賽馬會齡活城市
Jockey Club Age-friendly City

Thematic Report Series on the Concept of

an Age-friendly City in Hong Kong

Outdoor Spaces and Buildings

Initiated and funded by:

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香港中文大學
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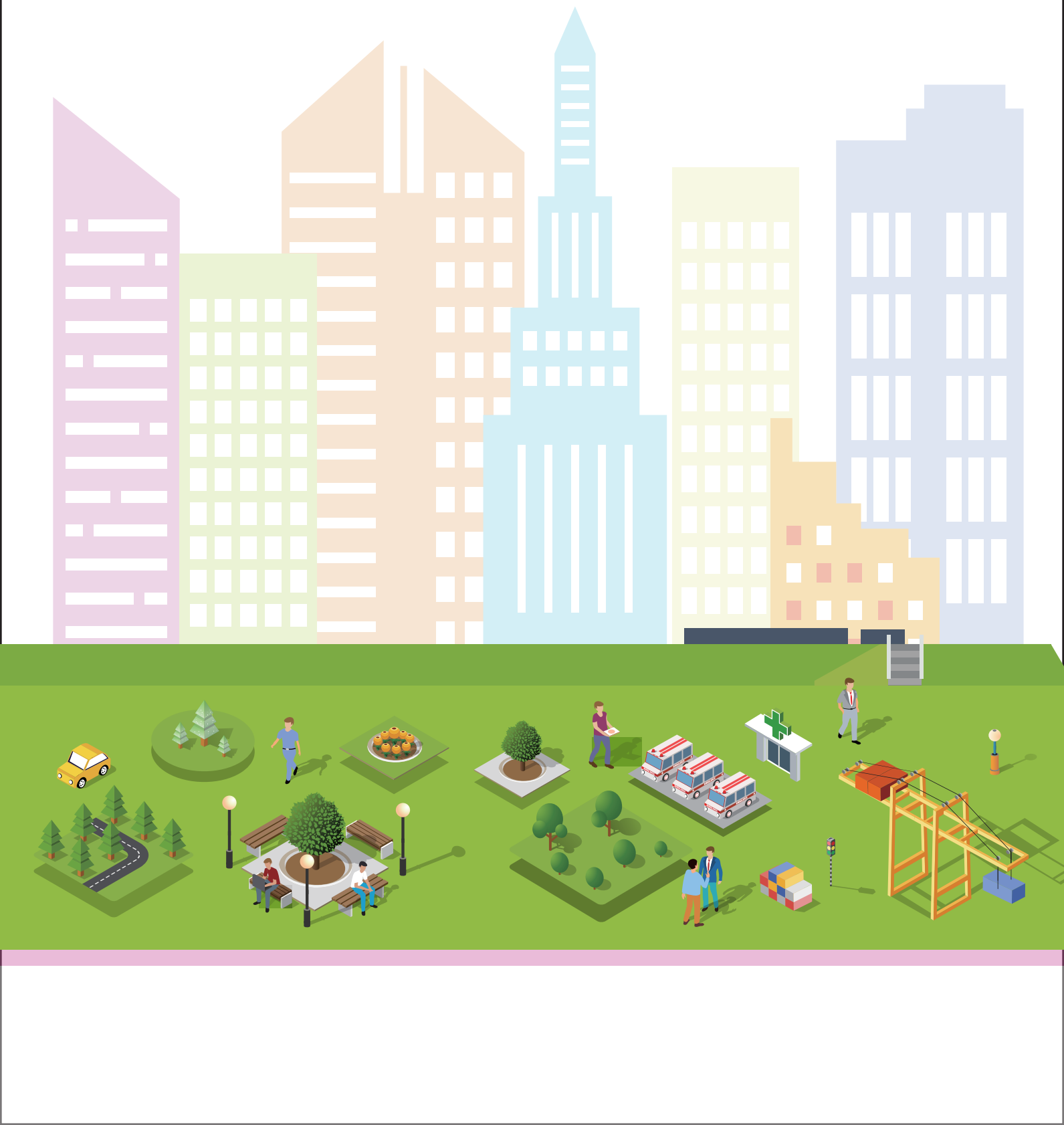
CUHK Jockey Club Institute of Ageing



Thematic Report Series on the Concept of an Age-friendly City in Hong Kong - Outdoor Spaces and Buildings

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The CUHK Jockey Club Institute of Ageing

In support of its aspiration to overcome the social challenges created by an ageing population, the Chinese University of Hong Kong (CUHK) established The CUHK Jockey Club Institute of Ageing in 2014, with generous support from The Hong Kong Jockey Club Charities Trust.

Since its establishment, the Institute has embarked on collaborative research in gerontechnology, healthy ageing, and community intervention programmes for the promotion of health and the prevention of frailty. An effort to promote messages of active ageing has been made through a dedicated series of TV programmes; announcing the results of the first multidimensional AgeWatch Index of Hong Kong in 2015; development of Hong Kong Elder Quality of Life Index incorporating AgeWatch Index for Hong Kong since 2016-2017; and supporting the implementation of the Jockey Club Age-friendly City Project, initiated and funded by The Hong Kong Jockey Club Charities Trust.

Building on the University's long-standing efforts of ageing research and its partnership with charitable organizations, the Institute will continue to develop its capacity and serve as a platform for ageing-related research, training and community outreach programmes.

Vision

To make Hong Kong an age-friendly city in the world.

Mission

To synergize the research personnel and efforts on ageing across disciplines to promote and implement holistic strategies for active ageing through research, policy advice, community outreach and knowledge transfer.

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Preface by The Hong Kong Jockey Club

Given our city's ageing population, The Hong Kong Jockey Club Charities Trust has since 2015 been implementing the Jockey Club Age-friendly City Project in partnership with four local university gerontology research institutes to support an age-friendly culture in all 18 districts in Hong Kong.

Eight domains of an age-friendly city have been identified by the World Health Organization. The CUHK Jockey Club Institute of Ageing, our project partner, has published a series of thematic reports featuring four of these in the Hong Kong context, including on Outdoor Spaces and Buildings, Community Support and Health Services, Transportation, and Communication and Information.

This thematic report focuses on Outdoor Spaces and Buildings. It examines the importance of having the requisite favourable environments for healthy ageing. It also explores the relationship between urban planning and health, and investigates the state of buildings and their effect on elderly health. Additionally, it provides a review of the initiatives implemented by the Government, non-governmental organisations, business sector and academia.

Our support for the Jockey Club Age-friendly City Project is made possible by the Club's unique integrated business model through which racing and wagering generate tax revenue and charity donations. As one of the world's top ten charity donors, we support Hong Kong's advancement as an age-friendly city through collaborative efforts.

On behalf of the Trust, I would like to express my sincere thanks to the CUHK Jockey Club Institute of Ageing for publishing these thematic reports. We hope the publications will be widely shared and facilitate discussion as well as joint action on enhancing our city's age-friendliness.

Mr Leong Cheung
Executive Director, Charities and Community
The Hong Kong Jockey Club

Executive Summary

This report is one of four thematic reports in a series on the concept of an “Age-friendly City” (AFC) in Hong Kong. Each of the four reports in the series investigates a selected AFC domain by understanding relevant local initiatives as well as worldwide experiences and practices, covering Outdoor spaces and buildings, Community support and health services, Transportation, and Communication and information, respectively.

With the aim of promoting the reader’s awareness of developing an AFC, the report specifies the domain of Outdoor spaces and buildings within the local context of Hong Kong and its importance in the establishment of an AFC. It also discusses the relevant prospects and policy implications for Hong Kong.

行政摘要

本報告為香港「長者及年齡友善城市」專題報告系列的其中一本。在四本專題報告中，每本報告會透過研究香港相關的措施以及海外經驗，分別探討長者及年齡友善城市概念中的四個範疇：室外空間和建築、社區與健康服務、交通、以及信息交流。

為提高大眾對建立長者及年齡友善城市的關注，本報告闡述香港在「室外空間和建築」範疇的情況，以及此範疇在建立長者及年齡友善城市的重要性，並就其將來的發展以及制定有關未來政策的啟示，作出討論。

Chapter 1 Introduction

1.1 The Role of Outdoor spaces and buildings in Healthy Ageing

1.1.1 The Domain of an Age-friendly City (AFC): Outdoor spaces and buildings

The World Health Organization put forward the concept of "age-friendly cities" in 2007, emphasizing the importance of creating a favourable physical and social environment for the elderly. An age-friendly city is not only limited to the health sector, but also takes into account the natural and built environment, social participation and inclusiveness (World Health Organization, 2007). A large-scale research project involving 33 cities around the world was carried out to study the characteristics and supportive living conditions of AFC in the urban environment. The factors identified as contributing to active and healthy ageing are grouped into eight domains as shown in Figure 1.

Figure. 1 The Concept of an Age-friendly City

Source: World Health Organization (2007)

Outdoor spaces and buildings

This domain of AFC refers to a pleasant, clean and secure environment with green spaces, rest areas, as well as well-developed and safe pedestrian crossings and building infrastructure, which is a favourable living environment for seniors. Both external environment and public building greatly affect the mobility, independence and quality of life of the elderly and whether they are able to age well. Features of the age-friendly urban landscape and built environment have been summarized from focus groups of older adults world-wide, in order to contribute to the WHO report. Cities around the world are recurringly working on improvement in themes, such as safety, accessibility and quality of life. Eleven important elements of Outdoor spaces and buildings are listed in Figure 2 below.

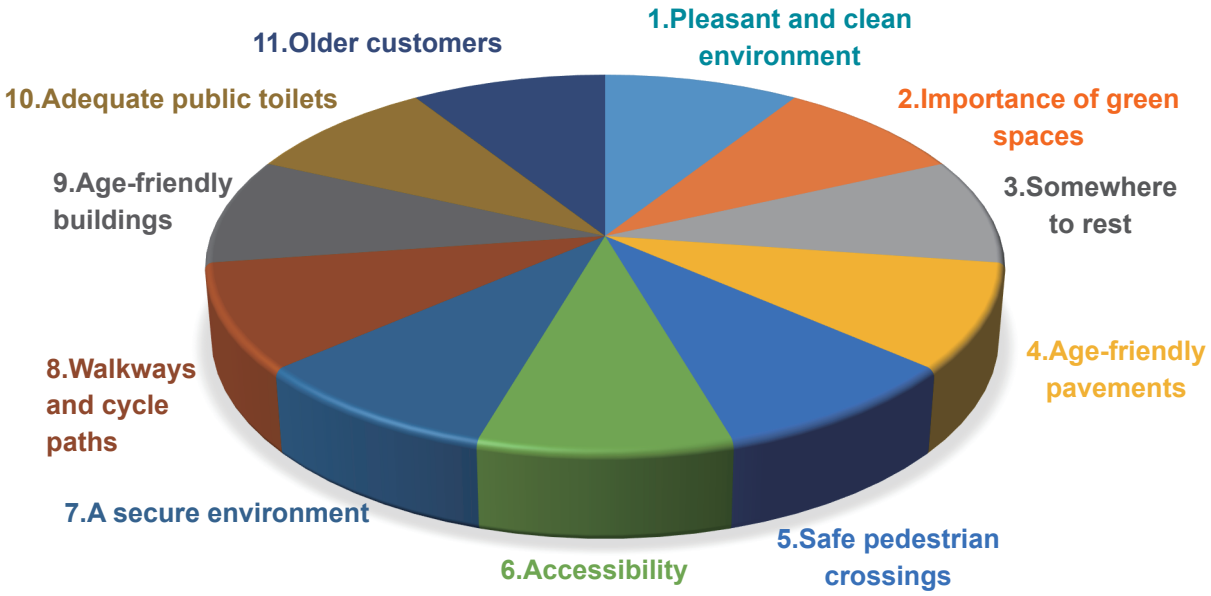


Figure. 2 The Elements of Outdoor Spaces and Buildings
Source: World Health Organization (2007)

There is evidence to demonstrate the importance of Outdoor spaces and buildings and their influence. The result of a cross-sectional study involving 14 cities worldwide showed that people living in more activity-friendly neighbourhoods may do an average of 68-89 minutes more of physical activities per week (Sallis et al., 2016). This suggests that efforts in urban planning and design can reduce the increasing health burden by utilising increased physical activity. This result is in line with a longitudinal study over a 12-year period indicating that the built environment with more green space and recreational facilities would provide more opportunities for outdoor activities and result in a positive influence on the change of Body Mass Index (Sarkar, Webster, & Gallacher, 2014). As well as the beneficial effects of outdoor space on physical health, mental health, in terms of anxiety, depression and loneliness, may also be greatly improved due to the individual's living environment, such as dwelling-level density, dwelling type and street network. Because of its importance, the role of Outdoor spaces and buildings is the domain of an age-friendly city. It is also as one of the components of ENVIRONMENT, one of the three domains of Healthy Ageing, according to the World Health Organization (2020).

