Times* (20 February 2017), www.straitstimes.com/singapore/housing/is-it-time-for-hdb-to-allow-cats-in-flats.

⁶⁷ R 4, GN o S 90/1989, <https://sso.agc.gov.sg/SL/HDA1959-R4?DocDate=19920325>.

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calls from many residents, this law remains in force. The reasons given by the HDB relate to the potential for cats to be a public nuisance, due to their tendency to wander, caterwaul, shed fur and defecate in public areas. However, one major benefit unique to HDB flats is that they are protected from creditors in the event of the owner's bankruptcy if one of the owners is a Singapore citizen.⁶⁸ This is to ensure greater security for a Singapore family should the breadwinner fall upon hard times.

In the case of rental flats, the HDB (Penalties – Rental Flats) Rules provide for a penalty of S\$5000 if the tenant breaches the covenant not to assign, sublet or part with the possession of the rental flat or any part thereof; or not to allow any person other than an authorized occupier to live in or share the rental flat.⁶⁹

5. ENSURING SUSTAINABILITY

Each HDB estate comprises a township of 150 000 to 300 000 people and a range of facilities must be provided to meet the changing needs of the residents. This change, effected in 1977, transformed the role of the HDB from a mere builder of flats to a developer of new towns. Taking a holistic view of its mission, the HDB decided that it was necessary to do more than just build housing for the people. There was a need to provide nearby offices and factory premises for residents to be employed, along with other facilities such as schools, markets, shops, eating places and recreational areas. The HDB also ensured that estates were provided with parks and gardens, children's playgrounds, jogging tracks and keep-fit corners. The ground-floor spaces of residential blocks have been converted into education centres, childcare centres, senior citizens' clubs, community sub-centres, neighbourhood police posts, offices for residents' committees and community halls. This is an ongoing exercise, as the needs of residents will change with the demographics. Singapore has thus taken a different path from other countries, such as the United Kingdom, which are only now waking up to the pollution and health problems created by satellite towns with few facilities, from which citizens commute (sometimes long distances) to city centre hubs of enterprise.

It must also be emphasized that public housing schemes can easily turn into slums with neglect and the passing of years. Thus, the HDB tries to ensure that its apartments remain in good condition, and that neighbourhoods continue to be vibrant communities.

The issue of the sustainability of the HDB flat must be viewed from two perspectives: (1) rejuvenation of old estates; and (2) construction of environmentally sensitive new estates.

It is essential to ensure that old estates are kept well maintained and, even better, rejuvenated. The HDB adopts two strategies here: upgrading and redevelopment. Upgrading involves the improvement of the physical conditions of the estate and both the exteriors and interiors of flats. Obvious priorities here would be the repainting of the exterior and the undertaking of repairs. This will enhance the value of the flats without uprooting the residents from their environment.

There are three upgrading programmes. The first is the Lift Upgrading Programme. HDB blocks built before 1990 were not provided with complete lift access; lifts stop only at certain floors, as it was too

⁶⁸ Housing and Development Act s 51(5); 'Bankruptcy, Divorce, or Death' (HDB), www.hdb.gov.sg/cs/Satellite?c=Page&cid=1383799236929&d=Touch&pagename=InfoWEB%2FPage%2FArticleDetailPage.

⁶⁹ Housing and Development Act s 532/2010, Rule 5.

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costly then to make them stop at every floor. The Lift Upgrading Programme will upgrade these older HDB blocks to provide direct lift access for every floor through the upgrading of existing lifts. New lift shafts and lifts will be provided where technically and economically feasible. The blocks that may be upgraded will be identified and then a poll will be conducted. The upgrading will proceed only if more than 75 per cent of owners agree. Singapore citizens will be given government subsidies for a large portion of the costs and the town council will also pay a portion of the remainder. The actual cost will depend on the flat type and block configuration.⁷⁰

