

Urban Planning from the Economic Perspective

— Taking Singapore as an Example

Tongyue Zhang^{1,a,*}

¹*Nanjing Foreign Chinese School, Nanjing, Jiangsu Province, China, 210000*

a. 13905189511@139.com

**corresponding author*

Abstract: The government of Singapore is a key player in the evolution of urban planning on a national scale. Singapore is small in size and resource-poor, but the government's urban planning, clear responsibilities, high quality and efficiency, focus on the people, and the achievement of an excellent living environment serve as a model for China's urban planning as it undergoes rapid urbanization. This paper examines the origins of Singapore's status as a garden city, how the city-state strikes a balance between competing needs, the theories and methods it employs to plan and manage urban change and growth, and the policies and measures it employs to make the most efficient use of its land resources.

Keywords: economic development, urban planning, Singapore sustainable development

1. Introduction

An island city-state with a total area of only 700 square kilometers, Singapore suffers from a lack of space and meager natural resources. However, the country is essentially a "garden city," with trees, flowers, and plants covering not just the ground but also the buildings and streets. The green area accounts for 45% of the country's acreage. Simultaneously, Singapore has achieved a balance between urban development and the enhancement of the living environment through careful planning. To meet the issues of optimizing land use during urbanization and striking a balance between economic expansion and urban development, planners and city operators in Singapore have implemented a wide range of concrete initiatives. People know from experience that prosperous urban areas are the product of deliberate planning and management of the economy, society, and environment. Achieving sustainable development goals is dependent on the development of digital technology, which in turn depends on the promotion of policies and economic growth in the cities of the future.

This paper examines the origins of Singapore's status as a garden city, how the city-state strikes a balance between competing needs, the theories and methods it employs to plan and manage urban change and growth, and the policies and measures it employs to make the most efficient use of its land resources. This study aims to further synthesize and refine Singapore's good practices and form experiences by examining the economic relevance of urban planning in the country. Research in this area benefits from these streamlined approaches as well. Singapore's successes and failures can be shared with nations in a comparable position so that they might learn from and model themselves on the city-state. While doing so, the author hopes to become an eyewitness and participant in the future urban construction of Singapore, a garden city, and offer some reference proposals for its development.

2. The History and Current Situation of Urban Planning in Singapore

When it was first founded in 1965, Singapore was a poor Asian emerging country with a shaky economic foundation. Singapore is now a typical and attractive modern tropical garden metropolis because to careful planning and effective government administration that has allowed the country to overcome the bottleneck restrictions of land resources and dramatically improve the economy, natural environment, and quality of life for its people. Here we will introduce the first of four phases of Singapore's massive urban expansion since independence.

To begin, with the end of World War II, Singapore's urban difficulties had become insurmountable, which was during the late 1950s and early 1960s (or the suffocating crowded times). Cities everywhere suffer from overcrowding, a lack of adequate housing, and poor sanitation. Slums and overcrowding characterize the city's core. The age of constant change began in 1958 with the birth of the first master plan, which offered an action plan that highlighted the need to achieve rational land use through land planning. Gradually, all of the city's territory is divided into green zones and new town sections.

Second, beginning in the 1960s and 1970s, the state began supplying the housing market and modern cities began to take shape. Public housing developments in Singapore's current urban planning phase were crucial in resolving the city's congestion issue. Rapid growth in building can be attributed, in part, to Singapore's excellent land reuse policy and rules that allow Singaporeans to buy their own homes. "Home Ownership Scheme" describes this program.

The rapid removal of slums and homeless people, as well as the resurfacing of new roads, sewers, and other beneficial infrastructure, were all direct results of the popularity of public housing. By the mid-1960s, programs to revive urban economies had joined the urban renewal efforts already underway. As a result of urban renewal efforts, the city's historic core has emerged as a global hub for commerce, finance, and tourism.

Third, development of quality and integrity were emphasized in the 1980s. The eighties were pivotal in Singapore's focus on defining the city's image. The importance of environmental quality has grown in recent years. The city's unique architectural design is essential to its plan to stand out as a major metropolis in the tropics.

