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Long-term planning and development for urban and regional inclusion, safety, resilience, and sustainability. Insights from Singapore

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Abstract

Today, Singapore is a thriving city-state representing a growth of almost eighty percent since 1990. A feasible combination of state authorities' planning, policy implementation, public-private partnerships, and international assistance has led to the city-state's development and sustainability. Urban economics fluctuations, demographic shifts, environment degradation reaching to irreversible points, among others, are expected to challenge the future of cities the next 50 years. Thus, it is considered essential to plan ahead for sustainability and resource management. This study delves into the broad policies and practices that have contributed to Singapore's success story while also getting into recent years' specifics and modern technologies of sustainable planning and development. Adopting a case study of Singapore long-term, or constant, re-development, findings contribute to the enhancement of the existing body of knowledge in the field of sustainable planning and can benefit those interested in understanding from a policy and operational standpoint. The Singapore example illustrates that technocratic competence in design, planning, and implementation is a fundamental requirement for the long-term world-wide sustainability scheme expressed by the UN Sustainable Development Goals.

KEY-WORDS: Sustainable communities, Urban resilience, Inclusive development, SDG11, Urban stakeholders, Community participation, Urban governance, Sustainable development planning and policy, Climate change adaptation, Green infrastructure

Βιώσιμος, ανθεκτικός, ασφαλής και χωρίς αποκλεισμούς αστικός και περιφερειακός μακροπρόθεσμος σχεδιασμός και ανάπτυξη. Αντλώντας έμπνευση από τη Σιγκαπούρη

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Περίληψη

Η σύγχρονη Σιγκαπούρη είναι μια ακμάζουσα πόλη-κράτος που αντιπροσωπεύει δυναμικό ανάπτυξης σχεδόν 80% από το έτος 1990.Αποτελεί υπόδειγμα για το συνδυασμό πρακτικού σχεδιασμού, εφαρμογής πολιτικών, συμπράξεων δημόσιου-ιδιωτικού τομέα και διεθνούς υποστήριξης, με τον οποίο οι κρατικές αρχές οδήγησαν την πόλη-κράτος προς την ανάπτυξη και τη βιωσιμότητα. Οι αστικές οικονομικές διακυμάνσεις, οι δημογραφικές αλλαγές, και η περιβαλλοντική υποβάθμιση που αγγίζει μη αναστρέψιμα όρια, μεταξύ άλλων, αναμένεται να αμφισβητήσουν το μέλλον των αστικών και περιαστικών περιοχών τα επόμενα 50 χρόνια. Ως εκ τούτου, ο έγκαιρος προγραμματισμός για τη βιωσιμότητα και τη διαχείριση των πόρων θεωρείται απαραίτητος. Σε αυτό το πλαίσιο, η παρούσα μελέτη ερευνά σε βάθος τις γενικές γραμμές πολιτικής καθώς και τις πρακτικές που έχουν ιστορικά συμβάλει στην πετυχημένη περίπτωση της Σιγκαπούρης, ενώ παράλληλα εξετάζει τις ιδιαίτερες και σύγχρονες τεχνολογίες και πρακτικές βιώσιμου σχεδιασμού και ανάπτυξης που έχουν εφαρμοστεί τα τελευταία έτη. Η υιοθέτηση των ευρημάτων από την μελέτη της μακρόπνοης, ή συνεχούς, ανάπτυξης της Σιγκαπούρης, δύναται καταρχάς να συμβάλλει στην ενίσχυση της υπάρχουσας τεχνογνωσίας στον βιώσιμο σχεδιασμό και ανάπτυξη, ενώ παράλληλα μπορεί να ωφελήσει όσους ενδιαφέρονται να κατανοήσουν σε βάθος από πολιτική και επιχειρησιακή σκοπιά το φαινόμενο του βιώσιμου σχεδιασμού. Το παράδειγμα της Σιγκαπούρης αναδεικνύει εμφατικά ότι η τεχνοκρατική ικανότητα στο σχεδιασμό, τον προγραμματισμό και την υλοποίηση αποτελούν θεμελιώδη απαίτηση για το μακροπρόθεσμο παγκόσμιο σύστημα βιωσιμότητας, έτσι όπως αυτό εκφράζεται από τους Στόχους Βιώσιμης Ανάπτυξης του ΟΗΕ.