The second is the Home Improvement Programme.⁷¹ Flats built before 1986 that have not been part of the main Upgrading Programme are eligible. They contain three components: essential, optional and improvements for active seniors. The essential improvements include repairing spalling concrete/structural cracks, replacing waste /soil discharge stacks, replacing pipe sockets and clothes drying racks, and upgrading electrical load. Once again, these measures clearly reflect a strong environmental as well as social ethic, ensuring the continuing use of existing properties rather than their dilapidation and ultimate demolition. The optional improvements – which are less obviously beneficial to the environment – include upgrading existing toilets/bathrooms and replacing doors, metal gates and refuse chute hoppers. They must be paid for by each owner, but at highly subsidized rates. The improvements for active seniors comprise slip-resistant treatment of floor tiles in toilets/bathrooms, grab bars in toilets/bathrooms and ramps to ease navigation of different levels. Again, 75 per cent or more of the residents must consent via a poll. Costs are subsidized and vary with the size of the flat, being only 5 per cent of the total costs for one to three-room flats, increasing to 12.5 per cent for the executive condo.

The Neighbourhood Renewal Programme was started in August 2007 in response to residents' feedback.⁷² This programme is fully funded by the government and implemented by the town councils. Residents are first consulted on the proposed improvements for the neighbourhood through avenues such as town hall meetings, dialogue sessions, block parties, mini-exhibitions and surveys. Feedback is then considered and, if feasible, incorporated into the design proposal for the consensus-gathering exercise. Again, this programme will proceed only if at least 75 per cent of the eligible flat owners in the neighbourhood indicate their support during the consensus-gathering exercise. In each block, proposed improvements at the first level could include the provision of new letterboxes, residents' corners, seating areas at void decks and tiling in lift lobbies. At the precinct level, they could include building drop-off porches, covered linkways, playgrounds, footpaths/jogging tracks, fitness corners, street soccer pitches and pavilions/shelter, and landscaping gardens. Blocks built up to 1995 that have not previously been upgraded are eligible.

There is another, less obviously environmentally friendly scheme, but it undoubtedly has high social value. The Selective En Bloc Redevelopment Scheme (SERS), introduced in 1995, provides for the redevelopment of existing housing precincts by relocating residents to a nearby site and demolishing

⁷⁰ 'Lift Upgrading Programme (LUP)' (HDB), www.hdb.gov.sg/cs/infoweb/residential/living-in-an-hdb-flat/sers-and-upgrading-programmes/lift-upgrading-programme&rendermode=preview.

⁷¹ 'Home Improvement Programme (HIP)' (HDB), www.hdb.gov.sg/cs/infoweb/residential/living-in-an-hdb-flat/sers-and-upgrading-programmes/home-improvement-programme-hip&rendermode=preview.

⁷² 'Neighbourhood Renewal Programme (NRP)' (HDB), www.hdb.gov.sg/cs/infoweb/residential/living-in-an-hdb-flat/sers-and-upgrading-programmes/neighbourhood-renewal-programme-nrp&rendermode=preview.

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the existing flats.⁷³ Residents are paid a sum based on the market value of their flat at the point of the SERS announcement, together with reasonable expenses to help them move.⁷⁴ Rehousing options include the following:⁷⁵

- taking up a new flat at the replacement site;
- applying for a flat elsewhere through the BTO or sale of balance flat (SBF) exercises within the grace period, with rehousing benefits and a 10 per cent priority allocation; or through the re-offer of balance flats exercise with rehousing benefits. The HDB will set aside 10 per cent of the flats offered in BTO or SBF exercises for priority allocation under the Resettlement, Relocation, SERS and Tenants' Priority Schemes;
- selling or transferring the SERS flat with the rehousing benefits thereafter; or
- returning the SERS flat and receiving an *ex-gratia* payment on top of compensation. Owners who exercise this option will forgo the SERS rehousing benefits.

SERS is part of the government's plan to rejuvenate and intensify development in older estates. It replaces old housing with new and adds new housing units. The new additional flats will facilitate the injection of younger households into a mature estate, thus rejuvenating the ageing demographic profile. As more than one-third of the flats were built before the 1980s, SERS allows the HDB to regenerate older public housing estates while enabling the community to grow.

In 2007 the HDB launched a major initiative, Remaking Our Heartlands (ROH), to transform selected towns for transformation into vibrant communities.⁷⁶ Each HDB estate will build on what makes it unique to capitalize on the area's distinct characteristics, thus remaking each township and estate to ensure that it remains 'relevant, vibrant and sustainable'. Residents are actively engaged in the early stages through focus group discussions and their input will be considered when developing these plans. So far, three ROH programmes have taken place.⁷⁷

One of the pilot towns identified for the first ROH was Punggol: it was earmarked to be an eco-town to showcase the HDB's efforts in sustainable development and is now showcased as a 'Waterfront Town of the 21st Century'.⁷⁸ Punggol is also home to the HDB's first eco-precinct, named Treelodge@Punggol.⁷⁹ This project will be discussed below, as we examine the HDB's efforts to ensure sustainability.