1.1.2 World Health Organization: Healthy Ageing and Environment

In 2020, the World Health Organization (WHO) published the Decade of Healthy Ageing: Baseline Report, which estimates that there are over 142 million older people (equal to 14% of the global population aged 60 years or above), who are currently unable to meet their basic daily needs, such as dressing themselves, getting and taking medication themselves or managing their own money. Striving to improve the

environment and allow older people to live with dignity despite losing their physical and mental capacities due to ageing, the WHO introduced the concept of Healthy Ageing in the Baseline Report.

Healthy Ageing

The WHO (2020, p. 9) defined healthy ageing as "the process of developing and maintaining the functional ability that enables wellbeing in older age". With this definition, the WHO set the goal of optimizing older people's functional ability as the key of the Decade. To foster the investment of government and other stakeholders, the invisibility of older people due to lack of data and the standardization of the measurement of healthy ageing has been pinpointed. In addition, with the forecast that 1 in 5 people will be 60 years or older by 2050, the WHO reminds us that healthy ageing is relevant to everybody and requires leadership and commitment to achieve the goal of optimizing the functional ability of older people.

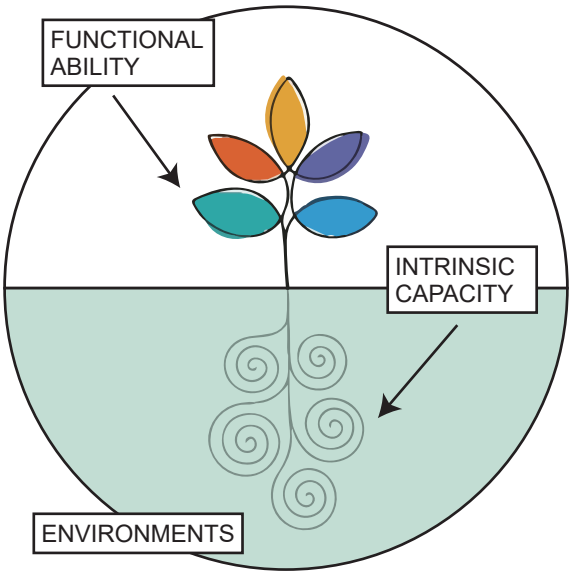


Figure. 3 The Concepts of Healthy Ageing
Source: World Health Organization (2020)

The Three Components of Healthy Ageing

To make the concept of Healthy Ageing clearer and more comparable, the WHO has further clarified and defined it as three components: 1) functional ability, 2) intrinsic capacity, and 3) environments. Details are shown in Table 1.

Functional Ability	Intrinsic Capacity	Environments
Functional ability enables people to be and to do what they have reason to value.	Intrinsic capacity comprises all the physical and mental capacities that a person can draw on.	Environments are where people live and conduct their lives.
Important Domains: 1. Ability to meet their basic needs to ensure an adequate standard of living 2. Ability to learn, grow and make decisions 3. Ability to be mobile 4. Ability to build and maintain relationships 5. Ability to contribute to society	Important Domains: 1. Locomotor capacity 2. Sensory capacity 3. Vitality 4. Cognition 5. Psychological capacity	Important Domains: 1. Products, equipment and technology that facilitate movement, sight, memory and daily functioning 2. The natural or built environment 3. Emotional support, assistance and relationships provided by other people and animals 4. Attitudes (as these influence behaviors both negatively and positively); and more broadly 5. Services, systems and policies that may or may not contribute to enhanced functioning at older ages.
Objective Measurements: 1. Ability to get dressed 2. Ability to take medication 3. Ability to manage money	Objective Measurements: 1. Delayed word recall 2. Hand grip strength	Objective Measurements: 1. Distance and travel time to services as well as green and blue spaces within a city

Table 1 The Three Components of Healthy Ageing
Source: World Health Organization (2020)

The three components of Healthy Ageing are interrelated. As shown in Figure 3, functional ability, intrinsic ability and environment are similar to plant, root and soil respectively. The metaphor suggests that functional ability is the tangible output of healthy ageing, which depends on an individual's intrinsic capacity and living environment. To optimize functional ability, we require input from robust roots and fertile soil. Similar to the root of a plant, a person's intrinsic capacity can be developed and maintained well. However, we also have to recognize that the level of intrinsic capacity declines with age. A number of age-related factors, including disease, injuries and age-related physical change, may be inevitable throughout the life course. Conversely, the environment, as compared with soil, is more plannable, controllable and changeable. Inputs from multiple sectors, such as government initiatives and policies, can fertilize the soil and make the environment enabling and age-friendly. Whether the environment provides resources or barriers determines the robustness of the roots and the flourishing of the tree. Therefore, an age-friendly environment is the key to deciding whether older people can actualize their potential and live with dignity.

From Healthy Ageing's Environment to Age-friendly City's Outdoor Spaces and Buildings

There is no doubt that the environment is crucial to enhancing an individual's intrinsic capacity and reduce barriers hindering functional ability. Cities and communities, where most older people live in, are under the spotlight of policy-makers and researchers. The WHO Global Network for Age-friendly Cities and Communities ("the Network") was established in 2010 to connect cities and communities worldwide with the common vision of making their communities more age-friendly. The Network provides a global platform for information exchange, experience sharing, and mutual learning. In 2021, there are over 1,114 cities and communities in 44 joined the Network, covering over 262 million people worldwide, according to the website of Age-friendly World (n.d.). Many cities and communities worldwide have been taking active steps towards becoming an age-friendly city.

The eight domains of Age-friendly City (shown in Figure 1) completely cover and incorporate the five important domains of Healthy Ageing's Environment (shown in Table 1). The development of an Age-friendly City moves forward and turn the ideas of Healthy Ageing into actual initiatives and policies with outcome assessment. It advocates a further step and leads to concrete action for new age-friendly policies, systems, services, products and technologies. Although all domains in an Age-friendly City or Healthy Ageing are equally important to enable older people to optimize functional ability, this topical report focuses on Outdoor spaces and buildings.

1.2 Health and the Physical Environment

1.2.1 The Importance of the Physical Environment for Physical Activities and Health Outcomes

In Chinese culture, there is a well-known idiom, “Mencius’s mother moves three times” (“孟母三遷”), which is the story about Mencius’s mother who moved houses three times to find a suitable environment for her son to grow up in. This illustrates the importance of the environment. The physical environment is integral to encouraging physical activities and health outcomes. Numerous studies have established a significant positive association between environment features and physical activities, and also health outcomes. Figure 4 shows a life course approach of healthy ageing, which illustrates the importance of the physical environment. The grey dashed line represents the dependency threshold. Individuals shown above the line can live independently, whereas those below the line will depend on other people. Normally, we are dependent at birth and death. As we grow, our cognitive and physical capacities grow relatively rapidly and may reach a peak during young adulthood. After that, our cognitive and physical capacities start to decline relatively gradually until death. Individual differences exist, as somebody may have a higher level of intelligence or be able to jump higher. Those with a higher peak of cognitive and physical functions may eventually become dependent relatively later, other things being constant.

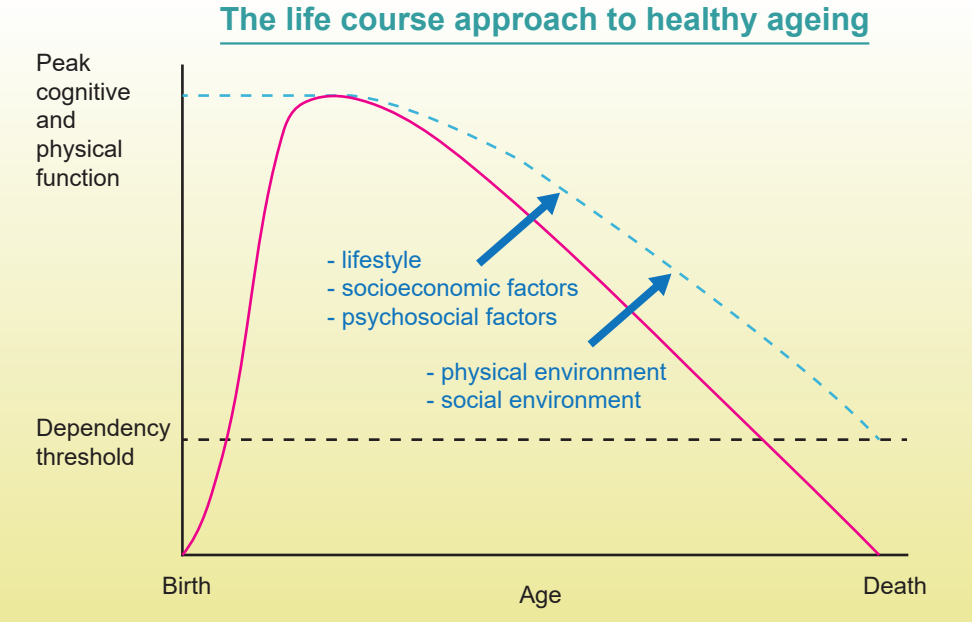


Figure. 4 The Life Course Approach to Healthy Ageing
Source: Modified from Kalache and Kickbusch (1997)

Situational differences also exist, as somebody may experience a particular disease, injury or accident. Nevertheless, the life course approach assumes the purple line is representing a track of a person’s health. Although their health

condition will inevitably decline after young adulthood, individuals may be able to avoid dropping below the dependency threshold. Some protective factors, such as lifestyle, socioeconomic status, psychological status and social environment, may shift the purple line to the gentler blue dashed line.

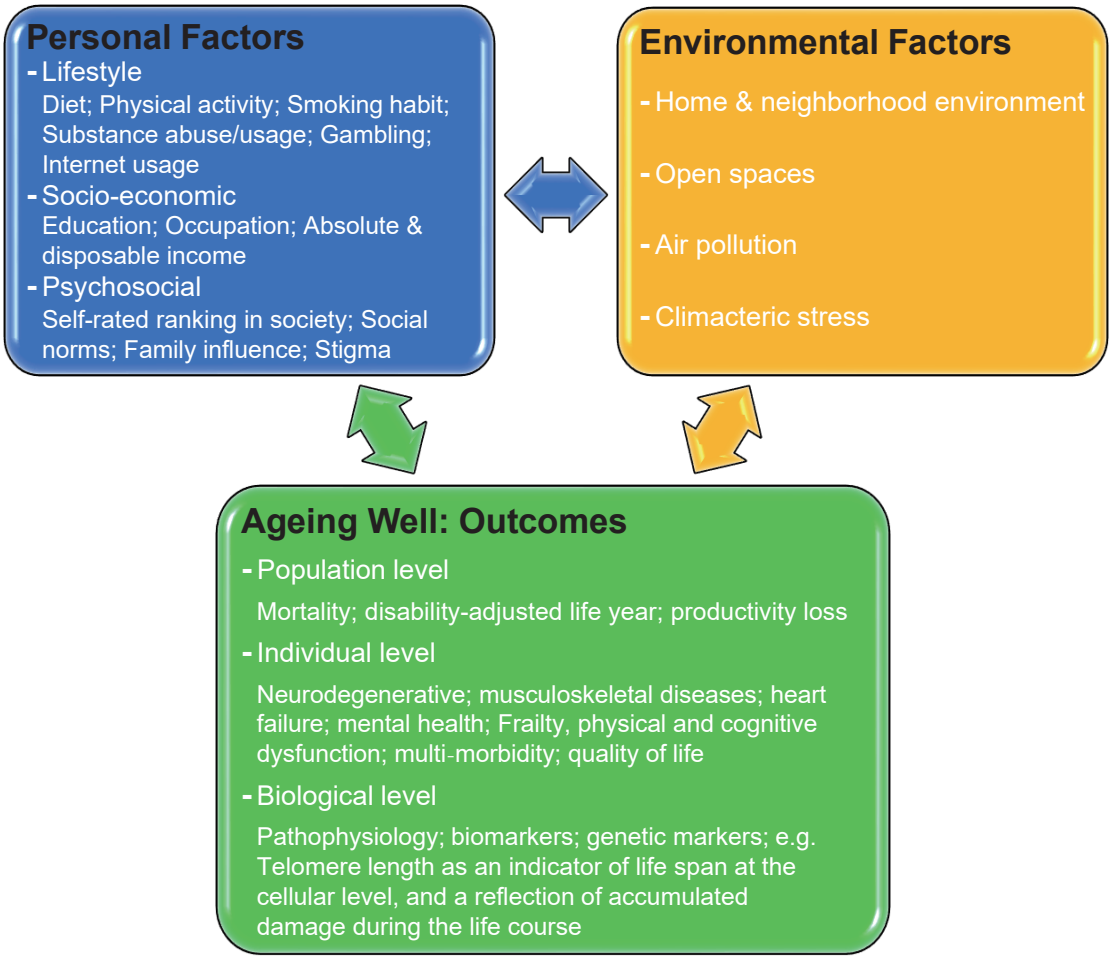


Figure. 5 An Integrated Framework of Ageing Well

Protective factors shifting the life trajectory to ageing well can be classified into 1) personal factors and 2) environmental factors, in order to form an integrated framework of ageing well (Figure 5). Personal Factors, such as smoking, diet, occupation or self-perception, are relatively controllable by oneself or depend on individual choice. In contrast, environmental factors, such as overall city planning, neighbourhood community and residential place design, are relatively external and are out of an individual's control. Both personal and environmental factors may contribute equally to an ageing well outcome. At the population level, less smoking and air pollution can reduce mortality. At the individual level, a higher disposable income and a wealthy neighbourhood environment may lead to a better quality of life. Unfortunately, studies are more likely to pay attention and spend efforts on personal factors. Environmental factors are more likely to be neglected or difficult to study. To study environmental factors, cross-discipline expertise is required, for example, architecture, urban planning, geography, social sciences and economics. Ideally, an

integrated framework considering factors from multiple disciplines is more holistic for understanding healthy ageing. In short, the importance of physical environment for healthy ageing is discussed theoretically. Next, the report will show evidence linking the physical environment with health.