ΛΕΞΕΙΣ ΚΛΕΙΔΙΑ: Βιώσιμες κοινότητες, Αστική ανθεκτικότητα, Ανάπτυξη χωρίς αποκλεισμούς, Σχεδιασμός και πολιτική βιώσιμης ανάπτυξης, Προσαρμογή στην κλιματική αλλαγή, Πράσινες υποδομές, Ατζέντα 2030

1. Introduction

After British rule and a short Japanese occupation, Singapore became an independent city-state in 1965 and fared for itself. By 1965, Singapore's population had ballooned to nearly two million and the Gross domestic product (GDP) per capita reached 1580 Singapore Dollars (Huff, 1997). It seemed as if the island would use up all the resources in a short amount of time. The state officials in Singapore believed that sustainable development and the pursuit of a green city-state was the solution and it would encourage foreign and local investments, embrace the locals, and help avert the harmful effects of overpopulation (Bercuson, 1995).

The state officials in Singaporere organized the governmental structure into active ministries and departments and established a centralized planning system. The Urban Redevelopment Authority was in charge of the overall planning. In 1971, the first Concept Plan was born, a map out for the coming at least 50 years. Short-term 10-15 years reviews were in action. One-tenth of the land is allocated for parks and green spaces. 4.5% of nature reserves are protected by law. Cleaning up the Singapore River and Kallang Basin provided access to clean potable water and created early initiatives for waste management, pollution reduction, and energy efficiency (Tortajada, Joshi and Biswas, 2013; Chua et al., 2020). Today, Singapore is a thriving city-state with a population of 5.5 million people representing a growth of almost 80% since 1990, a density of 7615 people per square kilometer and GDP per capita of 71318 Singapore Dollars, and a land area of 718 square kilometers, compared to a land area of only 582 square kilometers in 1965.

A combination of government planning, policy implementation, public-private partnerships, and international assistance has led to the city-state's growth and sustainability. As urban populations are expected to grow over the next 50 years, and urban boundaries expand, countries and cities must plan ahead for sustainability and resource management (Alaimo et al., 2022).

This study explores the general policies and rules that have led to Singapore's success story while also getting into recent years' details and modern technologies of sustainable planning and development.

2. Inclusive, safe, resilient, and sustainable Singapore

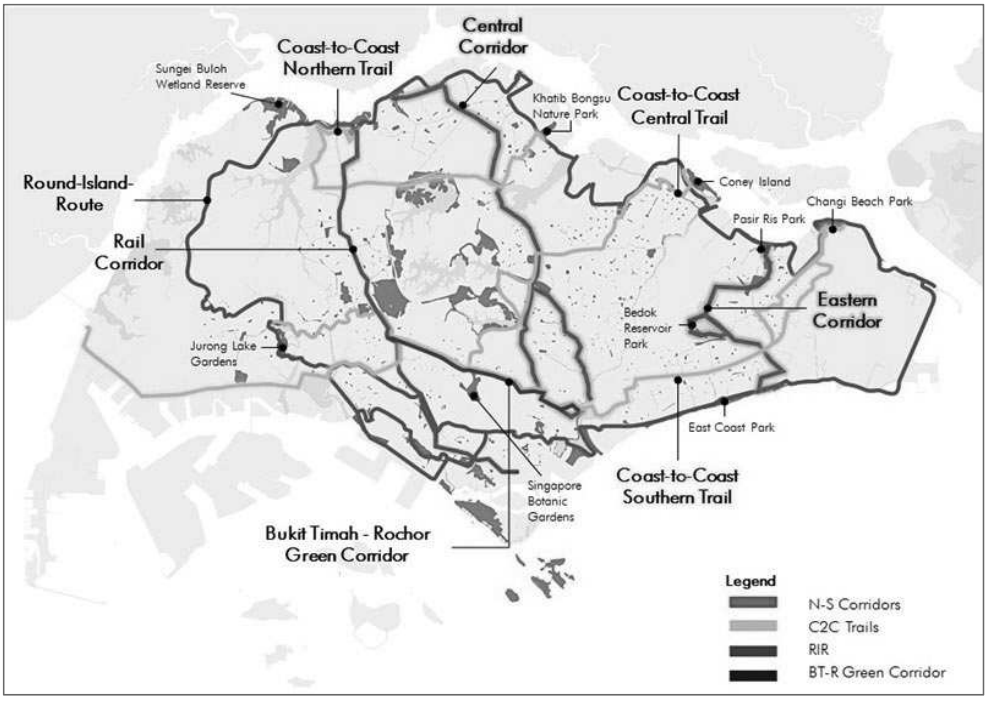
Singapore is a city-state with a small land area and a dense population (Zhou and Zhao, 2016). Given the increasing populace and the need for economic expansion, these circumstances necessitate the cautious and strategic use of space to ensure long-term development (Cho and Križnik, 2016). Securing