Fourth, the nineties can be considered a fresh scenario for the start of the twenty-first century. Singapore was on the edge of a fresh wave of social and economic reforms at the turn of the 1980s and 1990s. The government pushed for a middle ground between industrial expansion and ecological preservation. It is important to strike a balance between environmental conservation and land competitiveness brought on by rising populations and expanding economies. Some companies not only use vast amounts of land, but also pollute the surrounding environment with their emissions and byproducts. The majority of the property owners are public utilities, including incinerators, landfills, and sewage treatment plants. The present planning method involves placing these sites in close proximity to other hazardous places, either in remote locations far from human habitation or on small islands in the ocean. Development construction will increasingly rely on technical solutions as environmental technology advances, allowing for looser regulations within the development zone [1].

3. Urban Planning in Singapore

3.1. Land Use Planning

Singapore follows a style of intensive and compact urban growth with an eye toward minimizing its impact on the environment. Priority is given to the development of developed lots, with an emphasis on transit-oriented development, so that each development lot is built to the maximum permissible density of the plan while still conserving as much land as possible and protecting undeveloped lots.

Additionally, high-density, compact urban forms can shorten commutes by making better use of public transportation, existing infrastructure, and available land. By conserving the area needed for major highways, trunk roads, and rail transit networks early on in the master plan process, such land use conflicts can be mitigated later on.

3.2. Infrastructure Development

Innovative infrastructure offers robust service capabilities. The government of Singapore showed pioneering spirit by utilizing World Bank financing extensively and investing considerably in infrastructure construction, especially urban highways, which took up nearly 15% of the entire land area. In a short amount of time, a practical and effective land transportation system has been established. To begin, a comprehensive highway system that never fails. Singapore has an efficient four-tiered transportation system that includes regular highways, expressways, the Mass Rapid Transit system, and the Light Rapid Transit system. Although Singapore has 926,000 vehicles of all types, the speed is surprisingly fast, even in the downtown area at a speed of more than 50 kilometers per hour, almost no traffic congestion phenomenon [2]. This is all thanks to the flawless and efficient transportation network system, which allows all vehicles to be effectively and quickly diverted. The second technique is enforcing bus priority. Use economic tools to limit the use of personal automobiles and invest heavily in public transit options like buses and subways. As the number of roadways expands, residents of Singapore are required to buy automobile ownership licenses in advance at inflated prices, and the auctioned maximum prices in the car ownership market are comparable to the cost of vehicles themselves. The cost of using the roads and parking lots is also quite high. By limiting the number of privately-owned vehicles on the road, circumstances have been improved for public transportation; after installing bus lanes and giving buses precedence at intersections, 71% of those who rely on public transportation can get where they need to go in under an hour. The third step is to construct a system of drainage pipes [2]. The drainage system in Singapore is very well-known. Even though Singapore experiences rain on a daily basis, the roads are always dry. Sewage is piped straight into a sewage treatment plant, where it is purified and either reused in industry or released into the ocean. Through a network of pipes, rainwater is channeled to a reservoir, where it is filtered and purified for human use [2].

3.3. Public Service Facilities

In 1967, Singapore initiated the Garden City Movement, which involved extensive tree planting along roadways and vacant lots, as well as the construction of parks and recreational centers. More parks and highways were being planted with flowers in the 1980s of the 20th century, and unique amusement parks and nature preserves were being established. Singapore has developed a "park connection system" in response to the unique challenges of living on an island, which involves greening and paving walking and cycling paths along congested areas like rivers and roads to create a green network connecting parks across the island.

3.4. Environmental Protection

The concept of creating a garden city in Singapore dates back to 1965, the year the country became a republic. When the idea of creating a "garden city" was initially introduced in the 1960s and again in the 1990s, Singapore set new goals at each stage of its growth to raise the bar for garden city creation. Road greening plans were formulated to strengthen the application of colored plants in environmental greening, highlighting special spaces (lampposts, pedestrian overpasses, retaining walls, etc.) in the 1970s, and in the 1960s, it was proposed greening to purify Singapore by vigorously planting street trees, building parks, and providing open space for citizens. In the 1980s, it was

suggested that fruit trees be planted, unique recreational facilities be built, long-term strategic planning be developed, mechanized operation and computerized management be implemented, and more visually appealing and aromatic plant species be introduced [3]. It was proposed in the 1990s to construct ecologically sound parks, expand the number of theme parks, add stimulating entertainment venues, construct a corridor system linking parks, increase the number of shade trees along walkways, lower maintenance costs, and increase mechanization [3]. Gardens can create economic benefits of "real estate value," but they can also embody the comprehensive quality and spiritual outlook of the people, so the movement of building a "garden city" is deeply rooted in the hearts of the people and reaches a consensus with the general public. This is because the Singaporean government recognized the importance of the urban environment earlier. The development of Singapore's "Garden City" has received a jolt of energy as a result of all this [3].

