Making cities and human settlements inclusive, safe, resilient and sustainable
Centre for Liveable Cities, Ministry of National Development Singapore

S ingapore is a city-state with limited land and a high urban density. These unique circumstances demand prudent and strategic use of space to ensure sustainable development, given an increasing population and the necessity of economic growth. This requires sound and dynamic urban planning, combined with integrated long-term planning to ensure sufficient land for sustainable growth as well as a convenient and high-quality living environment for Singaporeans. Singapore therefore works with various stakeholders on policies such as those geared towards public housing and an integrated transport network, while ensuring the incorporation of green spaces throughout the urban landscape. Ultimately, the goal is to create a pleasant environment in which all Singaporeans can work, live, and play.

Integrated land use planning
Singapore takes a long-term approach to urban planning. This is implemented through the Urban Redevelopment Authority (URA)’s Concept Plan, a long-term strategic land use and transport plan that outlines broad strategies to guide development for the next 40 to 50 years. New approaches to district planning include integrating utilities, facilities and services — such as district cooling systems and common services tunnels — at district level instead of at a building level. This will allow the achievement of a wider range of economic needs such as business expansion and engineering complexity. New approaches to district planning include integrating utilities, facilities and services — such as district cooling systems and common services tunnels — at district level instead of at a building level. This will allow the achievement of a wider range of economic needs such as business expansion and engineering complexity.

Building safety
The Building and Construction Authority (BCA) champions safety, sustainability, and engineering excellence. BCA’s regulatory framework includes a rigorous system of checks and controls throughout the entire building lifecycle of design, construction, commissioning before occupation, and maintenance after completion. This includes a rigorous system of checks and controls throughout the entire building lifecycle of design, construction, commissioning before occupation, and maintenance after completion.

Transit-oriented development and planning
Transit-oriented approach to development and planning in order to ensure that transport capacity is able to support the variety of land uses, and that limited land is utilised productively. In this respect, land transport strategies and measures are guided by the Land Transport Master Plan, which is reviewed every five years. The long-term goal is to make public transport the preferred mode of transit, through improved connectivity and better services. Active mobility — walking, cycling, and the use of personal mobility devices — is also promoted. Together with new business models and technologies, such as car sharing and self-driving vehicles, Singapore aims to advance a mobility paradigm that is centred away from private transport. The following are some examples of Singapore’s transit-oriented initiatives:

Promoting public transport
The aim is that 75 per cent of morning and evening peak journeys should be made using public transport by 2030, and at least 85 per cent by 2050. To achieve this, Singapore’s rail network will be expanded from 230km today to 360km by 2030, enabling eight in ten households to be within a ten minute walk of a train station, and 85 per cent of public transport journeys of less than 20km to be completed within 60 minutes. In addition, bus networks will be extended and their service levels enhanced. In 2012, the Bus Service Enhancement Programme was introduced to provide commuters with better connectivity, more comfortable journeys, and shorter waiting times. Between 2012 and 2017, 1,000 Government-funded buses were added, with 80 new bus services rolled out to improve connectivity to major transport nodes and key community and commercial facilities.

Walking and cycling plan
Walf Cycle Ride SG is a vision to make walking, cycling and riding public transport a way of life for Singaporeans. To help realise this, a new planning and cycling plan (WCP) was introduced for developments with high pedestrian and cyclist traffic. The WCP requires developers to ensure that designs meet the needs of pedestrians and cyclists instead of catering mainly to vehicular traffic. It also provides for the building of ramps for barrier-free access. Further, developers are incentivised to provide bicycle lots and supporting facilities through exemption of these spaces from the gross floor area calculation. In addition, more covered walkways are being constructed so that people can walk to train stations, bus interchanges, and neighbourhood amenities comfortably, regardless of the weather. To date, 120km of sheltered walkways have been constructed, with another 200km completed as of end-2018.

Housing a nation
Over 80 per cent of Singapore’s resident population lives in public housing built by the Housing and Development Board (HDB). More than nine in ten of these public housing residents own their flats. Public housing is heavily subsidised to ensure that it is widely affordable. A progressive system of housing grants has been put in place, on top of subsidised purchase prices for new HDB flats. As a result, most first-time home buyers today use less than a quarter of their monthly income to pay their housing loans. This is well below the international benchmark of 30 to 35 per cent of monthly income allocated to housing.

Beyond shelter, public housing provides an environment in which to live, work, play, and learn. HDB towns have a full range of facilities to meet the various needs of residents, such as commercial spaces, schools, transport nodes, and parks.