Evidence 1 - Geographical Variations in Hong Kong

Hong Kong is a good laboratory because of its great geographical variations in the living environment. Within the 2755 km^2 area, there is a considerable contrast in the landscape, including mountains, rivers and the sea. Figure 6 is a map showing the 18 districts in Hong Kong. Comparing Shatin and Sham Shui Po, there are obvious differences in the urban development, although they are next to each other on the map. Shatin is a new town which is surrounded by hills, with a river in the centre, whereas Sham Shui Po is an old town with a high density of buildings and a chaotic traffic network.

In 2010, a study addressed the disparities in older populations with different measurements and examined the relative contributions of individual and environmental factors to their health outcome (Woo, Chan, Leung, & Wong, 2010). This study obtained statistics of approximately 4,000 people aged 65 years or above from a survey across districts in Hong Kong. The research team measured the participants' self-rated health, frailty and four-year mortality. They also used path analysis to examine any geographical variations and analyse the relative contributions of lifestyle, socioeconomic status and residential location. Obvious district variations in physical health, mental health, frailty and mortality were observable (Woo et al., 2010). Using Shatin as a reference district, old towns in Kowloon, such as Sham Shui Po and Wong Tai Sin, were identified as intermediate and high-risk districts.

As mentioned in the previous section, both personal and environmental factors contribute to the outcome of healthy ageing. The results of path analysis (shown in Figure 7) showed that the magnitude of direct environmental effect of district itself is comparable to those of personal factors, such as socioeconomic status, diet quality (measured by the Diet Quality Index; DOI), physical activities (measured by the Physical Activity Scale for the Elderly; PASE) smoking habits and alcohol use. This differs from the general and public perception of healthy ageing. Personal factors are important, but environmental factors also play a significant role. It can be concluded that district variations in health outcomes exist in the Hong Kong elderly population, resulting directly from environmental factors and are indirectly mediated through personal factors.

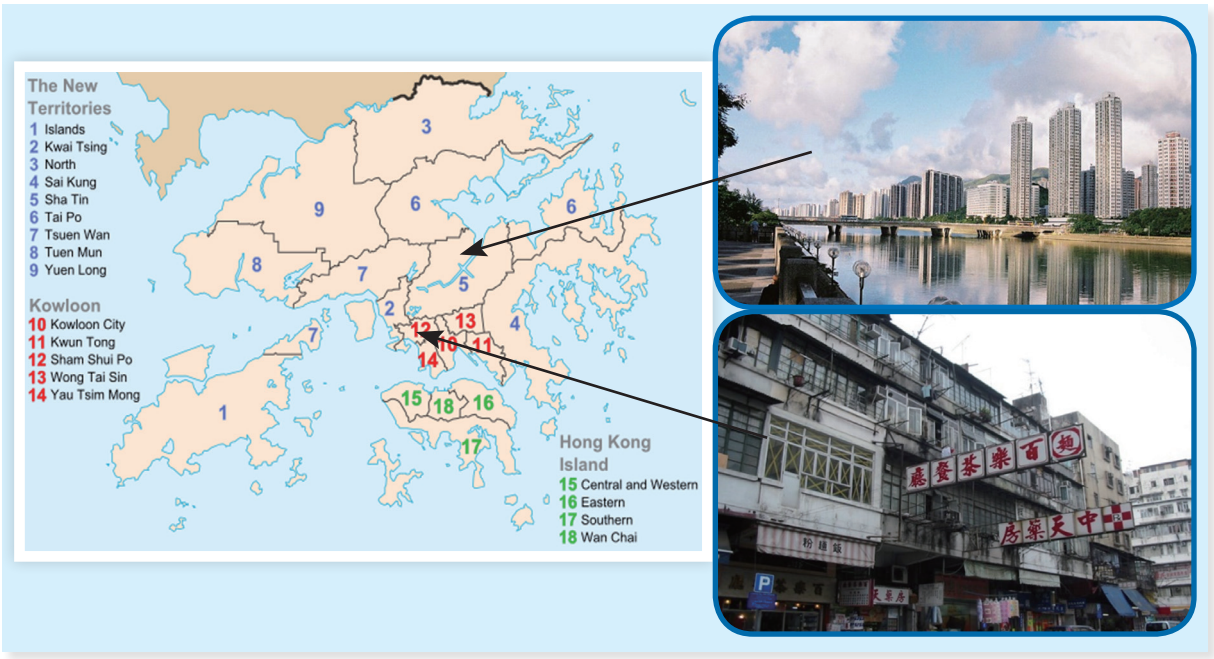


Figure. 6 A Map of Hong Kong

Source: Photos from Wikipedia

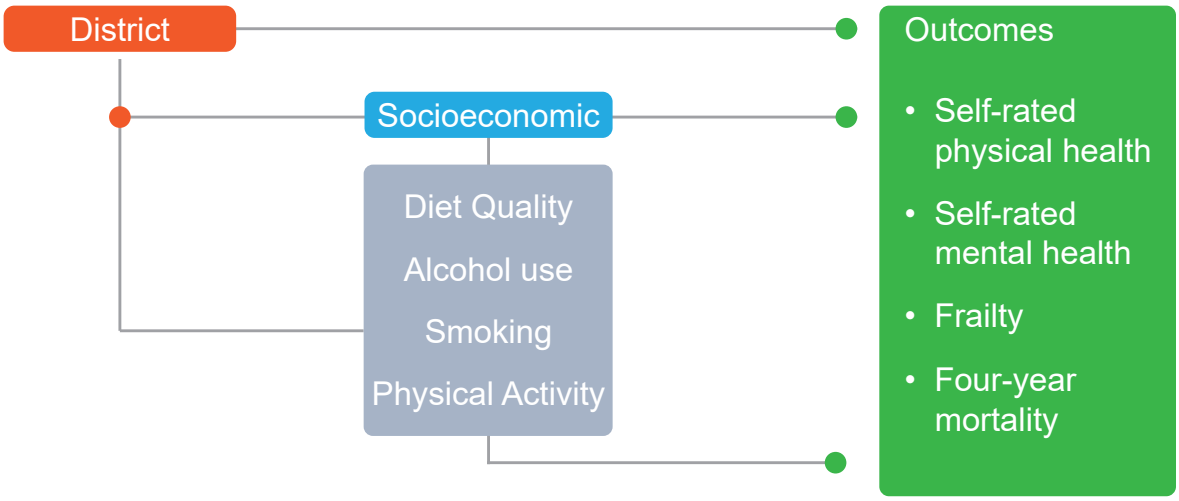


Figure. 7 A Path analysis model of self-rated physical health, self-rated mental health, frailty and mortality

Source: Modified from Woo et al. (2010)

Evidence 2 – Benefits of Green Space and Blue Space

Studies showed that neighbourhood green spaces and blue spaces are associated with a better health outcomes. In the Mr. and Ms. Os (Hong Kong) study in 2001-2003 (Yu et al., 2018), about 4,000 Chinese older people aged 65 years or above were monitored for two years. The research team measured the proportion of vegetation within a 300-metre radial buffer of the participants' place of residence, and the participants' frailty status was categorized into 1) Robust, 2) Pre-frail and 3) Frail. Results showed that the frailty status of participants living in neighbourhoods with more than 34.1% green space was more likely to improve, than those living in neighbourhoods with 0 to 4.5% after two years. In addition to the direct effect on frailty due to the green space itself, path analysis showed that it also indirectly reduced depression, reduced disease incidence and improved cognitive function through increased physical activities. These benefits of green space are independent of demographics, socioeconomic status, lifestyle factors, health conditions, and baseline frailty status. Therefore, living in neighbourhoods with a high percentage of green space can offer a wide range of benefits, such as an improved frailty status due to increased physical activity.

Source: A Photo of Ma On Shan in Hong Kong from Wikipedia

Another study also found that neighbourhood green space was associated with a reduced risk of mortality (Dan Wang et al., 2017). This study collected data from about 3,500 Chinese older people aged 65 years or above with an average of 10.3 years of follow-up. The research team also quantified the green space within a 300-metre radial buffer of the participants' residence and recorded their death registry as categorized into 1) all-cause, 2) respiratory system disease, and 3) circulatory

system disease. Results showed that a 10% increase in coverage of green space was significantly associated with a reduction in all-cause mortality, circulatory system-caused mortality and stroke-caused mortality. The association is independent of demographics, socioeconomic status, lifestyle factors, health conditions and housing type.

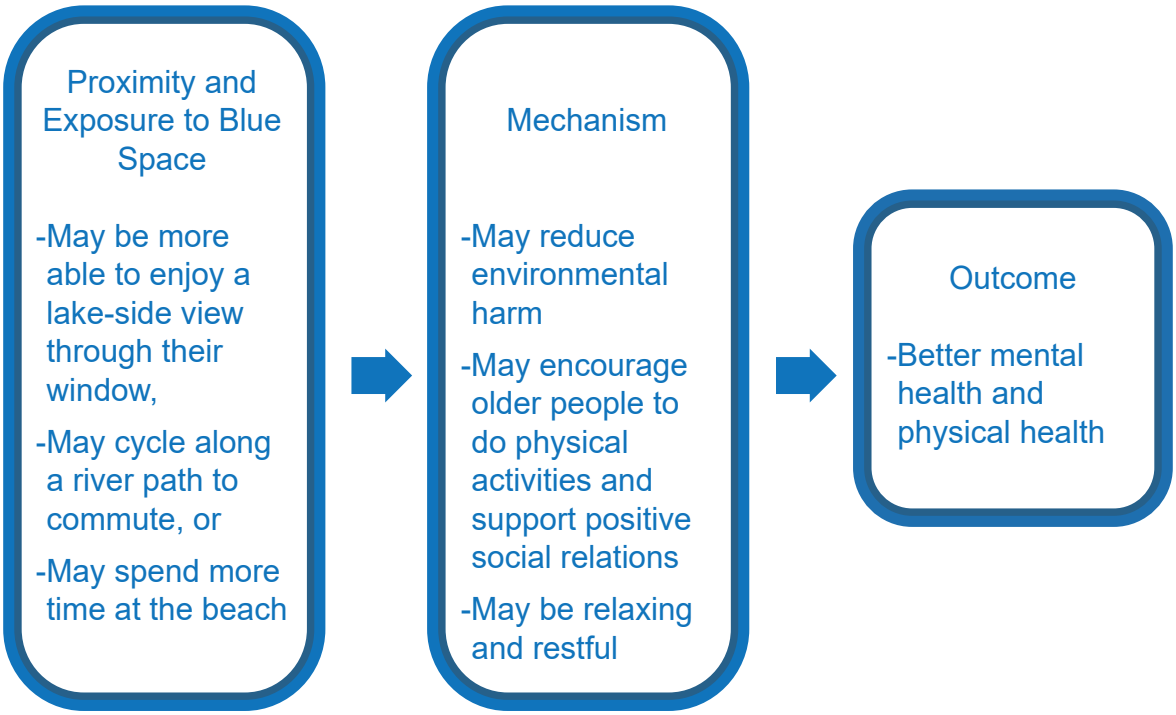


Figure. 8 A conceptual diagram of the relationships between blue spaces and health and well-being.

Source: Adapted from White, Elliott, Gascon, Roberts, and Fleming (2020)

Similar to green space, researchers also provided evidence on the potential health and well-being benefits of blue space, or aquatic environments, such as rivers, lakes and the coast. A study provided a narrative overview and synthesis of the potential benefits of blue space, which conceptualized the relationship between blue space and health and wellbeing (White et al., 2020). As shown in Figure 8, older people who live or work closer to blue space are likely to have more exposure to or contact in terms of duration, frequency and intensity. Because of proximity, they may be more able to enjoy a lake-side view through their window, cycle along a river path to commute or spend time at the beach. Several studies from Europe, Asia, and North America evidenced that blue space is beneficial to mental health and physical health, including depression, life-satisfaction, blood-pressure, vitality, fatigue and the immune system function. This study also identified the mechanisms explaining the link between blue space and a positive outcome. First, a blue space may reduce environmental harm, such as urban heat islands, noise and air pollution. Second, a blue space is a capacity-building place, which may encourage older people to do physical activity and support positive social relations. Third, a blue space is a relaxing area in which to

rest, which may reduce stress, anxiety and fatigue. The magnitude of a blue space's effect depends on its type, water quality, age, or initiatives of policy makers.