⁷³ 'Residential' (HDB), www.hdb.gov.sg/cs/infoweb/residential/living-in-an-hdb-flat/sers-and-upgrading-programmes/sers-flat-owners.

⁷⁴ 'SERS Compensation' (HDB), www.hdb.gov.sg/cs/infoweb/residential/living-in-an-hdb-flat/sers-and-upgrading-programmes/sers-compensation.

⁷⁵ 'Rehousing Options' (HDB), www.hdb.gov.sg/cs/infoweb/residential/living-in-an-hdb-flat/sers-and-upgrading-programmes/rehousing-options.

⁷⁶ 'Remaking Our Heartland' (HDB), www20.hdb.gov.sg/fi10/fi10349p.nsf/hdbroh/index.html.

⁷⁷ In the third ROH, the site in Woodlands has the theme 'Star of the North', the old town of Toa Payoh is 'Our Charming Toa Payoh' and Pasir Ris is 'Our Urban Sanctuary.'

⁷⁸ B Chew, 'A Weekend at Punggol Waterway Park', *My Nice Home* (18 February 2016).

<https://mynicehome.sg/cs/mnh/article/a-weekend-at-punggol-waterway-park>; E Neo, 'New Punggol Town Hub to open in 2021 with hawker centre and library' *Channel News Asia* (7 October 2018),

www.channelnewsasia.com/news/singapore/punggol-town-hub-2021-hawker-centre-library-10800152;

Fayyadhah Zainalabiden, 'Why Punggol Town Hub May Perform Better Than Our Tampines Hub', *MS News*, <https://mustsharenews.com/punggol-town-hub-tampines/>.

⁷⁹ www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/treelodgepunggol

5.1 Sustainable Public Housing in Singapore

Mindful of the challenges that beset Singapore as a city state with extremely limited land space, few natural resources and an open economy, the HDB has made considerable efforts to ensure sustainability by developing estates that provide eco-friendly features for a smart, sustainable living environment.⁸⁰

First, as mentioned earlier, the building of good, affordable housing for the nation is a huge step towards environmental sustainability, as the provision of electricity, piped water and modern sanitation systems raises living standards and removes pollution from streams and rivers. This requires a concerted effort by the government, of which the HDB is part. Good governance is a key ingredient in a good environmental management system (EMS), and the elements of a sound EMS for a city include a sound housing policy and effective implementation thereof.

5.2 Environmental Management in a City

A sound EMS for a city starts with good environmental management policies. These must then be implemented via effective institutional, administrative, legal and physical infrastructure.⁸¹ A sound EMS for a city should comprise the following:

- comprehensive and sound environmental policies implemented through effective institutional and administrative structures;
- comprehensive land use planning, encompassing zoning for commercial, industrial and residential areas, schools, shopping malls, markets, hospitals, airports, ports, nature reserves, public parks and recreational areas, heritage sites and so on;
- physical infrastructure for the provision of essential services, including clean water, electricity, communications, roads, railways and mass public transport systems;
- infrastructure for pollution control – water treatment plants, waste collection and treatment facilities, sewage treatment plants and similar; and
- effective laws and enforcement.

There must be coherence among the various institutions and government ministries in the various policies and in their implementation. These must, in turn, be translated into national and local policies and legal frameworks. There must also be respect for the rule of law. In the context of the provision of public housing, it is clear that the HDB has been a highly effective administrator in crafting the policies – many of which are highly innovative – and seeing to their effective implementation. The HDB's work was facilitated by comprehensive land use plans that included a master plan, a concept plan and detailed development guide plans for 55 areas in Singapore. These are revised periodically.⁸²

The HDB works closely with the National Parks Board to ensure that parks and gardens are featured in every housing estate. Singapore is a leader in urban greenery and initiated the Cities Biodiversity Index

⁸⁰ 'Smart and Sustainable Living' (HDB), www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living.