New towns today are centred on the fundamental philosophy of sustainability, so as to provide residents with a high quality of life and reduce commuting times. Most HDB towns are developed based on the ‘Neighbourhood Principle’, where several neighbourhoods are grouped around a town centre that provides essential services within close reach of residents. Panjang, HDB’s newest town in the northeast of Singapore, is based on a newer planning concept where smaller residential estates share a common green and a variety of well-integrated facilities to enhance accessibility and encourage clean commuting. The green network of nature reserves, parks, park connectors, tree-lined roads and other natural areas built within and around HDB estates has made living in public housing more desirable.

The Concept Plan is reviewed at least once every ten years and the Master Plan every 20 years. These reviews are necessary to take into account various factors such as changing land use needs; socio-economic and technological trends; demographic changes; the economy, social, and environmental needs of current and future generations; as well as regional and global economic developments.

The Concept and Master Plans map out the directions for Singapore’s growth and introduce new and innovative approaches to planning and development. For example, in Master Plan 2005, URA’s identified future growth areas to meet a wider range of economic needs such as business expansion and diversification. As part of the plan, the Jurong Lake District in the western part of Singapore was identified as a new mixed-use business district.

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City in a Garden
The distinctive Marina Bay Central Business District skyline demonstrates Singapore’s commitment to building a City in a Garden.
Safer streets

To make streets safer for the elderly and for those with disabilities, 50 “Silver Zones” will be implemented by 2023 in areas with high senior resident populations, in amenities frequented by seniors, and in areas with high rates of accidents involving senior pedestrians. Silver Zones include road safety features, such as lower speed limits, centre dividers, and humps and chicanes that slow down motorists and remind them to look out for pedestrians. To date, 15 Silver Zones have been completed.

Future opportunities

New growth districts

Singapore is optimizing space by transforming existing areas into new growth districts. This includes redeveloping the Greater Southern Waterfront region after the relocation of existing maritime port to the western part of the country, and the redevelopment of the Paya Lebar region in the northeast, after the relocation of the existing military airport.

Spatial strategies

Spatial strategies are being applied to avoid overcrowding. This includes setting up economic zones outside the traditional business and financial district in the central region, such as Changi Business Park in the East and one-north® in the West. In tandem, more residential spaces are being planned in central Singapore to enable more people to work nearer their homes.

Underground infrastructure

Options are being explored to shift more of the transport and utilities infrastructure and storage facilities underground. Some examples under study include an underground goods mover system to reduce footprint impact, underground electrical substations, and roof cavities for storm-water drainage and storage to increase water resilience.

As an enabling city

The aim is to transform the country into an enabling place for seniors to live independently and comfortably while remaining integrated in the community. For example, barrier-free accessibility, and more existing and community spaces in housing estate have been introduced. There is also a programme to introduce more accessible and senior-friendly fittings such as grab bars and slip-resistant floor tiles.

To better engage senior citizens, spaces have been integrated with facilities such as day care, and health and community programmes to develop community-centric and barrier-free senior-friendly amenities. A network of therapeutic pocket gardens based on horticulture therapy all around the country is centre to support seniors with dementia as well as post-stroke patients through the provision of contemplative spaces and activity zones.

Senior-friendly amenities

Seniors can live close to their families and communities through priority schemes to rent HDB flats, a Priority Housing Scheme for mobile flats, and purpose-designed housing options such as three-generational ‘3-G’ flats and shared bedroom ‘First’ flats. The country is also expediting integrating senior-friendly housing and senior care services, such as assisted living developments.

Green buildings

Singapore is working to ensure that at least 80 per cent of total building gross floor area will be green by 2030. To this end, the PCA Green Mark Scheme was launched in 2005 to promote resource efficiency and reduce any potential environmental impacts on the built environment. The Green Mark Scheme paved the way for the formulation of Singapore’s first Green Building Masterplan in 2006, focusing on new buildings. Following consultations with industry stakeholders, the Masterplan was revised in 2009 and 2014 to cover existing buildings and tenanted space, and drive the built environment sector to meet the 80 per cent green buildings target. To date, Singapore has more than 3,200 green buildings with a total gross floor area of more than 94 million square metres equivalent to more than 34 per cent of total floor area of all buildings in Singapore.

Green transport

In addition to promoting public transport and encouraging active mobility, Singapore is encouraging a shift to cleaner vehicles. To help vehicle purchasers make more informed decisions, the Fuel Economy Labelling Scheme was introduced, providing information on the fuel efficiency of each vehicle model. Another scheme provides rebates for low-emission vehicles and levies surcharges for high-emission ones. In December 2017, an electric car-sharing programme, BlueSG, was rolled out to introduce 1,200 shared electric cars and 2,000 charging kiosks island-wide by 2020. In addition, 50 hybrid buses were deployed by the first quarter of 2019, and 60 electric buses are slated for trials by mid-2020.