The study of Garrett et al. (2019) in Hong Kong provided further evidence on the benefit of blue space. Hong Kong is one of the world's most densely populated coastal cities and consists of multiple islands, urban waterfronts, fountains and ponds in parks, inland rivers, waterfalls, reservoirs, beaches as well as bays. About 1,000 Hong Kong residents were recruited for a survey through convenience sampling. The result of the study showed that older people with a view of blue space at home may have better physical health. If the blue space is close to their home (within a 10-15 min walk) and has good facilities and wildlife, older people will visit the blue space more regularly, stay longer and do more activities, which may then result in better mental health. These results suggested that both green and blue spaces could be important public health resources.

Evidence 3 – Benefits of Physical Activities

Unsurprisingly, physical activity, whether aerobic, resistance or flexibility, can reduce risk of chronic diseases and geriatric syndromes, such as frailty, depression and sarcopenia. It is also well-known that 30 minutes of aerobic exercise or 10,000 steps per day are generally recommended to an adult. The following research provides more evidence on how and which physical activities are beneficial to older people.

When the benefits of physical activities are proven and obvious, it is interesting to know the drawbacks of lack of physical activities, such as sedentary behaviour (sitting for prolonged periods). A Canadian study recruited over 9,000 older people and over 10,000 middle-aged adults for the survey (Shilpa & Liza, 2012). Among the 19,000 participants, those sit less than 2 hours per day were 43% more likely than those sit over 4 hours per day to age successfully, in terms of cognitive function, emotional vitality, depression, engagement with life, social support and spirituality. Findings indicate a clear difference between active and inactive habits.

It might be expected that older people would have to do a large amount of intensive physical activity in order to enjoy these benefits, such as Marathon running. However, studies indicated that walking within their neighbourhood itself is enough to be beneficial, and does not require to be a weekend hike. In a Canadian study, more walkable neighbourhoods, where rates of walking are also higher, were associated with a lower prevalence of overweight and obesity, and a decreased incidence of diabetes (Creatore et al., 2016). Increasing their daily walking frequency within the neighbourhood seems worthwhile. Most importantly, walking is a physical activity for all ages.

The elderly do not need to be trained like athletes, what they have to do is to develop a habit of undertaking physical activity. In a Japanese study, overall health was substantially associated with a daily step count and daily duration of moderately intensive activities (Aoyagi & Shephard, 2010). To achieve better physical health, it is suggested to take over 8,000 steps and/or over 20 minutes of activities per day. To achieve better mental health, it is suggested to take over 4,000 steps and/or over 5 minutes of activities per day. The threshold sounds feasible for older people but maintaining the habit may be difficult. The study pointed out that precipitation can result in an exponential decrease of activity to 4,000 steps per day. The optimal outdoor temperature for activities is around 17°C, being too hot or cold will reduce the number of activities. For disease prevention and medical expense reduction, the Government should build an enabling environment and culture for habitual physical activities.

To sum up, theoretical and empirical evidence supports the importance of physical environment for physical activities and health of the elderly. Neighbourhood design impacts on the health of ageing populations. The magnitude of the impact could be equivalent to that from lifestyle and socioeconomic factors. We can change older people's health and well-being by changing the city where they live.

1.2.2 To Change Ourselves by Changing the City

Health is not merely the absence of disease, and is concerned with complete physical, mental and social well-being. Being healthy is fundamental to every human being. Everyone has the right to speak out if their living environment is not health-friendly. Contrary to the general understanding, people's health and well-being do not depend just on hospitals, doctors and medical systems. Both personal and environmental factors play a significant role. People's daily lives are shaped by the city, and vice versa. Health is the product of interaction between the citizens themselves and their neighbourhoods. Our everyday practices are influenced by the environment. For example, we will go swimming if there is a swimming pool, or we will go hiking if a hiking trail is there. Meanwhile, our everyday practices can shape the environment. For example, we can build swimming pools and hiking trails if desired. Older people are not only users of the space and buildings. They can also participate in making decisions on the planning of spaces and buildings in order to pursue good health.

An Example: Walkable Environment in Hong Kong

Generally speaking, walking is age-friendly and health-friendly. Making our city walkable provides a greater opportunity for older people to enjoy walking. Hong Kong older adults walk more than those live in Western countries. Hong Kong has a high residential density, intersection density, parks within walking distance and a good transport network. These features showed a positive correlation with physical activity (Sallis et al., 2016). Although the air quality, temperature and humidity are not always optimal, the large shopping malls, with their air conditioning, offer a safe place in which to walk in all weathers. In addition to shopping areas, there are pleasant environments with beautiful views, such as the famous Victoria Harbour. A Hong Kong study also pointed out that walking as a means of transport can enhance the level of physical activities undertaken by the elderly (Cerin et al., 2013). The busy network of the Mass Transit Railway (MTR) and bus routes connect diversified recreational destinations, such as cinemas, museums, sports stadiums and theme parks. Instead of driving, Hong Kong residents are more likely to walk to the MTR station or bus stop

Source: A photo of Victoria Harbour from Wikipedia

to take public transport. Furthermore, the presence of diverse services within the neighbourhood also enhances walking. Shops, grocery stores, the clinic or restaurants are within walking distance and this removes the need to drive and park a car.

Even though Hong Kong is considered an enabling environment for walking in general, there are areas for improvement. Most older people do not walk as fast as the average person and they may not be fast enough to cross the road in time, which could potentially discourage walking, increase the accident rate or put them at risk of injury (Webb, Bell, Lacey, & Abell, 2017). In Hong Kong, the average duration of traffic lights for pedestrian crossing is 0.8m/s. As walking ability declines with age due to a higher weight or weaker muscles, older people may not achieve this speed at their comfortable walking pace. Traffic design, such as pedestrian safety islands, tunnels and footbridges with an elevator, may be more appropriate for older people.

The Strategies of "Walk in Hong Kong"

To develop Hong Kong into a world-class walkable city, the Transport Department developed the "Walk in HK" initiative in 2020 to foster a pedestrian-friendly environment for people to commute, connect with others and enjoy themselves. The project promotes four strategies to make Hong Kong connected, safe, enjoyable and smart. This project uses Central and Sham Shui Po as pilot areas. Central is the business area, while the other is an urban district.

Even though this project is still being implemented, this is a good start and an attempt to improve the walkability factor in Hong Kong, which not only offers health benefits to older people, but also economic and transport benefits to the whole city. The following are some examples of the 4 promoting strategies:

MAKING IT Connected 行得通

- Enable access for pedestrians of all ages and with different mobility abilities, such as providing new barrier-free access facilities

MAKING IT Safe 行得妥

- Provide safe and convenient walkways and crossings, such as implementing traffic-calming measures to reduce traffic speed

MAKING IT Enjoyable 行得爽

- Design attractive, aesthetically pleasing, interesting and vibrant walkways and places, such as providing public art, streetscape enhancement, street trees and a gentle landscape

- Enhance the pedestrian way-finding system

Source: Transport Department (2018)

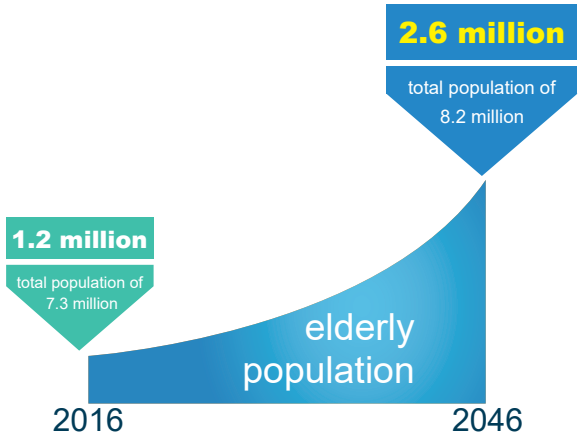
In this section, we examined the importance of the environment for the physical activities and health of older people. We believe that changing the environment of our city can change ourselves because citizens and their city interact and influence each other. In the next section, we will further investigate the background information of the Hong Kong situation, particularly Hong Kong older people's views on outdoor spaces and buildings and the challenges Hong Kong faces.

1.3 Hong Kong

1.3.1 Ageing Population

Hong Kong is facing an ageing population, or even a 'super-ageing' population. According to the Census and Statistics Department (2018), the total Hong Kong population was 7.3 million in 2016, of which the elderly population was 1.2 million. In other words, there is approximately one in seven people aged 65 or above. By 2046, the Census and Statistics Department (2017) estimated that the total Hong Kong population will reach 8.2 million, of which the elderly population will comprise 2.6 million. This means that the ratio of the elderly to the total population will rise to one-third.

As one of the wealthiest and most advanced cities in the world, the life expectancy of Hong Kong citizens is ranked the highest in the world and is still steadily increasing. On average, residents survived until the age of 84.2 in 2016. In contrast to the increasing trend in life expectancy, the fertility rate of women is just 1.2 children in 2016 and is expected to continue to decline. Without taking into account immigrants, the birth rate is not sufficient to maintain the current supply of labour. As a result, the extended life expectancy and low fertility rate will present a severe economic and societal burden. As estimated by the Census and Statistics Department (2018), it is estimated that 231 older people were dependent on 1,000 persons aged between 15 and 64 in 2016. The elderly dependency ratio in Hong Kong is high and will show a sharp increase over time. Inevitably, the competitiveness of Hong Kong will be weakened if the Government does not cope with the challenges of an ageing population. It is important to build Hong Kong into an age-friendly city, in which older people are healthy and active and able to contribute to family and community, such as providing care for young family members and voluntary services.



1.3.2 Outdoor spaces and buildings: assessment in Hong Kong

Aiming to develop Hong Kong into an age-friendly city, The Hong Kong Jockey Club Charities Trust ("The Trust") has partnered with four gerontology research institutes of local universities, namely the Jockey Club Institute of Ageing of The Chinese University of Hong Kong, the Sau Po Centre on Ageing of The University of Hong Kong, the Asia-Pacific Institute of Ageing Studies of Lingnan University and the Institute of Active Ageing of The Hong Kong Polytechnic University, to implement the Jockey Club Age-friendly City Project ("JCAFC Project") since 2015. The JCAFC Project has covered all 18 districts of Hong Kong and carried out a baseline assessment study providing a holistic view of age-friendliness in Hong Kong. Findings have been concluded and published in the report Jockey Club Age-friendly City Project - Cross-district Report of Baseline Assessment on Age-friendliness (18 Districts) (2019). The results of surveys and focus groups regarding Outdoor spaces and buildings domain provide valuable information for different stakeholders.

In general, the public is satisfied with the Outdoor spaces and buildings, as the mean score is 4.04 out of 6 in the survey. Among the eight domains of an age-friendly city, it ranked in the middle. In line with previous findings, the rating of Outdoor spaces and buildings was positively correlated to self-rated health and a sense of community. In a focus group, participants agreed that parks and green spaces were available, but hygiene issues, air pollution and noise pollution exist. In some areas, age-friendly facilities, including toilets, shelters, seats, elevators and exercise equipment are available but limited. Some people also expressed that even if these facilities are sufficient, older people may not benefit from them because of their poor design and inadequate maintenance. These opinions suggest to the Government that both quantity and quality are equally important.

In 2021, the four universities completed the final assessment on the age-friendliness of local communities in 18 districts of Hong Kong based on eight domains of an age-friendly city, which shows the most updated status in Hong Kong and the changes in the past years since baseline assessment. According to 19,892 completed questionnaires, the scores of Outdoor spaces and buildings increased in general. However, as shown in Table 2, the scores of "Public areas are clean and comfortable" and "There are sufficient street lighting and police patrols to keep outdoor areas safe" decreased. Similarly, participants in 181 focus groups reported that accessibility and age-friendly facilities for older people were enhanced and increased, such as new elevators, lifts, seats and exercise equipment. However, they also complained that environmental and hygiene problems persisted, including littering, smoking, mosquitoes and rodent problems. Therefore, they suggested timely maintenance of existing facilities, regulating pollution and providing more outdoor spaces.