⁸¹ LH Lye, 'Environmental Law, Policy, Governance and Management for Cities: Getting it Right for a Sustainable Future – The Singapore Experience' in J Huang and S Gupta (eds), *Environmental Policies in Asia: Perspectives from Seven Asian Countries* (World Scientific 2014) ch 9.

⁸² See LH Lye, 'Land Use Planning and the Garden City as an Urban Development Approach in Singapore' in N Chalifour, P Kameri-Mbote, LH Lye, J Nolon (eds), *Land Use Law for Sustainable Development* (CUP 2006) ch 21.

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at the Convention on Biological Diversity's Conference of the Parties in Nagoya⁸³ This is a self-assessment tool for cities to evaluate and monitor the progress of their biodiversity conservation efforts against their own individual baselines. It brings nature to the forefront of urbanization, contributing to improvements in air quality and enhancement of quality of life and species diversity.

The HDB also works with the Ministry of Environment and its National Environment Agency, and with the Public Utilities Board, to ensure the supply of clean water and electricity to all its projects, as well as the construction of sewage and drainage facilities. Together with the clean-up of the city came an emphasis on conservation of its biodiversity. Singapore's first Prime Minister, Mr Lee Kuan Yew, called for its evolution first into a 'Garden City'⁸⁴ and then to a 'City in a Garden',⁸⁵ its third prime minister has now called for a 'City of Gardens and Water'.⁸⁶ Comprehensive laws were passed relating to air and water pollution which complement the provisions on social housing.⁸⁷

These initiatives have ensured that land use is optimized to overcome the constraints of land scarcity in Singapore. This has translated into high-rise, high-density buildings that are integrated with green areas and landscaping, with a network of open spaces within the town to provide visual and spatial relief. An efficient transportation network also ensures that residents are effectively and efficiently linked to their places of work. As noted earlier, each town is self-sufficient, containing a comprehensive range of facilities, including markets, shops, schools, community centres, library and sports facilities.

More than this, however, the HDB has used its position to pursue innovation in the provision of environmentally sustainable housing. The aforementioned Treelodge@Punggol is Singapore's first experimental eco-friendly public housing project and was awarded the Green Mark Platinum Award. The project has also won international accolades for its sustainable design, such as the Green Good Design Award in 2010 and the Futurac Green Leadership award in 2011. The estate comprises 712 units of premium flats housed in seven 16-storey residential blocks. The flats were launched for sale in 2007. This residential development incorporates a range of green technologies and innovations for effective energy, water and waste management. They include north-south orientation of buildings; solar panels to generate lighting for common areas; centralized recyclable refuse chutes; and a sophisticated rainwater collection and recycling system. Intensified greenery on the eco-deck, vertical greening along the columns of the residential blocks and green roofs on the roof decks help to cool down the ambient temperature, while beautifying the precinct environment. There is also a well-shaded jogging path for residents, exercise stations for the elderly and a children's playground made from recycled materials. Treelodge@Punggol was one of the pilot HDB projects in Singapore for the FerroLite partition wall

⁸³ See 'Singapore Index on Cities' Biodiversity' (National Parks), www.nparks.gov.sg/biodiversity/urban-biodiversity/the-singapore-index-on-cities-biodiversity; 'User's Manual on the Singapore Index on Cities' Biodiversity' (CBD International), www.cbd.int/doc/meetings/city/subws-2014-01/other/subws-2014-01-singapore-index-manual-en.pdf; 'City Biodiversity Index' (Singapore Infomedia), http://eresources.nlb.gov.sg/infopedia/articles/SIP_1765_2011-02-11.html.

⁸⁴ This started in June 1963 with the planting of the first tree by the first Prime Minister, Lee Kuan Yew. See also his autobiography, LK Yew, *From Third World to First* (Harper Collins 2000) ch 13.

⁸⁵ See the National Parks Board's tribute to Singapore's first Prime Minister Mr Lee Kuan Yew – 'The Man behind the Greening of Singapore' (National Parks), www.nparks.gov.sg/about-us/special-tribute-to-mr-lee.

⁸⁶ Speech by Prime Minister Lee Hsien Loong at the opening of Bishan Park – ABC Waters, 17 March 2012. See "'Garden City' Vision is Introduced' (History SG), <http://eresources.nlb.gov.sg/history/events/a7fac49f-9c96-4030-8709-ce160c58d15c>.