Green spaces

Despite the constraints, close to 10 per cent of land in Singapore is set aside for parks and nature conservation. Today, more than 80 per cent of households live within 900m, or a ten-minute walk, of a park. The aim is to expand this to more than 90 per cent of households by 2030, by creating more neighbourhood and regional parks. One of the most scenic regional parks in the Singapore Botanic Gardens (SBG). With over 150 years of history, the SBG is a premier tropical botanical garden and is Singapore’s first UNESCO World Heritage Site. Located just outside the main shopping district, the SBG is also a prime example of green spaces coexisting within a broader urban landscape.

As Singapore continues its transformation into a City in a Garden, the National Parks Board (NParks) has identified six key areas to fulfil this vision:

• Establish world-class gardens
• Rejuvenate urban parks and enliven the streetscape
• Optimize urban spaces for greenery and recreation
• Enrich biodiversity in the urban environment
• Enhance competences of the landscape and horticultural industries
• Engage and inspire communities to co-create a greener Singapore.
The National Cycling Plan launched in 2010, envisions cycling as an integral part of Singapore’s transport system. Since 2013, the country has been working on its Greenery Awards in 2013, which recognised the integration of greenery in its architecture. Singapore aims to achieve 200ha of skyrise and vertical greenery by 2030. The Park Royal Pickering Hotel was one of the early recipients of the Skyrise Greenery Awards in 2013, which recognised the integration of greenery in its architecture.

In 2018, the three events were attended by a record number of over 2,500 delegates from over 45 countries. The URA Academy has also been organising a four-day Integrated Land Use Planning course since 2009 to provide a comprehensive overview of URAs core work.

World Cities Summit

The biennial World Cities Summit (WCS) is an exclusive platform for government leaders and industry experts to address livable and sustainable city challenges, share integrated urban solutions, and forge new partnerships. Jointly organised by Singapore’s Centre for Liveable Cities (CLC) and the Urban Redevelopment Authority (URA), key highlights of the Summit include the WDS Mayor’s Forum, the Lee Hsien Yew World City Prize, and the WCS Young Leaders’ Symposium. The Summit is held in conjunction with the Singapore International Water Week (SIWW) and the CleanEnviro Summit (CES). The Summit is attended by international city leaders, offcials, and practitioners from 42 countries. CLC’s international programmes are guided by the Singapore Livability Framework, which identifies the outcomes and systems of a livable and sustainable city. The Framework is also a means to assess sustainable urban development as outlined in SDG 11 and the New Urban Agenda.

In 2016, Singapore signed a three-year MOU with the UN Environment on several initiatives related to sustainable buildings. For instance, the Centre for Sustainable Buildings (BCA) and UN Environment collaborations include rehabilitating its 2.6 km² wastewater pond; conducting research in green development; developing green building standards and constructing green buildings; mapping renewable energy sources such as wind, solar, and geothermal energies; encouraging residents to lead environmentally-conscious lifestyles; and promoting green transport.

In line with SSTEC’s vision to serve as a model of sustainable development for other cities, Singapore and China have been working together to document lessons and experiences gained over the last ten years to share with other cities in China and beyond. The documentation was launched at SSTEC’s tenth year celebrations in 2018.

Sustainable Cities and Communities

In 2017, Singapore and China embarked on a flagship bilateral project to jointly develop the Sino-Singapore Tianjin Eco-City (SSTEC). The 30km² SSTEC provides a platform for both countries to collaborate on environmental protection, resources and energy conservation, and other urban sustainability. Prior to the development of the SSTEC, the site comprised mainly unutilised salt paddies, barren waste land and polluted water bodies. As of 2018, the 4km² Start-Up Area is largely completed. The SSTEC is now home to approximately 80,000 residents and 5,000 registered companies.

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1 Hawker centres are permanent food centres in Singapore where people from all walks of life can enjoy affordable food in a clean environment.

2 one-north is a 200 ha development hosting a cluster of research facilities and business parks space to support the growth of Biomedical Sciences, Information Technology (IT), Media, Planetary sciences and Engineering industries.

3 The Proximity Housing Grant applies to families purchasing public flats to live with or close to each other, i.e. within 4 km. For example, this would apply to married or engaged couples who are buying an HDB flat to live with or near their parents.