Domains and questionnaire items	Baseline assessment score	Final assessment score	Score difference	Sig.
Outdoor spaces and buildings	4.04	4.09	+0.05	**
Outdoor spaces				
1. Public areas are clean and comfortable.	4.33	4.28	-0.05	**
2. Outdoor seating and green spaces are sufficient, well-maintained and safe.	4.22	4.20	-0.02	
3. Drivers would give way to pedestrians at road junctions and pedestrian crossings.	4.04	4.09	+0.05	**
4. Cycling paths and pedestrian pavements are separated.	3.62	3.87	+0.24	**
5. There are sufficient street lighting and police patrols to keep outdoor areas safe.	4.33	4.26	-0.06	**
Buildings				
6. Business services (e.g. shopping centres, supermarkets, banks) are concentrated and convenient to use.	4.35	4.41	+0.06	**
7. Specialised customer services are arranged for needy persons in needs (e.g. priority service counters for elderly people).	3.40	3.62	+0.22	**
8. There are clear signage, sufficient seating, barrier-free lifts, ramps, handrails for stairs, and non-slip floors inside and outside the buildings.	4.01	4.11	+0.09	**
9. Public toilets for outdoor and indoor areas are sufficient, clean, well-maintained, and easily accessible by people with varying mobility levels.	3.86	3.92	+0.05	**

Table 2 Age-friendly scores of Outdoor spaces and buildings in Hong Kong

Remarks: ** means statistically significant change at $p<0.01$; scores are rounded to two decimal places

In short, the results of baseline and final assessment are encouraging. The increases in scores indicated that the JCAFC Project is successful in improving the age-friendliness in Outdoor spaces and buildings, especially there were influences of social unrest and COVID-19 pandemic. Inevitably, there are still areas for improvement, but it seems that the promotion of Age-friendly City is in a right direction.

1.3.3 Challenges

It is easy to criticize the insufficiencies of stakeholders and neglect the challenges behind them. In the Hong Kong 2030+ Planning and Strategy, the Development Bureau and Planning Department (2016) envisioned developing Hong Kong into a liveable high-density city, including promoting age-friendly public spaces in the built environment. However, the government also recognized the many challenges involved. In this section, four categories of challenges and related issues are identified according to the Hong Kong 2030+ Planning and Strategy (2016) and the opinions of specialists (McCay & Lai, 2018).

1. Population Density

The Hong Kong population is not merely ageing, but also growing. The population was about 7.5 million in 2018 and is expected to reach almost 8.22 million in 2043. The land area is 1,106 km^2, including 271 km^2 of built-up areas. On average, around 27,000 people are living in a 1 km^2 area. In this highly populated city, some areas are compacted with high wall-like towers and canyon-like streets. These features have created a crowding and stressful environment that lacks space, traps pollutants and blocks sunshine.

In addition to lack of physical space, a high population density results in a lack of social or psychological space. Living within four walls can be claustrophobic and give rise to a feeling of being trapped. Surrounded by the walls of a 200 square feet apartment, the view through the window is another wall of the next building. Such a homogeneous urban environment can lead to boredom, depression and possibly suicide. Although humans are social beings, continual overcrowding can be frustrating. There is a greater chance of family conflict with little space to escape, hide or have a rest. Conversations and music can be easily heard, which can be a privacy issue for the home owner and also a noise issue for the neighbours.

Source: A photo of domestic helpers in Central at the weekend from Wikipedia

At the weekend, there is a unique urban phenomenon in Hong Kong. Foreign domestic workers take over all the parks, streets or underpasses each Sunday. Over 330,000 domestic workers, mainly from the Philippines and Indonesia, live in their employer's house. They are always allocated one day's leave on Sunday. Because of their low income, many of them sit on cardboard boxes on the ground and turn informal seating areas into their own social spaces. This large scale of public space occupation hinders other citizens from using it. Furthermore, sitting and sleeping on the ground or roads is not ideal, humane nor hygienic for these domestic workers. However, no satisfactory alternative solutions have been identified for decades because of the dense infrastructure in Hong Kong.

2. Lack of Ground

In contrast to the growing population, the supply of land area is limited, stagnated and insufficient. Hong Kong is simply a city without ground, or a so-called 'vertical city'. New spaces are mainly developed by building high rises and underground facilities. About 20% of the land is steep slopes (i.e., over 30 degrees in gradient). Apart from the built-up areas, the majority of the remaining land may consist of natural assets or ecologically sensitive areas. The land supply cannot meet the considerable land demand for housing, economic use, government, institution, community, open space and transport facilities. The Hong Kong 2030+ Planning and Strategy (2016) estimated that the total new land requirement beyond 2040 is at least 4,800 ha. However, the planned and committed projects, including Kai Tak Development, Kwu Tung North New Development Area(NDA), Fanling North NDA, Hung Shui Kiu NDA,

Yuen Long South Development, Kam Tin South Development and Tung Chung New Town Extension, can only supply around 3,600 ha. A simple calculation suggests that more than 1,200 ha is required. This massive shortage in land supply is a big issue for stakeholders, especially the land requirement of market-driven uses, construction-related uses, recycling facilities and higher education also exist in long-term. Different land requirements will continually compete for new land.

Source: A photo of Stone Wall Trees in Kennedy Town, from Wikipedia

A common phenomenon in the metropolis is the competition between buildings and plants for space. Most citizens do not have enough living space in Hong Kong, plants will only have less space. Most plants grow in the ground, but large areas of ground have been built on or paved. To survive, trees are forced to grow on a stone wall as shown in the above photo. Urbanization is always at the expense of plants. In Hong Kong, 90% of the population lives within 400m of a park. However, it may be a “pocket park” with only one tree planted and the remaining areas are paved. There are also certain regulations on the size and variety of trees. The compact environment does not allow tall trees with a big crown. Leafy trees are less preferred so that the government does not need to sweep up the fallen leaves. Because of limited space, most plants are small and placed on walkways, which are more likely treated as decorations instead of nature. This explains why some old trees are felled and sent to landfills if they block the view.

3. Ageing Building Blocks

In Hong Kong, when the population is ageing, blocks of flats are ageing at the same time. Time is the most irreversible factor. According to figure 9, there will be large-scale urban decay by 2046, especially in the densely built urban cores, such as Yau Tsim Mong. As estimated, the number of private housing units aged 70 or above may reach 326,000 by 2046. It will be almost 300 times of the building stock of the same age in 2015. Comparing the statistics, urban renewal may be as urgent as the ageing population and land scarcity.

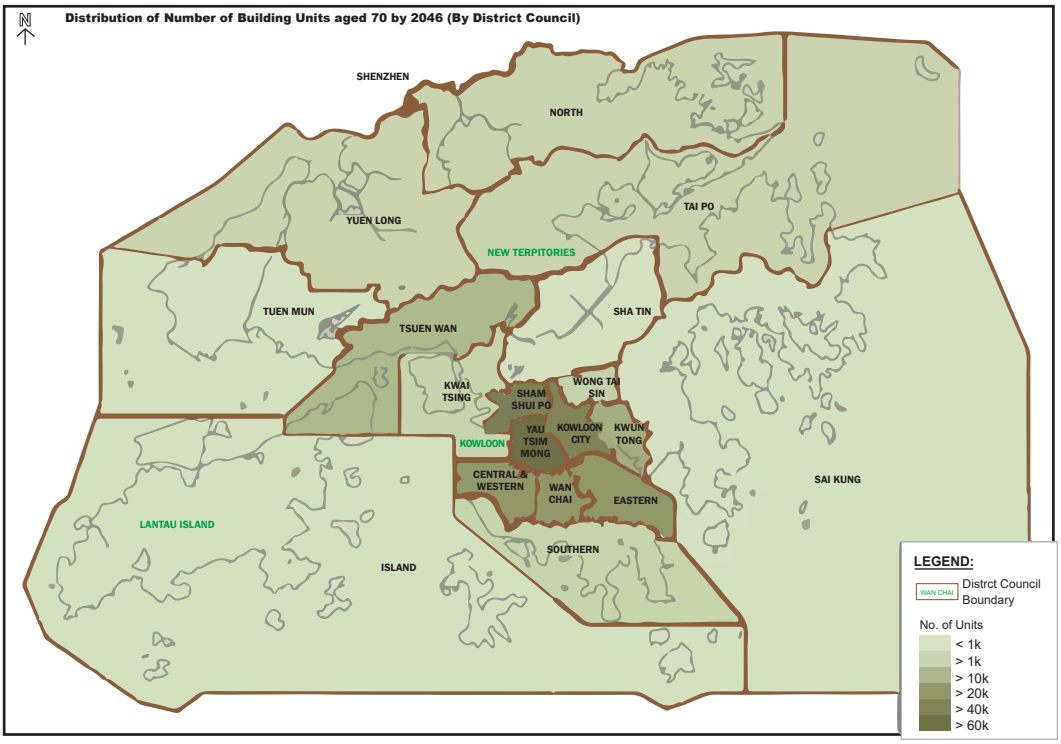


Figure. 9 The Distribution of Private Housing Units Aged 70 or Above By 2046 (by District Councils)

Source: Hong Kong 2030+ Planning and Strategy (2016)

A decaying environment results in problems of impaired design and unadvanced technology. Much attention has been drawn to the health impacts of housing because of the COVID-19 pandemic. Since the 2003 SARS epidemic, people have recognized that poor housing ventilation may facilitate the spread of disease. Now, health specialists also pointed out that leakage in the drainage system or pipes of old buildings may lead to the vertical transmission of the COVID-19 virus, which refers to residents living in the same units, but different floors are infected. In the past, the design of buildings and urbans took health into consideration, but were simply limited to tidiness and cleanliness. However, the existing infrastructure may no longer meet modern standards. Ventilation and safe drainage system preventing disease have become a mandatory focus. People are requesting more now, as they are expecting innovation and technology, such as artificial intelligence and automatic robots.

4. Housing Affordability

High population density, lack of ground and ageing block buildings create the problem of unaffordable housing prices. There is a continuously increasing number of households and a declining new housing supply. According to the report Global Living 2020, Hong Kong remains the most expensive place to purchase a property with an average price of around HK$9.78 million (US$1.25 million), and one of the most expensive places to rent with an average monthly rent of around HK$20,919

(US$2,681) (CBRE Research, 2020). It is a desperate situation for many people, who can never afford their own house. Housing can be a huge financial burden for retired older people. Older people may be forced to live in a small and crowded space, where they spend a lot of time as they are retired. Or they may live far away from the city centre, so that they have to commute over a long distance despite their declining driving ability and mobility.

Average property price (USD)			Average monthly rent (USD)		
1	Hong Kong	$1,254,442	1	New York	$2,870
2	Munich	$1,000,000	2	Abu Dhabi	$2,838
3	Singapore	$915,601	3	Hong Kong	$2,682
4	Shanghai	$905,834	4	Singapore	$2,604
5	Shenzhen	$783,855	5	Los Angeles	$2,310
6	Beijing City	$763,498	6	Dublin	$2,260
7	Vancouver	$754,617	7	Jeddah	$2,212
8	Los Angeles	$717,583	8	Dubai	$2,038
9	Paris	$650,555	9	London	$1,887
10	New York	$649,026	10	Riyadh	$1,759

Table 3 The Average Property Price and Average Monthly Rent of Cities in the World
Source: CBRE Research (2020)

Unsurprisingly, if older people are wealthy and healthy, they do not worry about housing affordability and can live on a hill with a scenic view. However, if older people are not well-off and are losing their self-care ability, they may have to wait for a subsidized care home or nursing home for years or until they die. According to the website of the Social Welfare Department (2020), there were a total of 37,525 applicants being waitlisted for various types of subsidized residential care services for the elderly at 31 December 2020. The average waiting time for subvented homes and contract homes is 41 months. It is estimated that nearly 5,000 people died while on waiting lists for places in old people's homes or community care. These are bleak statistics, depicting an unhappy old age.

1.4 Overview

In this chapter, we lay a foundation for the report by introducing the concept of Outdoor spaces and buildings, a domain of an age-friendly city as one of the components of ENVIRONMENT, one of the three domains of Healthy Ageing referred to by the WHO. We also traced the relationship between health and the physical environment. We

described the importance of the physical environment for physical activities and health outcomes with evidence from studies. We use walkability in Hong Kong as an example to demonstrate how changing the city can change ourselves, as the enabling environment for walking makes Hong Kong older adults walk more. We also presented various information and statistics of Hong Kong, which serve as a general picture for later discussion, including an ageing population, a baseline report of Outdoor spaces and buildings, and existing challenges in Hong Kong.

In the coming chapters, we will further explore more topics regarding Outdoor spaces and buildings. In chapter 2, we will talk about planning and design, including the issue of “Double Ageing”, the relationship between planning and design and health, and a comparison between Hong Kong and other cities. In chapter 3, we will go through the classification of open space and open space’s linkage with older people’s health. In chapter 4, we will particularly investigate buildings, including both public buildings and residential buildings for the elderly in Hong Kong, and their relationship with health. In chapter 5, we will review the Hong Kong policies provided by the Government, non-governmental organizations, business sectors and academic communities. Finally, we will give a conclusion in chapter 6.

Chapter 2 Planning and Design

2.1 Issue of Double Ageing

2.1.1 Double Ageing: Ageing Population and Ageing Buildings

Both the ageing population and ageing buildings have received a lot of attention, but they are usually regarded as two independent issues to deal with. The public is unaware of the combined and multiplying influence of the ageing population and ageing buildings, known as double ageing. Social scientists and policy-makers may be dealing with an ageing population themselves, when built environment professionals are solving ageing buildings separately. We need to bring them together and cooperate. Otherwise, the phenomenon of double ageing is causing increasingly urgent and serious social problems.