adequate land for sustainable growth as well as comfortable and elevated home environments for Singapore necessitates solid and flexible local planning paired with term planning. As a result, Singapore collaborates with a range of public and private stakeholders on policies including government housing and an integrated transportation network, all while ensuring that public parks were incorporated into the urban lifestyle.

Singapore's urban strategic plan is long-term (Ofori, 1994; Rozario and Rosetti, 2012; Friess, 2017), as it ought to be to the objective of sustainable urban development (Vardopoulos, 2022b). The region development authority's plan was of a long-period and major land-dwelling use as well as a transportation strategy that define broad plans to steer growth for the next fifty to sixty years (Yuen, 2009). These ideas turned into a big plan that probably leads out the following ten to fifteen years of advancements. Every ten years, the visualization is evaluated, and every five years the master plan is updated. These evaluations are important to account for a variety of issues, including changes in land use needs (Zitti et al., 2015), economic and technical trends, population changes (Salvati and Carlucci, 2016), present and future generations' economic, social, and ecological needs, as also regional and worldwide economic trends (Sariannidis et al., 2018). The conceptual and grandiose plans outline the way for the project's development and the introduction of fresh and innovative development concepts and techniques.

Greenery Incentive; Considering that most of Singapore was a swampland (Mahizhnan, 1999), the fact that nowSingapore has 33 square kilometers of space devoted to parks, park connectors, and 34 square kilometersof nature reserves, is not a coincidence whatsoever. Singapore's growth in green space is attributed mainly to the national parks and partnering agencies (Figure 1) (See: www.nparks.gov.sg). A park connector network program began in 2007 to enhance green spaces in the city (Tanuwidjaja, 2011). The network has grown from 42 kilometers to 200 kilometers.

Figure 1. Park connectors, trails and footpaths network in Singapore



Source: www.nparks.gov.sg

The streetscape greenery master plan is a blueprint for optimizing available green spaces along the roads for lush, densely planted treatments (Behm and Choon Hock, 2012; Siong, Gwee and Mak, 2013). The Skyrise Greenery Incentive Scheme was introduced in 2009 funding up to 50% of installation costs of rooftop greenery and vertical greenery (Beatley, 2016).To date, there are 322 buildings with skyrise greenery.

The Active, Beautiful, and Clean Waters program (See: www.pub.gov.sg/abcwaters/about) replaces concrete walls of water canals and landscapes for better integration with surrounding parks and green space(Neo et al., 2022). National parks and partnering agencies have established 3P sectors: people, public sector agencies, and private corporations. Community-In-Bloom program attempts to encourage a gardening culture in Singapore(Tan and Neo, 2009; Tan, Wang and Sia, 2013). A garden city fund was set up in 2002 to allow donations to the city's greening efforts. Donations and public-private partnerships allowed national parks and partnering agencies to launch a 1 square kilometers

gardens by the bay development, a joint effort between government agencies, architectural and design firms, and construction companies that sought to blend nature, modern technology, and environmental management (Yuen, 1996), current subject to the imperative of sustainable development for human well-being (Cortesi, Vardopoulos and Salvati, 2022).From 1986 to 2007, green cover on the island grew from 35.7% to 46.5% despite a 68% population growth. The concerted planning and efforts of Singapore's government agencies and private companies have enabled Singapore to become one of the greenest countries in the world against a backdrop of limited land and a growing population(Chang and Huang, 2011).