3.5. Localized Urban Centers

Singapore can only foster economic growth and job creation through the expansion of its secondary and tertiary industries because of its dearth of natural resources. Non-essential commercial operations are spread over four regional centers, each of which has an area of about 1.5 million square meters and a work-residential balance within its jurisdiction [4]. This cuts down on travel time and congestion in the city core. The core of the city will grow into a thriving metropolis with hotels, offices, retail, and entertainment options, drawing people from all over the world. The status quo of many sectors will be improved over time. An impressive "industrial park" will serve as home to cutting-edge, high-value businesses.

4. The Economic Dimension of Singapore's Urban Planning

4.1. Optimizing the Layout of Urban Space

There are approximately five million people living in the city-state of Singapore, which has a total land area of less than 700 square kilometers [5]. The population density of the entire island is 7,000 people per square kilometer, and the urbanization rate is very close to one hundred percent [5]. Singapore's land use is orderly, traffic is never congested, and the city-state has gradually formed an efficient urban spatial layout structure, earning it a prominent position in the global urban system and earning it the moniker "small country, big city," despite its diminutive size.

4.2. Improving Urban Economic Efficiency

Singapore's transition from a third- to a first-world city took less than fifty years. To begin, Singapore's gross domestic product per capita increased from US\$350 in 1960 to US\$58,819 in 2020 [5]. Second, Singapore has had no slums, ethnic communities, or homeless people since at least 1985. Third, The Economist and Mercer Consulting, among others, have often ranked Singapore as Asia's most livable city. They said that Singapore's high rankings were largely attributable to the country's internationally competitive economic dynamism, world-class infrastructure, favorable atmosphere for garden cities, home-owners' peace of mind, and high levels of connection.

4.3. Promoting Sustainable Urban Development

Promoting urban renewal in the face of mounting environmental challenges and climate crises is a key component of sustainable development. Singapore's urban planning and construction management set out on an unprecedented rapid development route after independence, and in little over 40 years the city-state had become one of the world's most livable. The well-thought-out design is the most educational aspect.

Singapore places a premium on urban planning, viewing it as "the strategy of urban development, the program for building cities, and the basis for managing cities" due to the country's emphasis on scientific formulation and careful implementation. The first step is that superior intelligence creates superior strategies. Experts from the United Nations were brought in during the early stages of the PRC's formation to create a comprehensive, long-term development plan for all of Singapore, one that would set a solid foundation for the next 40–50 years of growth and be updated every decade. The urban master plan, which is produced as a result of conceptual planning, is updated every five years to ensure that it remains up-to-date, progressive, and scientific. After four years of research and planning, the 2001 conceptual blueprint proposed seven planning points, including the following: new housing in familiar places; high-rise urban life; more leisure options; more flexible commercial land; regional commercial centers; extensive railway networks; and a sense of identity; with an increased focus on "people-oriented," national identity, and sustainable development. One may say that the idea master plan is the goal of every Singaporean, and that the master plan itself is the means by which that goal is to be attained [6].

5. The Future Development of and Suggestions for the Economic Dimension of Singapore's Urban Planning

5.1. Future Development Trends of the Economic Dimension of Urban Planning in Singapore

Singapore's urbanization pattern has leveled off, so the country can now devote its attention to optimizing the local spatial layout, promoting the exploration of novel space utilization strategies, and developing Future Development Areas and Reserve Sites to better facilitate urbanization [7]. In order to make Singapore a desirable place to live and work for people of all backgrounds, we must find a way to accommodate a wide range of requirements while also reserving space for the future to accommodate any unanticipated demands and future development opportunities.