In addition to the given statistics in the previous chapter, around 90% of older persons were living in domestic households (Census and Statistics Department, 2018). Around 13%, 25% and 50% of older persons were living alone, with spouse only and with children, respectively. Compared with ten years ago, households with all members being older persons surged 67.4% in 2016. In view of this rapid and massive social change, maintaining an older persons' home, making it safe and comfortable for living has become urgent yet costly. Nevertheless, retired older people, especially those who rely on government allowances, may not be able to maintain, upgrade and refresh their ageing housing stock in a sustainable and timely manner.

Source: Fictional character (Right; photo from Pexels) and fictional dialogue

Naturally, these ageing buildings bring problems, such as weakened structure, illegal additions, and the lack of an elevator. The Urban Renewal Authority attempted to tackle these problems, but the current implementation of urban renewal initiatives could not keep pace with the speed of ageing. The projects are always time-consuming, costly, may lack societal support and experience many physical constraints. Apart from the conventional method, we probably would need the input of technology, innovation and design. Rapid development in artificial intelligence, Big Data and 5th generation mobile networks (5G) create opportunities and possibilities. Vendors are competing and developing smart home platforms, such as Amazon's Alexa, Google Home and Apple Homekit. If the government, NGO, business or academic communities can help integrate new technology into older people's lives and an old building's facilities, then older people and buildings may be able to upkeep their functional performance. Robots and automatic systems may be potential solutions to the ageing population and ageing buildings, and might then turn a liability into an asset.

2.1.2 Implementing "Double Smart" Solutions

To tackle double ageing, the Jockey Club Design Institute for Social Innovation (DISI) proposes an integrated approach called "double smart", which applies advanced technology and design of hardware and software to achieve smart ageing and smart city (Ling & Lee, 2019).

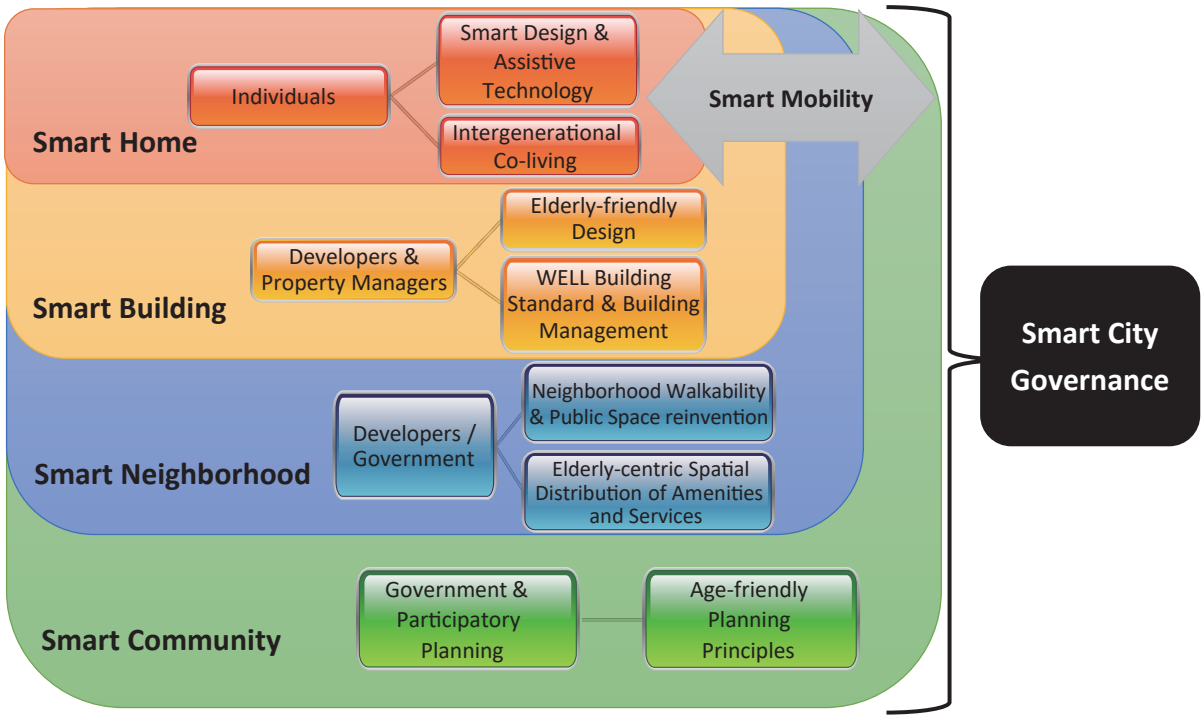
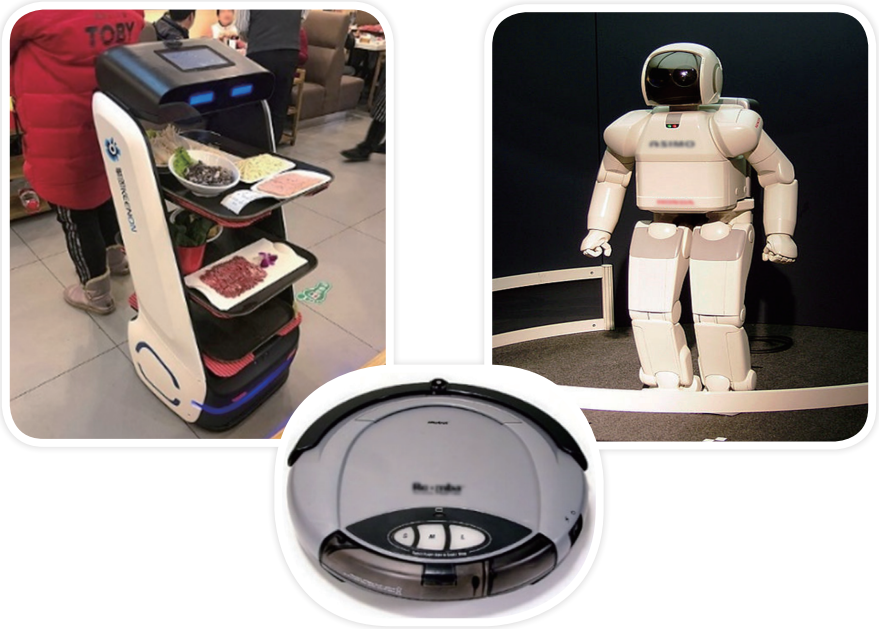


Figure. 10 The Conceptual Model of "Double Smart"
Source: Modified from Ling and Lee (2019)

Before examining the details of "double smart", people are aware that many older people are technologically illiterate. It is true that many older people do not always understand new technology and may become resistant to it. Using a smartphone might be a great challenge for them. However, the elderly in the future are adults at present. It is expected that the next generation of the elderly will be more receptive to information and technology. On the other hand, although the composition and structure of devices will be more complicated, the design and usage could be more straightforward and more user-friendly. In the future, devices could work more automatically and independently. Instead of pressing buttons, users can give the direct command and interact with the artificial intelligence by simply speaking, such as Google assistant and Siri. These user-friendly technologies should benefit all people, including the elderly.

DISI redefined smart city from an elderly-centric perspective to formulate an integrated framework of "double smart" (Figure 10). Starting from older people's immediate living environment, age-friendly technology, in both hardware and software, is introduced into a smart home, smart building, smart neighbourhood and smart community. Smart mobility influences the older people's willingness and accessibility to move between their home, building, neighbourhood and community. Smart city governance affects the way that the government and people accept, adapt and react to innovation.



Source: Photos of robot from Wikipedia

Smart homes include smart design, assistive technology and intergenerational co-living for older people. There are a lot of well-developed examples. Cabinets can be designed to be mechanically lower for the elderly in wheelchairs and automated pill dispensers can be designed for those who take medication long term. Remote

sensing equipment on the bed, floor and refrigerator can be used for sleep monitoring, fall detection and nutrition monitoring, respectively. Such remote sensing equipment can also remind the elderly to switch off electric appliances and water taps, or switch on lights automatically when they go to the bathroom at night. These inexpensive designs and technologies enable them to live independently and reduce the caregivers' burden. Intergenerational co-living is not confined to family members, but also other children, teenagers and adults, such as university students. The variety of social support networks not only reduces their sense of loneliness and abandonment, but it also keeps older people connected with the most recent information, culture and technology, which are important input for refreshing and updating their lives.

Source: Examples of elderly-friendly design in building, from Architectural Services Department (2019)

The smart building includes elderly-friendly design, WELL building standard and building management. Examples of elderly-friendly design in a building are seats in elevators, handrails in corridors and spaces for socializing, physical activities and rest, as shown above. The WELL building standard originated in the US and promoted seven concepts for a healthy building, including air, water, light, nourishment, fitness, comfort and mind. This provides a framework for building management. With the elderly-friendly hardware, property managers can control and adjust air temperature, water quality, light brightness, food delivery, exercise programmes, sound level and health services. More importantly, it highlights the role of the building management team. Research has shown that people, especially the older people, trust and rely on the building security guards when they need help, because they are the most accessible and familiar, due to regularly meeting them at the entrance (The Hong Kong Institute of Housing, 2018). Therefore, the profession and customer relationship of the building management team is also crucial for a smart building.

The smart neighbourhood includes neighbourhood walkability, public space reinvention and elderly-centric spatial distribution of amenities and services. Neighbourhood refers to the area within the walkable physical distance of older people. Initiatives to increase neighbourhood walkability are reducing clutter, improving pedestrian safety and providing clear wayfinding signs, which influence the elderly's willingness and ability to access facilities and services. Public space reinvention encourages social inclusion and intergenerational interaction, in addition to accessibility, convenience and safety. For example, parks should perform the functions of a playground, social space, sports area and recreational space for people of different ages. The amenities and services for older people, such as an elderly centre, clinic and market, should be available in the neighbourhood. As new technology becomes available, the promotion of online services may help the elderly overcome physical boundaries, such as online banking, online shopping, online clinics and online delivery services.

Smart community refers to age-friendly planning principles. In contrast to smart homes, smart buildings and neighbourhoods, which are decided by a relatively small groups of peoples, a smart community is shaped by the participation of both the government and citizens. The stakeholders and public need to be aware of age-friendliness, such as domains of age-friendly city and components of healthy ageing as introduced by WHO. With the innovation and advancement in technology, the role of built environment professionals has never been more critical for building an age-friendly city. Double ageing is a predictive challenge with opportunities for expressing our creativity. Present efforts will benefit older people in the future.

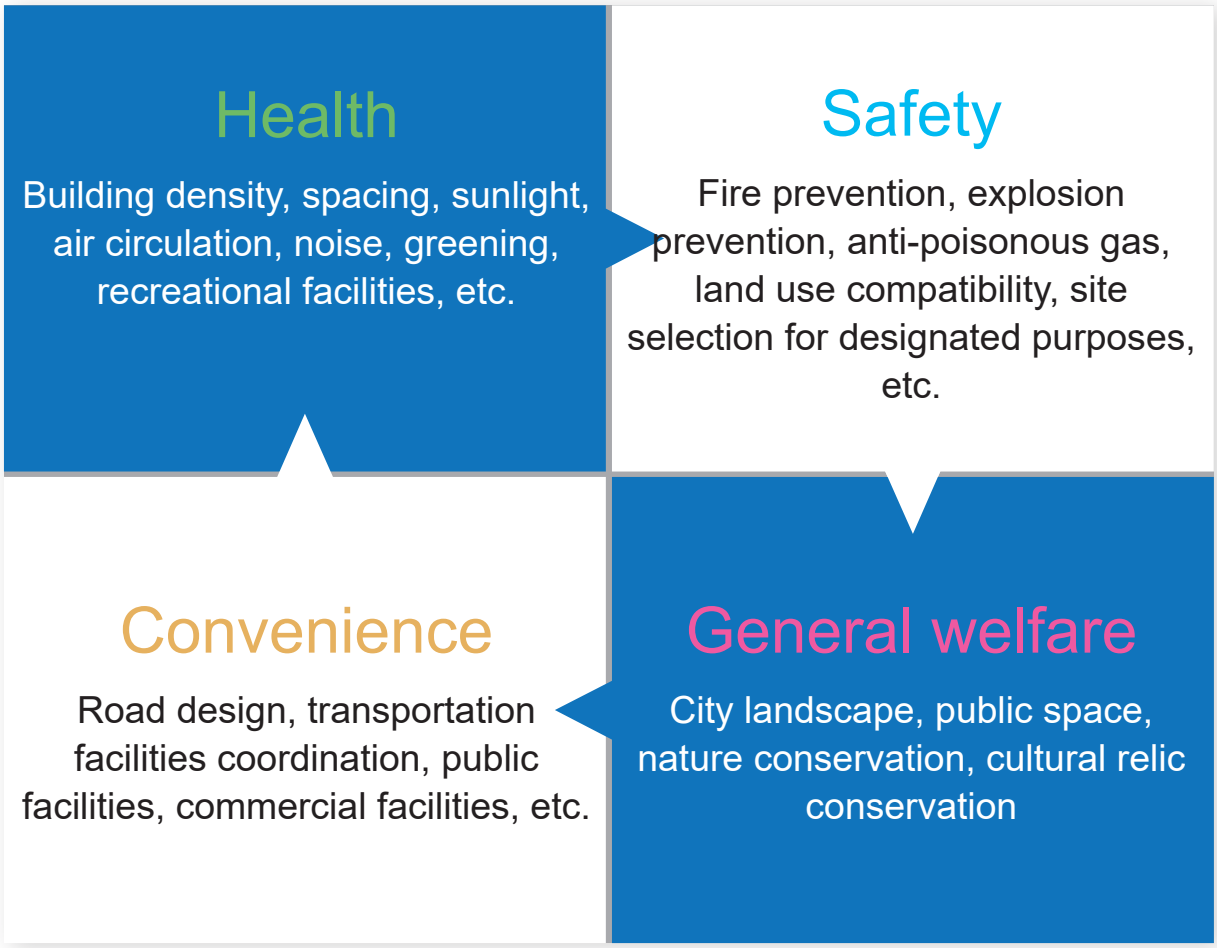
Source: Photos of Redevelopment of Kwun Tong Town Centre and Hung Shui Kiu New Development Area, from the Hong Kong 2030+ Planning and Strategy (2016)