Housing a Nation; About eighty percent of Singapore's citizens live in municipal properties constructed by the Housing Development Board (Thong, Yap and Seah, 2000). Nine out of ten of those residents have their own homes. To ensure that public housing is inexpensive, it is substantially subsidized (Teo, Devadoss and Pan, 2006). On the highest of the supported sale prices for newly constructed Housing Development Board suites, a progressive system of housing allowances has been implemented. As a result, many first-time buyers pay off their mortgages with less than a quarter of the monthly salary. This is significantly below the international norm of housing accounting for 25 to 30 percent of monthly salary. Apart from providing shelter, public housing also gives a place to live, work, play, and education. Commercial areas, schools, transportation hubs, parks, etc. are all available in Housing Development Board communities to fulfill the diverse demands of inhabitants. To provide people with a high quality of life and cut commuting times, new developments are centered on the underlying principle of sustainability (Vardopoulos, 2021a). Most Housing Development Board towns are built on the Neighborhood Social Concept which involves clustering multiple neighborhoods around a community center that provides necessary facilities within walking distance. Neighborhood Social Concept's newest suburb in the north of Singapore, is built on a novel design concept in which residential complexes share a shared green space and a range of very well amenities to improve access and promote clean commuting. In and around Neighborhood Social Concept flats, a green network of nature reserves, parks, park connections, forest roads, and other natural spaces has made living in government housing less attractive.

Building Safety; To enhance the environment sector, the Building and Construction Authority promotes a strong attitude of safety knowledge and control. The Building and Construction Authority maintains safety and quality standards whilst ensuring that the regulatory regime stays relevant as projects grow larger and technical sophistication via frequent assessments (Ong,

Anggadjaja and Soh, 2009). The development control act and other regulations govern the design and construction of buildings in Singapore. This involves a stringent system of checks and balances across the whole building lifespan, including design, construction, licensing before occupancy, and post-occupancy maintenance. Experienced professionals must undertake frequent assessments ofcompleted structures under the regular structure regime to assess the state of the building and, if needed, prescribe repair actions (Low, 2011).

Transit-oriented development and planning; Singapore implements a transport development management design method to ensure that transportation capacity can serve a wide range of land uses and that limited space is effectively used (Yuam, 1997). The Road Transport Grand Plan, which is reviewed every five years, guides land transportation policies and initiatives in this regard (Santos, Li and Koh, 2004). Through enhanced connectivity and services, the long-term goal is to make mass transit the preferred mode of transportation (Toan and Van Dong, 2020; Papavasileiou and Mitoula, 2021). Walking or mobility by bicycle and the usage of personal mobility equipment are all encouraged as well (Nguyen, Koh and Wong, 2015). Singapore seeks to build a smart city by combining innovative economic models and technology such as car-sharing and eco-vehicles, a mobility model that is focused on public transportation rather than private transportation (Yuam, 1997; Mitoula and Papavasileiou, 2021).

Promoting public transport; By the end of the year 2030, the goal is set up for public transportation to account for 75% of evening peak trips, and at least 85% by 2050. To do just that, Singapore's railway system will be extended from 230 kilometers today to 360 kilometers by 2030, allowing eight out of ten houses to be within ten minutes of a train station and 85 percent of large transportation journeys of less than 20 kilometers to be finished within 60 minutes (Kong et al., 2019; Wang, 2019). Furthermore, bus routes will be expanded and service level agreements will be improved. The public bus improvement program was launched in 2012 to give passengers enhanced communication, less comfortable rides, and reduced longer waits (Leong et al., 2016). From 2012 and 2017, 1000 public state buses were introduced, together with 80 additional bus services, to increase connectivity to key transportation hubs and important social and commercial establishments (Dou, Wang and Meng, 2019).

Inclusive transport; Singapore continues to take steps to ensure that public transportation is accessible to everyone, including the elderly, disabled, visually impaired, and families with kids (Diao, 2019). Every railway station has had at minimum one obstruction-free entry by an elevator, a perceptible guide scheme, and power chair bathrooms since 2006. More than 85 percent of railway stations have now roadblock accessibility to the decks from the rail

station. Priority boarding areas for customers with additional needs on railways, city transports, and elevators were launched in 2015 and are now in operation at 20 railway stations and nine bus intersections. Since 2017, city transports have been outfitted with the capability of allowing parents to panel with their children in open buggies. All city automobiles will be nature-friendly by the year 2024 (Rojas Lopez, Toan and Wong, 2020).