5.2. Technological Innovation in the Economic Dimension of Urban Planning in Singapore

The advent of digital tools has altered every aspect of human existence. There is a competition among cities to become "smart," employing data analytics and other digital tools to boost local economies, streamline transportation systems, and influence urban development. It's crucial to study the impact of digital technology on city planning. The government of Singapore has been planning for a "Smart Nation 2015" (in 2015) since 2006, and this was reinforced by the "Sustainable Development Blueprint" in 2009 [8]. For instance, Singapore's government has implemented the Enabling Speedy Registration for Visitors (EASE) program to ensure that visitors can complete their check-in as quickly as possible after arriving at the airport, booking a hotel, and receiving news. This program acts as a "Digital Concierge" for each visitor by anticipating their needs, providing personalized location-based information, and helping with travel arrangements. A ten-year plan called "Smart Nation 2025" was unveiled by the government in 2014; it is an updated version of the "Smart Nation 2015" plan and the first smart nation blueprint in the world [8]. To that end, it seeks to facilitate Singapore's digital transformation across a variety of sectors, including but not limited to healthcare, transportation, education, urban planning, and the financial sector. Aiming to increase digital inclusion, create a world-leading digital economy, and transform the government information management system, the plan offers three pillars of smart country construction: digital society, digital economy, and digital government. The "Blueprint" states that science and technology are essential for long-term economic growth, and it proposes a number of measures to this end, including the widespread adoption of renewable energy sources, the construction of more energy-efficient commercial buildings, and increased investment in R&D to resolve the apparent trade-off between

the effectiveness of energy-saving technologies and their low price tags. To counteract the limitations on growth imposed by few resources, safeguard the environment, and spur economic expansion, Singapore will inevitably increase its spending on cutting-edge technologies in the years to come.

5.3. Suggestions for the Future Development of the Economic Dimension of Singapore's Urban Planning

Singapore may become more competitive in the long run while using less resources if it prioritizes optimizing its use of essential resources like electricity and water.

Second, bolstering urban environmental governance to become Asia's leading high-density, environmentally responsible, clean and green metropolis with a high quality of life and a strong sense of community and place.

Third, thriving community development: strengthen citizens' ties to the neighborhood and take part in Singapore's construction plan for eco-friendly, cost-effective building. At the same time, people's concern for the environment has evolved into a social obligation and a criterion by which businesses are judged.

Fourth, making a 15-minute circle of your life: Urban health issues in the post-epidemic era have received a lot of attention because of the global impact they have had since the outbreak. The widespread spread of the coronavirus has created significant difficulties for metropolitan areas, prompting some to wonder if urbanization has a future at all. It is possible that in the future, Singapore would focus on the "15-minute city" design concept, which seeks to improve citizens' quality of life by making everything within 15 minutes of their homes accessible by foot, bike, or public transportation. It will become a happy city as it develops into a green and prosperous metropolis.

6. Conclusion

In conclusion, effective urban planning demands both long-term foresight and a solid foundation. Long-term aims and short-term urban construction should be taken into account, and duplication of efforts should be minimized by careful planning. The meticulous planning that went into Singapore's urban expansion makes a world of a difference. Only with careful scientific planning can limited resources be maximized, reasonably employed, and utilised most effectively, resulting in a flawless urban development strategy and shape.

Still, there are numerous inadequacies that need to be further optimized and improved, notably in terms of comprehensiveness, because of insufficient study time and the past inability to conduct on-site investigations and explorations in Singapore because of the pandemic. Sample research on this issue and a trip to Singapore with classmates for on-site inspections are only two examples of the future plans for this area that involve more investigation and improvement.

References

- [1] Chye Kiang Heng. *Overview of Urban Planning in Singapore [J]*. World Scientific, 2021, (01), 11-12.
- [2] Jiang Ling. *Experience and inspiration of urban planning and construction management in Singapore [J]*. *Urban Management and Technology*, 2017, 19(03): 26-27.
- [3] Chen Qining. *Drawing on Singapore's experience to promote institutional innovation in China's urban planning management [J]*. *Urban Planning*, 1998(05): 14-17+59.
- [4] *Singapore Urban System Report, 2022*. <https://www.ura.gov.sg/Corporate/Planning>.
- [5] *Singapore's per capita GDP over the years (1960-2021, USD), 2023*. <https://www.macrotrends.net/countries/SGP/singapore/gdp-per-capita>.
- [6] Qu Hualin, Weng Guilan, Chai Yanwei. *Singapore's urban management model and its significance[J]*. *Geographical Research and Development*, 2004(06):61-64.

- [7] Liu Mengting. *Summary of Singapore's experience in ecological city planning and construction [C]*//China Urban Science Research Association,Tianjin Binhai New Area People's Government.2014 (9th) Urban Development and Planning Conference Proceedings-S05 Construction and Excellent Examples of Ecological Urban Areas. 2014:3.
- [8] Mao Daqing. *Urban planning in Singapore [J]*. *Urban and Rural Construction*,2012,No.453(06):87-89.