⁸⁷ LH Lye, 'A Fine City in a Garden – Environmental Law, Governance and Management in Singapore' (2008) *Singapore Journal of Legal Studies* 68.

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system, which is designed to reduce noise transmission between rooms. The wall is essentially non-load bearing and made of ferrocement. As compared to other cement-based partition walls, the hollow core of the FerroLite wall cuts down on the need for raw materials such as cement and sand. In addition, services can be installed and concealed within the wall with minimal wet works and without the need for hacking.

The HDB's environmental innovations are not, however, limited to new regimes. It also has a green strategy which seeks to bring sustainable living into existing HDB estates, as part of its Roadmap to Better Living in HDB Towns. The HDB Greenprint⁸⁸ is a comprehensive and integrated framework of goals and strategies to guide greener HDB town development and create sustainable homes. In the Greenprint framework, the concept of green and sustainable lifestyles is extended beyond Punggol to build green neighbourhoods, green flats and green communities. The HDB Greenprint was first piloted at Yuhua estate in Jurong, where 38 blocks of flats have been transformed into a green neighbourhood. Launched in 2012, the pilot HDB Greenprint programme in Yuhua aimed to introduce energy-efficient water management and waste management features to the estate. It was completed on 28 November 2015. The HDB has also set up the HDB Greenprint Fund to support and promote the development and implementation of green solutions within the precinct. It encourages owners who have ideas on how to achieve savings in water or electricity usage, increase recycling rates, reduce heat in the environment, improve community bonding and enhance the quality of the living environment to apply for funding. The fund will support testing of green solutions to current problems.

The Greenprint Fund looks for 'great ideas to achieve savings in water or electricity usage, increase recycling rates, heat reduction in environment, or improve community bonding, and quality of living and environment'.⁸⁹ The proposed solutions should take the form of products, processes, systems or methodologies that could help to improve or create a greener, smarter living environment. The solutions should be new, original (ie, no direct applications of off-the-shelf products and no direct monetary incentive-based proposals) and implementable. So far, this has been restricted to one neighbourhood (Teck Ghee). There is a cap of S\$100 000 per application and funds are reimbursed rather than being paid upfront. Reimbursements cover the total qualifying cost incurred in the development or testing process. These refer to costs associated with the following categories:

- personnel;
- equipment, software, materials and consumables;
- professional services;
- intellectual property rights; and
- testing and certification

5.2.1 Waste collection

Other environmentally sensitive initiatives include the building of pneumatic waste collection systems.⁹⁰ To tackle the problems associated with open refuse collection, without the need for a

⁸⁸ 'HDB Greenprint' (HDB), www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint.

⁸⁹ 'HDB Greenprint Fund' (HDB), www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint/funding.

⁹⁰ 'Waste Management' (HDB), www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint/waste-management.

dramatic increase in refuse collection staff, an automated waste collection system has been installed in 38 residential blocks in Yuhua. This system uses a vacuum-type underground pipe network to collect household waste, which is then transported through underground pipes to a sealed container. Trucks periodically collect the waste for disposal. The entire waste collection process is automated, thereby reducing manpower requirements and increasing productivity.

5.2.2 Energy conservation⁹¹

The HDB is installing solar photovoltaic (PV) systems to power lifts, corridor and staircase lighting, and water pumps. So far, 8 mega-watt-peak (MWp) of solar PV systems has been installed, with another 46 MWp of solar PV systems committed across the island; 1.13 MWp of solar PV systems is also being installed on the rooftops of suitable HDB residential blocks at Yuhua.

The HDB is also helping residents to reduce energy consumption at home. Under the Green Homes Package, the HDB will work with suppliers from the private sector to provide bundle discounts to residents buying energy-efficient appliances such as air conditioners, refrigerators and lighting, as these consume the most amounts of energy.

Elevator energy regeneration systems, under which 20 per cent of the energy consumed by lifts can be recovered without affecting lift operations, are also being installed where feasible.⁹²

LED lighting was first implemented in Jurong Town in 2008. The switch to LED lighting in common areas such as corridors, staircases, and lift lobbies achieved a 50 per cent reduction in energy consumption. These results have spurred the HDB to explore the wider implementation of LED lighting for outdoor street lights in Yuhua. It is estimated that by replacing current outdoor street lights with LED lighting, energy consumption can be reduced by about 50 per cent.