Walking and cyclingplan; Walk bike ride is a movement in Singapore that aims to make walking, cycling, and taking the subway a way of life (Rojas López and Wong, 2017; Henderson, 2018). A pedestrian and biking plan was implemented for areas with heavy pedestrian and bike traffic to help realize this aim. The pedestrian and biking plan mandates that builders ensure that the design accommodates the demands of cyclists and pedestrians rather than only automobile traffic. It also calls for the construction of stairs to provide roadblock access. Furthermore, by exempting bicycle lots and associated facilities from the gross floor space calculation, builders are encouraged to offer them. Moreover, more covered pathways are being built so that people can easily travel to railway stations, busy intersections, and local facilities despite the weather. By the end of 2018, 200 kilometers were completed.

Waste prevention and management; One of the more pressing issues for Singapore has been waste management. There is very little room for landfills with limited areas, and it is challenging to locate landfills far away from residential areas. Additionally, from 1970 to 2000, the amount of solid waste disposed of increased six times to 7600 tons per day. Acknowledging the waste problems, state officials borrowed 25 million United States of America Dollars from the World Bank in 1973 to build its first incineration plant. Since then, the government has opened additional incineration plants in the city-state while closing a series of landfills away from residential areas (Lang, 2005). The ultimate aim is to reduce, reuse and recycle waste. The government currently owns and operates four waste-to-energy incineration plants (Tun et al., 2020). These plants reduce waste volume by up to 90%.New technologies allow the incineration process to generate 962 million kilowatt-hours of electricity or 2-3 percent of Singapore's total electricity usage. Advanced air pollution control equipment mitigates the pollution that is otherwise generated. The ash created from the incineration plants and waste that cannot be burned are sent to Semakau Landfill (Chan, 2016). It covers 3.5 square kilometers and has a capacity of 63 million cubic meters with an estimated lifespan of 35 to 40 years due to increasing recycling rates. The landfill is not a wasteland due to the careful construction of an impermeable rock around its perimeter. The marine ecosystem is protected, and the wildlife on and around the island hasn't been affected negatively. Although

the incineration plants and Semakau landfill are successful to a large extent, they provide an unsustainable means to manage waste at current growth rates. Therefore, the National Environment Agency, the government body responsible for waste management, has set up initiatives and programs to reduce waste disposal through increased materials recycling.Some of the programs that the National Environment Agencyhas set up since the 1990s include a National Recycling Program that has been increasing the number of recycling bins and providing more frequent collection services, a Recycling Program for Schools, and a Recycling Program for Industrial and Commercial Premises. The voluntary Packaging Agreement seeks to reduce packaging waste. Essential 3P (people, public, private) partners such as the Singapore Environment Council, the Packaging Council of Singapore, and participating industries have made this initiative a success. In 2006, the national 'Why Waste Plastic Bags? Choose Reusable Bags!' campaign was launched to encourage the use of reusable bags for shopping. In 2011, a new requirement was launched whereby all waste-collection companies would incentivize households to recycle more. Recycle bins are now fitted with electronic tags to measure the amount of waste recycled. The 'Clean & Green Singapore' campaign, the Recycling Outreach Program, the Pre-School 3R Training Kit, the Clean and Green Week Schools Carnival, and the promotion of Earth and World Environment Days have been launched to encourage the public to recycle as much as possible and to get others to do so as well (Neo, 2010). From 2000 to 2015, waste generation in Singapore increased from 4.65 million tons to 7.5 million tons, 61.4 in percent terms. During the same period, the recycling rate has increased from 40% to 60% and continues to grow. The government is on track to meet the target of recycling 65% by 2020 and 70% by 2030, set in the Sustainable Singapore Blueprint (Kerdlap, Low and Ramakrishna, 2019).Singapore is getting closer to meeting its sustainable waste management targets of Towards Zero Landfills and Towards Zero Waste as its recycling rate rises.