Two potential examples are the redevelopment of Kwun Tong Town Centre and Hung Shui Kiu New Development Area as shown above. Kwun Tong Town Centre is an old urban area that now has a dense network of ageing buildings. Currently, ongoing construction works are anticipated to turn it into modern skyscrapers with improved connectivity, urban permeability, greening and public spaces. At present, Hung Shui Kiu New Development Area is a large area of deserted agricultural land. Site formation and infrastructure works have commenced to transform it into a new town of Hong Kong with enhanced land-use efficiency and environmental quality. We rely on built environment professionals to turn old and aged buildings areas into modern and smart spaces.

2.2 Hong Kong Planning and Design for the Elderly

2.2.1 Hong Kong Planning Standards and Guidelines

According to the website of the Planning Department (2019), the Town Planning Ordinance was established in 1939 with major revisions in 1991 and 2004. To promote the health, safety, convenience and general welfare of the community, it makes provision for the systematic preparation and approval of plans for the lay-out of areas of Hong Kong as well as for the types of building suitable for erection therein. Detailed contents of the promotion are shown below.



Neither statutory nor rigid, the Hong Kong Planning Standard and Guidelines were completed in 1981 and modified many times. As a tool for the planners, it lists each kind of land utilization and corresponding facility scale and requirement. This ensures the government to reserve enough land for social and economic development, and meanwhile provide suitable public facilities to meet the needs of the public during the planning process. There are twelve chapters in total. We will introduce three of them, related to outdoor spaces and buildings: 1) Community Facilities, 2) Recreation, Open Spaces & Greening, and 3) Internal Transport Facilities.

Community Facilities

Based on the population growth and density, the Hong Kong government provides a wide range of community facilities, such as elderly centres and community care service facilities. Elderly centres provide diversified services, including counselling, outreach, referral, social and recreational activities. In each new developmental area with a population of around 170,000 or above, there should be at least one district elderly community centre with at least 424 m^2. In a cluster of new and redeveloped housing areas with a population of 15,000 to 20,000 persons, there should be at least one neighbourhood elderly centre with at least 305 m^2. To enable older people with moderate or severe physical impairment to age at home as much as possible, a series of day-care and support services are also provided. For every 1,000 persons aged 65 or above, there are 17.2 subsidized places. A day care centre for 40 places should be at least 267 m^2, when integrated home care services for 70 places should be at least 90 m^2. Guidelines required these centres to be located on the lower floors or the ground, accessible with lift and nearby open space or playground. The government has provided residential care homes to serve the elderly who cannot receive adequate care at home. There are 21.3 subsidized beds for every 1,000 elderly residents. A home for 100 places is required to be at least 1354 m^2.

Source: A photo of an Elderly Centre from the Planning Department Website

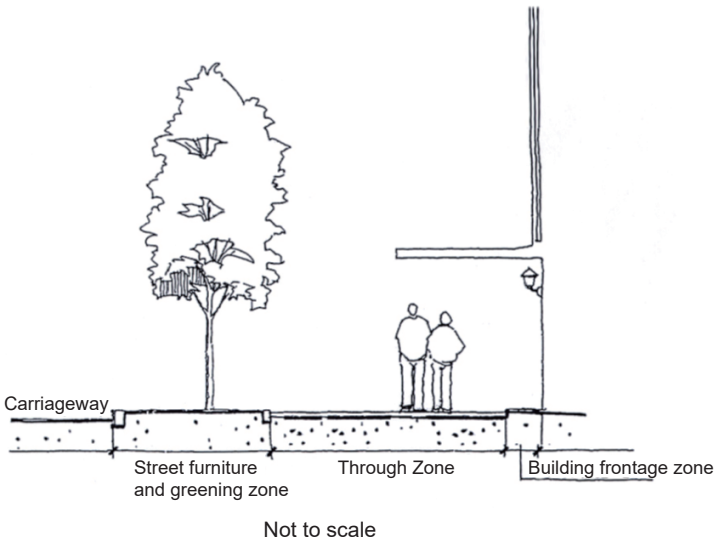
Recreation, Open Spaces & Greening

Based on fairness and equality, the government provides spaces for recreation, rest or vegetation. Basically, the standard is 10 ha per 100,000 persons. To meet the standard, the government maximizes the greening opportunities and attempts to build parks, gardens, promenades and sitting out areas. The minimum requirements are that at least 20% of the land is for planting, and half of which is for trees. The guidelines require planning for special needs of the disabled and the elderly. For example, public toilets, adequate lighting and emergency calls; unobstructed walking areas, shelter for walking and resting; handrails and ramps for steps; nearby car pick-up and drop zone, safe crossing zone; exercise facilities for the older people, such as Tai Chi areas.

Source: A photo of a fitness station for the elderly, from the Leisure and Cultural Services Department (2021)

Internal Transport Facilities

The planning for pedestrians is to make walking easy, safe, enjoyable and comfortable, because it is part of daily life and the most environmentally friendly mode of transportation. The Hong Kong government especially prioritizes the development of pedestrian network around railway stations. Principles of effective planning are clear, direct and attractive road conditions with road signs; adequate width, lighting, handrails, shelter and seats; to set up pedestrian zone with shops and avoid pedestrian-car conflict. The standard of footpath/walkway is 4.5 m width for commercial areas and 2-3.5 m width for residential areas. Ideally, each footpath should be accompanied by street furniture and a greening zone with at least 1.5 m width and 0.5-1 m building frontage zone. This is known as the three-zone concept as shown below. However, to suit the actual circumstance or design, the width is always flexibly adjusted.



Source: Three-zone Concept of a Footpath, from Planning Department Website

2.2.2 Planning for a Liveable and Healthy City

The Planning Department is responsible for planning and designing an inclusive and supportive city for better health and well-being. Through the age-friendly design of housing estate, public space, the community and streetscape, the government promotes the important concept: “Ageing in Place”.

“Ageing in Place”

In 2012, the Hong Kong Housing Society launched the “Ageing-in-Place” Scheme, which has been implemented in 20 rental public housing estates. According to the Hong Kong Housing Society (2019), most elders prefer to stay in a familiar community even when their physical and cognitive condition becomes weak. In order to let the elderly tenants stay at home, this scheme aims to strengthen their health and postpone their decline by active contact and immediate intervention of social workers stationed in the estate. The scheme provides convenient, inexpensive and appropriate services, which avoid the elderly being admitted to institutions early. Figure 11 shows the five domains of services in the scheme.

Figure. 11 The Five Domains of “Ageing-in-Place” Scheme

Source: Photos from Hong Kong Housing Society (2019)

The “Ageing-in-Place” Scheme mainly caters for the housing, health and social needs of the elderly. Extensive home-visit health and home assessments were done to identify the needs early and provide immediate and timely intervention. Volunteers, caregivers and organizations from medical, social welfare, academic, business and district communities are responsible for drawing attention, establishing platforms and providing efficient services. Since 2014, the scheme has involved 290 organizations and implemented over 3,500 home assessments, 67,000 health assessments and 6,300 referrals. Results of the longitudinal study showed that this scheme reduced the elderly’s reliance on elderly homes, because they were more satisfied with their living environment, used fewer emergency services, improved cognitive performance, reduced falling times and participated in more community activities. In view of this success, the scheme has received several local and international awards. The elderly are treated as an indispensable part of society, in which they are continuously and sustainably making active contributions.

Incorporating the concept “Ageing in Place”, both public and private housing are designed with flexibility for intergenerational support and sustainable age-friendliness. In housing estates, universal facilities and public spaces are required for social interaction, such as an elderly centre, community canteen and community centre. Also, for leisure purposes, the natural environment, bird-singing corner, chess corner and community farm are preferred for activities. Making use of new technology can facilitate communication and information transmission among the elderly. Therefore, older people can indeed age at home and actively contribute to their community.

2.2.3 The Four Principles in Building Design

The Architectural Services Department (2019) developed a set of elderly-friendly guidelines by doing research, case studies, workshops and consultations. These guidelines are not mandatory rules for designer or projects proponents, but they serve as good recommendations to follow. In which, four overarching principles were introduced. They are safety, support, cognition and wellbeing.

The principle of safety addresses falls prevention, injury mitigation and contingency planning. Falling is harmful to vulnerable older people, possibly resulting in a fracture. The floor surface should be slip-resistant. Lifts and escalators are preferred to stairs and ramps. Corridors, stairs and ramps should have enough handrails and lighting. Sharp edges and corners of furniture or statue should be avoided to reduce accidents. Road and street design should ensure there is a safe separation of pedestrians and vehicles. In case of emergency, the service desk or emergency call button should be easily identifiable and reachable for the elderly to seek help. Apart from physical safety, psychological safety may also be considered. Public spaces with

closed–circuit television or good visibility may provide a sense of security because people can help if they see someone in danger. However, privacy is a controversial issue.

Figure. 12 The Four Principles of Elderly-friendly Design
Source: Architectural Services Department (2019)

The principle of support hinges on maximizing physical independence and convenience for the elderly, especially those with declined abilities. Logical grouping of functional areas and direct route can allow those with less stamina to walk for a shorter time. If ramps and stairs are necessary, they should be gentle in gradient. The use of facilities should be intuitive and easy enough for all elderly. Automatic operating systems, such as automatic doors, are always preferred. Toilets are highly crucial. They must be adequate, easy to find, with handrails, hooks for a walking stick or other personal belongings, large enough for a wheelchair or helper.

The principle of cognition covers wayfinding and orientation of space. Many elderly have weakened vision and a lowered information processing speed. Signage needs to be available, readable and understandable. However, overloaded and complicated signage could be confusing sometimes. Designers need to be aware of the use of colour, materials, symbols, icons and artwork. Landmarks can assist in orientation and locating. Designers should make facilities visible for the elderly. Otherwise, they will not notice them nor use them.

The principle of wellbeing refers to a comfortable and pleasant environment. Air conditioning and ventilation matter to the elderly, as it is common for them to have respiratory problems and complain of feeling cold. Garden, plants and a scenic window view are relaxing and enjoyable. As people are social beings, socializing space, especially inter-generationally friendly, should be considered by designers.

Source: Examples from Architectural Services Department (2019)

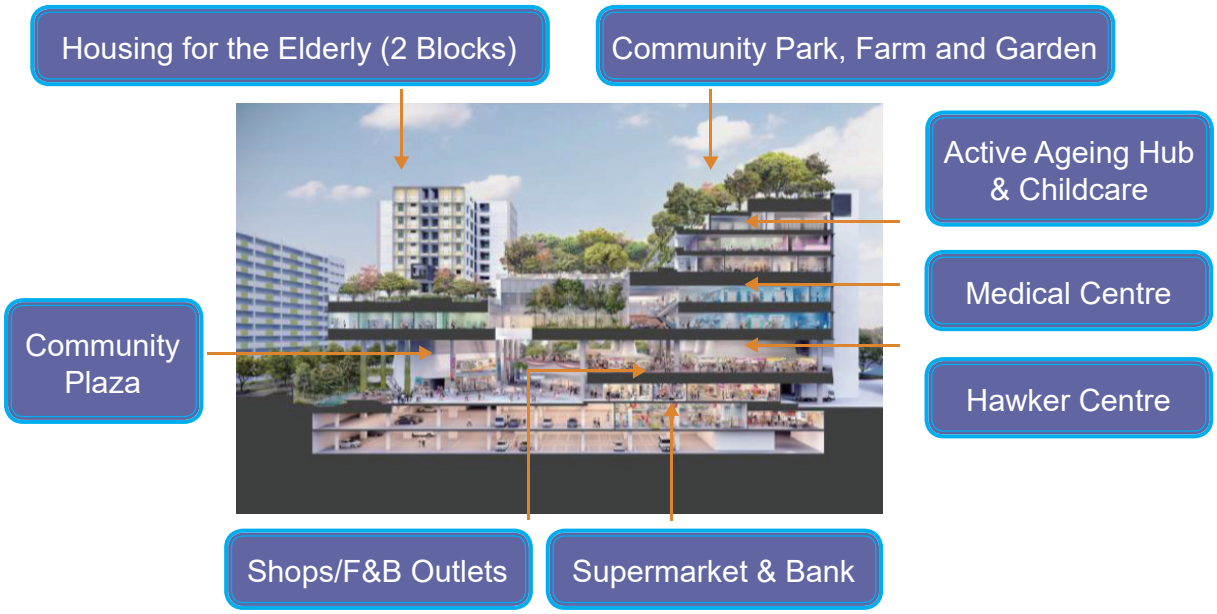
2.3 International Comparison and Foreign Experiences

Countries have a variety of situations and contexts. As a result, unique planning and strategies are shaped by a particular social, political and economic background. For example, an international comparison of four countries, including Australia, Denmark, India and the United Kingdom, showed that their principles of promoting independence of elderly are not universal because of cultural differences (Plath, 2009). However, it is still worth examining and learning from an international comparison and foreign experiences.