5.2.3 Water conservation – rainwater harvesting

The HDB has stated that as part of its efforts to boost water resource efficiency in public housing, it will introduce the rainwater harvesting system which was successfully piloted using membrane technology at the HDB's Centre of Building Research. The new system reduces the usage of potable water for block washing at void decks, refuse chutes and corridors.⁹³ This will save up to 1000 cubic metres of potable water annually for block washing, requires minimal maintenance and reduces energy consumption.

5.2.4 Green commuting

⁹¹ 'Energy Conservation' (HDB), www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint/energy.

⁹² Adrienne Berhard, 'Elevators are Going Green' *Smithsonian* (27 April 2018), www.smithsonianmag.com/innovation/elevators-are-going-green-180968907/.

⁹³ 'Water Conservation' (HDB), www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint/water.

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To promote cycling as a form of green commuting, the HDB will look into improving cycling networks to achieve seamless connectivity within public transport nodes.⁹⁴ The HDB will also look into providing adequate and efficient bicycle parking facilities to support green commuting. It will seek to install a dual bicycle rack system in its housing estates, which optimizes space by holding two bicycles using the same space required by a normal bicycle rack. This system also minimizes theft and creates safer, neater corridors.

5.2.5 Green spaces

The HDB is also seeking to provide more green spaces, such as rooftop greenery and green walls.⁹⁵ These will be introduced to help cool the neighbourhood and beautify the environment. An environmental impact study found that green spaces can reduce homogenous surface temperatures by up to 3.1 degree Celsius. Over time, as the growth and coverage of plants increase, the homogenous surface temperature is expected to improve further.

The HDB is also encouraging community gardening. Community in Bloom in the Heartland is an exciting collaborative project between the HDB, the National Parks Board and residents' committees to strengthen ties among residents through the cultivation of community gardens.⁹⁶ In addition to actively setting aside plots in precincts for community gardening, the HDB is working with residents' committees and the National Parks Board to set up and cultivate community gardens. Since 2009, designated sections of the roofs of new multi-storey car parks can be transformed and converted into community gardens. Pre-installed features in such car parks – such as water points and raised planted boxes of varying planter heights for all residents – facilitate the conversion of the open space to a community garden.

6. CONCLUSION: THE FUTURE

It is clear that the HDB experience is worth sharing and will be helpful both to developing countries that are seeking to provide housing to their citizens – particularly the poor and the lower strata of society; and to developed countries as they revisit their housing and environmental policies in light of expanding populations and increasing environmental pressures. Some aspects, however, should not be replicated, such as the removal of constitutional protection for property. Even here, however, it should be emphasized that in 2007, despite the lack of constitutional protection for property, compensation at market value was restored in the Land Acquisition Act. This clearly shows that Singapore has been blessed with a government and civil servants who are sensitive to the many dimensions of governance and, being acutely aware of changed circumstances, have sought to redress perceived inequities. What stands out clearly is the commitment of the government and the dedication of its officers in the HDB, as well as in other sectors of the government, and their ability to work well together. Indeed, the HDB's

⁹⁴ 'Green Commuting' (HDB), www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint/green-commuting.

⁹⁵ 'Greenery' (HDB), www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint/greenery.

⁹⁶ www.nparks.gov.sg/gardening/community-gardens/start-a-community-garden/5-steps-public-housing; see also 'Eco Learning Journey' (HDB), www.hdb.gov.sg/cs/Satellite?c=Page&cid=1383797544232&pagename=InfoWEB%2FPage%2FArticleDetailPage&rendermode=preview.

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knowledge and expertise, honed through the years, have seen its Building and Development Division branch out, as Surbana Jurong, into developing countries such as China and India, to share its expertise and help these countries build modern, sustainable cities.⁹⁷ The coming years will see new challenges as the population continues to increase, placing greater strain on resources, and climate change rears its ugly head. What is clear is that the HDB will continue to play its important role in continuing to build good and sustainable housing for the people of Singapore.

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⁹⁷ 'Our History' (Surbana Jurong), <https://surbanajurong.com/our-history/>.