Zero energy building: According to the UN Environment Programme Report, buildings account for one-third of greenhouse gas emissions, 40 percent of the world's energy consumption and resources, and 25 percent of global water consumption. In the densely built-up urban environment of the island, with limited land space and few natural resources, greening buildings is vital to sustainability. The effective way for a city to reduce its carbon footprint in the long term is energy and water efficiency (Vardopoulos, 2017; Cremades et al., 2019), waste reduction (Zorpas and Lasaridi, 2013; Vardopoulos, Konstantopoulos and Zorpas, 2019), or sustainable techniques and materials. In 2005, Singapore's building and construction authority introduced the Green Mark green

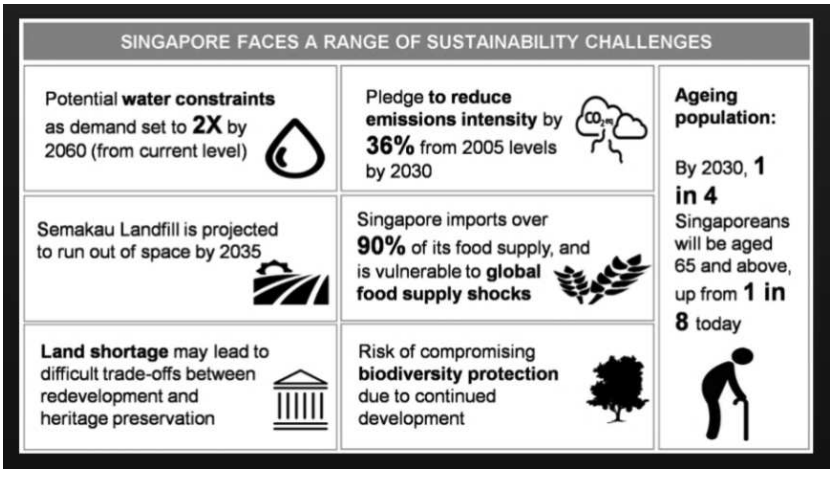
buildings rating system (Li et al., 2011). It evaluates and grades a building's environmental impact and sustainability performance (Vardopoulos, 2019b). The Green Mark allocates points to projects according to their performances in the categories of energy efficiency, water efficiency, environmental protection, indoor environmental quality, and other green features and innovations, which are all aspects well-addressed consistently in the wider scholarly literature (Savvides and Vassiliades, 2017). Based on the points allocated, a project was awarded Green Mark Certified, Gold, Gold+and Platinum ratings. The system is heavily weighted towards achieving energy efficiency due to the importance of energy in the tropical environment. The building and construction authority published the Green Building Masterplan in 2006, 2009, and 2014 introducing new legislation, financial incentive schemes, industry training programs, public outreach campaigns, and research and development initiatives (Shan et al., 2020). In 2006, a 20 million Singapore Dollars Green Mark Incentive Scheme started. It offers direct monetary incentives to developers who score above the certified level. In 2008, it amended imposing minimum standards on all new buildings to a level on par with the certified average. The Singapore Ministry of National Development launched a 50 million Singapore Dollars research and development fund to encourage green building technologies and solutions research.Additional incentive schemes include the 100 million Singapore Dollars Green Mark Incentive Scheme for Existing Buildings, which are of great significance on the sustainability agenda (Vardopoulos and Theodoropoulou, 2018, 2019, 2020; Vardopoulos, 2019a, 2021b; Vardopoulos et al., 2021), the Green Mark Gross Floor Area Incentive Scheme, the 5 million Singapore Dollars Green Mark Incentive Scheme for Design Prototype and Building Retrofit Energy Efficiency Financing Scheme. Throughout, Singapore has been leading by example. In 2006, all new public sector buildings and those undergoing significant retrofits had to meet standards on the level of Green Mark Certified. In 2009, all new public sector buildings with air-conditioned floor areas of more than 5000 square meters had to achieve a platinum rating. Existing buildings with air-conditioned floor areas of more than 10000 square meters had to be retrofitted to achieve Green Mark Gold Plus rating. Additionally, the state authorities are spending 52 million Singapore Dollars to create a Green Buildings Innovation Cluster whose goal will be to develop large-scale and high-impact demonstration projects and address barriers to the widespread adoption of energy-efficient solutions and practices. The building and construction authority devised strategic trusts that outline the basis for policy regarding green buildings. The thrusts are the public sector taking the lead, spurring the private sector, furthering the development of green building technology, building industry capabilities through training,

profiling Singapore and raising awareness, and imposing minimum standards. These trusts and the countless programs and incentive schemes have led to success (Karnavos et al., 2022). The number of green Mark buildings in Singapore has grown from 17 in 2005 to more than 2100 in 2014, and the gross floor area of green buildings amounts to 25% of the total built-up areas of Singapore.

3. Future challenges

Singapore's natural resource constraints are the main and biggest issue; and while the country has tackled them admirably since independence, these challenges remain pertinent. In addition, economic prosperity and demographic changes, have created a fresh set of sustainability challenges (Figure 2) for Singapore, and not only (Salvati and Carlucci, 2017). As population aging continues and the pursuit of non-economic needs (i.e. social and cultural) intensifies, these new challenges will become increasingly evident (Cecchini et al., 2019; Cividino, Egidi and Salvati, 2020; Halbac-Cotoara-Zamfir et al., 2020).

Figure 2. Singapore sustainability challenges



Source: www.ecosperity.sg

4. Discussion and Conclusions

Sustainable development goals are the goals that are globally recognized to plan a better future for upcoming generations (Kyriakogkonas et al., 2022). The seventeen sustainable development goals have the agenda to coherent and integrate nations into a structure by the end of 2030 (Mitoula, 2022).

While Singapore has responded well to its sustainable challenges, many of these challenges are likely to intensify with continued economic development (Garefalakis et al., 2022).

Be cognizant of the trade-offs; Overcoming the various sustainability challenges requires making difficult trade-offs. One way to examine these trade-offs is through the lens of the government budget. There is a finite amount of financial resources available to the state each year, which is responsible for allocating these resources across priority areas as efficiently as possible. Increasing spending on public healthcare to accounting for aging trends will mean fewer resources are available for maintaining and upgrading roads, schools, and public housing, to name a few. Under the annual budget lies a number of other policy trade-offs that need to be constantly assessed. For instance, how does Singapore choose between higher taxes and the need to reinforce the concept of personal and family responsibility? What is the impact of higher taxes on foreign capital and labor, and is Singapore's current economy resilient enough to withstand potentially negative shocks that come with it? Increasing current expenditure may lead to immediate higher well-being or even sustainable long-term growth if invested productively, but may also jeopardize Singapore's strong reputation of fiscal discipline in the capital markets(Alexopoulos et al., 2020). How and when should Singapore utilize its reserves while factoring in issues of equitable intergenerational transfers? The trade-off between biodiversity and land use was another keytheme (Prokopová et al., 2019). Singapore's land requirements will continue to come into direct conflict with the need to conserve biodiversity. In most cases, the clearing of land for new infrastructure will unavoidably lead to some destruction of flora and fauna, but the key is to be as "light-footed" as possible, and to take necessary remedial actions(Salvati, 2013). Another trade-off stemming from Singapore's land constraints is the need to strike a balance between the desire to preserve historical sites with the need for development (Vardopoulos et al., 2020; Vardopoulos, 2022a). This tension has previously led to public dissent, particularly over the demolition of the Old National Library building, and more recently, Bukit Brown Cemetery. There are no easy solutions to these trade-offs and, ultimately, Singaporeans have to make these decisions in a collaborative manner. The key, however, is to engage in constructive and inclusive discussions based on balanced and well-supported arguments.

Holistic and long-term planning; Singapore should guard against quick-fix solutions to deal with complex and long-term sustainability challenges. For example, given the shrinking labor force, sustainable economic growth can only be achieved through higher labor productivity (Lemonakis et al., 2016). A truly sustainable approach to higher labor productivity includes retraining workers

to adapt to dynamic labor market conditions (e.g. smart (Vardopoulos et al., 2020), digitization (Doukas, Maravegias and Chrysomallidis, 2022), changing the curriculum and mindsets of parents to prepare the younger population for emerging industries, ensuring that Singapore has the enabling conditions for new, fast-growing industries to flourish, among others. Effective communication is required to create the policy space needed for holistic, long-term planning.

Caring at the core; Singapore should double down on its efforts to create a compassionate society. As actors in society have diametrically different needs and interests, policy trade-offs will invariably create relative winners and losers. Inspiring people to consider the needs and interests of others, to care more for one another, and encouraging businesses to be responsible for their operating environments, would go a long way in helping tackle some of Singapore's many sustainability challenges.

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