2.3.1 Inclusive Approach vs Exclusive Approach

Similar to Hong Kong, Singapore is a wealthy Southeast Asian city with the advantages of geographical location, international trade and human capital. Unfortunately, it also faces the issue of an ageing population. Singapore adopted

an inclusive approach promoting intergenerational interaction. Kampung Admiralty is an example of the government's inclusive housing policy. Kampung Admiralty is an integrated retirement community project for seniors aged 55 or above. The 11-floor complex comprises two public housings, a large community park and garden, an active ageing hub and childcare centre, a medical centre, a hawker centre, supermarkets, banks, shopping outlets and a community plaza. Apart from elderly-friendly designs and a wide range of services, the community plaza and community park are important for integrational social activities. As a vibrant spot next to Mass Rapid Transit station, large scale of activities, including sports events, classes, talks, workshops, music performances, competitions and festivities, attract visits by people of all ages and from many different places throughout the year.



Cross-sectional perspective of Kampung Admiralty

Source: Modified from the Centre for Liveable Cities and Seoul Institute (2019)

Contrary to Singapore's inclusive planning, Sun City in Arizona has adopted a very exclusive approach. Sun City is the largest retirement community in the USA. Residents must be aged 19 years or above and at least one household member must be 55 or above. There are no schools for children, but many facilities, such as golf courts and swimming pool, recreational centre, fitness centre and clubs for activities.

Events and activities in Kampung Admiralty

Source: The Centre for Liveable Cities and Seoul Institute (2019)

Instead of promoting intergenerational interactions, the planning of Sun City is in line with Western culture in that individuals can live independently. In Sun City, the organizer upholds the idea that taking care of grandchildren is not the responsibility of the elderly. Therefore, young people can only stay for three months at most. The developers believe that exclusive approach does not bring loneliness, but creates the time and space for the elderly to develop their interests and spend time doing what they enjoy. Regardless of the kind of passion, residents can find another like-minded partner due to the diverse and eclectic lifestyle at Sun City.

In contrast to the two examples, the planning of Hong Kong does not show an obvious preference for either inclusion or exclusion. The Hong Kong government promoted “Ageing in Place”, which appears to be an attempt to help the elderly to remain connected to society. However, on the other hand, elderly centres and elderly homes seem to be the only option for many. It is unnecessary to copy the successful experiences from foreign countries, because of the discrepancy in culture and context. The built environment professionals can first identify the particular and unique problems in Hong Kong, compare them with these successful countries and incorporate their lessons into future policy.

Source: Photos from the website of Sun City Arizona - The Original Fun City! (2021)

2.3.2 Comparison with Seoul and Singapore

Because of exceptionally rapid economic growth in the 20th century, South Korea, Singapore, Taiwan and Hong Kong are known as the Four Asian Dragons. Nowadays, Singapore and Hong Kong have developed into international financial centres, while South Korea and Taiwan have developed into leading electronic manufacturing centres. However, none of them can avoid the 'ageing tsunami' despite their economic success. Both cities have put initiatives and programmes in place themselves and started a collaboration with others. The Centre for Liveable Cities from Singapore and the Seoul Institute from South Korea (2019) shared a series of case studies adopting the "Ageing in Place" and "Active Ageing" approach, which are following a similar direction to Hong Kong and provide valuable insights.

⬆ **Seoul, South Korea**

Singapore ⬇

Source: Photos from Wikipedia

"Ageing in Place" in Seoul and Singapore

Apart from the Kampung Admiralty as a good example of providing diverse support for elderly within the neighbourhood, both Seoul and Singapore have implemented more "Ageing in Place" initiatives. For housing, Seoul provided an exemplary model called Borin Housing, which is to purchase existing properties and convert them into shared rental housing for seniors. As a result, it is more likely to provide senior housing for elderly in areas where they are originally living. Replacing their original home with new houses and facilities is in fact not always preferable, because conserving a familiar living environment is important to many elderly people (Zhang, 2020). It is worth noting the leader system in Borin House, which assigns minor roles to elected tenants. Leaders share the responsibilities and make decisions together. For example, a rooftop leader manages the rooftop and gardens; a cleaning leader inspects the waste and recycling. Such a leader system tends to improve the sense of belonging and order.

In Singapore, the government focused on increasing housing options and flexibility for the elderly by introducing the Studio Apartment Scheme and 2-room Flexi Scheme. The principle of these schemes is giving priority to the elderly buying or renting a smaller but elderly-friendly flat near their married children or existing home. These schemes enable the elderly to realize a gain from selling their current 3-room or 4-room flat without reducing their living quality at the same time. Such flexible choice facilitates economic efficiency and the rotation of housing supply, and also caters for the diverse housing needs of the elderly.

Artist's Impression of Bishan Ridges in Singapore, which offered 2-room Flexi flats only to seniors (aged 55 and above) on leases of between 15 and 45 years
Source: The website of Housing Development Board (2021)

In view of the serious housing problems in Hong Kong, built environment professionals may consider copying the success of Seoul and Singapore. In addition to the above cases, Seoul and Singapore have carried out something similar to Hong Kong. The Shinnae Medical Housing in Seoul is a public rental house required to be located within a 500-metre radius of a hospital, community health centre or national medical institution. The Reaching Out Community Service Centre in Seoul and the Community Network for Seniors in Singapore are examples of providing community support. The inclusive urban design includes memory-building design in Seoul encouraging cognitively-deteriorated elderly to leave their homes and age-friendly schemes in Singapore, such as the Land Transport Authority's Silver Zones and the National Parks Board's therapeutic gardens. All these kinds of measures should be continued and embedded in the general planning.

"Active Ageing" in Seoul and Singapore

There are certain commonalities in active ageing schemes among cities despite of situational differences in their respective city. Similar to Hong Kong, Seoul and Singapore have established elderly centres providing services, activities, programmes

and workshops for welfare, wellness, health, and recreation. Similar to the Elderly Academy in Hong Kong, an initiative called “National Silver Academy” exists in Singapore, promoting lifelong learning and offering a range of subsidized courses for the elderly. Nevertheless, we can look at some comparatively advantageous features of this particular plan.

In Seoul, the Seoul 50 Plus Foundation established in 2016 targeted to address the needs of the elderly aged from 50 to 64. The particular age group is easily neglected by Hong Kong elderly policy, because 65 years old is considered as the absolute cut-off defining “elderly”. However, preparing this generation is important because many may be anxious and unprepared for their retirement. Helping them explore possibilities and actualize potential is crucial, as early prevention is always better than later intervention. The Seoul 50 Plus Foundation has provided educational programmes, counselling programmes, employment programmes and research programmes, empowering people to transit smoothly towards an entirely new developmental stage. Hong Kong may take such focus into consideration and review its current elderly policy.

Source: Photos from the website of Seoul 50 Plus Foundation (2020)

In Chinese culture, meals play a vital role (民以食為天). This applies to seniors too. Coincidently, there are local initiatives to start up open kitchens to provide meals and community spaces for the elderly in Seoul and Singapore. In Seoul, the open kitchen of Gwanjin-gu Special Care Zone simultaneously functions as a restaurant providing nutritious meals, platforms providing age-friendly food product sales and nutrition information, and an education centre providing cookery lessons. In Singapore, a community kitchen of Goodlife! Makan, located in the Marine Parade neighbourhood, is designed “for seniors, by seniors”, especially those living alone. Seniors are in charge of meal preparation by gathering in the morning, deciding which meal to cook together and doing the shopping themselves. Only two to three staff members are on standby to help. Outside mealtimes, elderly can stay longer and use the space for meetings and activities. This kind of open kitchen overcomes the challenge of food

preparation and provides space for social and activities. The community kitchen may inspire and go beyond the traditional forms of support, such as an elderly centre and meal delivery.

Source: Captured screens from YouTube Video "Welcome to the GoodLife! Makan kitchen!" (I Feel Young SG, 2017)

2.3.3 Foreign Experiences

The preparation for the ageing 'tsunami' is at different stages of progress across the globe. Scholars have attempted to develop quantified measurements permitting objective comparisons, although indicators may be not ideal for international ranking and can be significantly influenced by political conflicts and the pandemic, despite age-friendly policies (Woo, 2020; Woo, Leung, Yu, Lee, & Wong, 2021). The Global AgeWatch Index is a multi-dimensional index to assess the economic and social well-being of the elderly in more than 90 countries/territories. It highlights the key aspects of older people's well-being, including income security, health status, capability and enabling environment. The AgeWatch Index 2016 for Hong Kong revealed that Hong Kong ranked 21st among 97 countries or territories and 2nd among Asian countries or regions, after Japan (CUHK Jockey Club Institute of Ageing, 2018). The results seem in line with a common perception that Switzerland and Nordic countries, such as Norway and Sweden, ranked top.

Ranking	Country/ Region
1	Switzerland
2	Norway
3	Sweden
……	
8	Japan
……	
21	Hong Kong
……	
97	Afghanistan

Table 4 Overall Ranking of the Global AgeWatch Index 2015
Source: Adapted from CUHK Jockey Club Institute of Ageing (2018)

Cities in the Nordic region have joined the WHO Global Network for Age-friendly Cities and Communities. To develop more age-friendly cities, the built environment professionals have worked on initiatives increasing inclusion and accessibility (Jönsson, 2018). In Oslo, a door-to-door minibus service is being tested. A similar minibus called Flexlinjen with a low floor for both wheelchairs and walking aids is found almost everywhere in Gothenburg. In Trondheim, when there are events, such as hip-hop concerts, blues nights, Tai chi and yoga, transport will be organized for those who need it. Apart from transportation, there are many other examples

of making the elderly feel connected. Everyone in Uppsala is offered home visits, once they turn 80. In Gothenburg, the elderly can play and do homework with pupils, and read to children during lessons and break times in preschool and schools. In Tampere, free entry to public facilities are not merely granted to elderly, but also to the person accompanying them.

Akita in Japan also joined the WHO Global Network for Age-friendly Cities and Communities in 2011. It was successful in involving and encouraging the cooperation of residents, private enterprises and government departments. One of the projects is one-coin certificate, with which older people can take bus at a reduced rate and have discounts or free drinks in shops and swimming pools. Age-friendly Partners and Akita Platinum Town Study Group are collaborations between the public and private sectors. Registered partners strive to increase age-friendliness, such as by using a universally accessible design. The establishment Club of Friendship between Generations in Akita and the construction of a multi-generational city hall provide opportunities and spaces for the interaction of citizens ranging from 20 to 80 years old.

Source: Photo of a universally accessible barbershop in Japan, named "Kounotori", as an Age-friendly Partner, from the website of World Health Organization (n.d.)

From the experiences of Nordic countries and Japan, we can learn that developing an age-friendly environment is about both physical and social initiatives. Increasing accessibility and user-friendly design are important, but reducing loneliness and increasing meaningfulness are also crucial. Built environment professionals need to consider improvements in tangible factors, such as accessibilities and facilities, and also intangible factors, such as culture and policy. They are mutually influenced. The elderly-friendliness of outdoor spaces and buildings provide availability and choices for the elderly, when policy and culture determine whether these facilities can be fully utilized. Involvement of people is necessary. Of course, decision making needs

the elderly residents' participation. However, we cannot neglect the participation of private, business, NGO and government sectors. Without the support of the whole of society, there will be obstacles during the implementation of the urban plan. Finally, the actualization of urban planning takes at least years. Built environment professionals need to predict the future and consider the rapid development of technology and the changes in society. Otherwise, when the new urban development is completed, the initially innovative plan may appear outdated.

Chapter 3 Outdoor Spaces

3.1 Green and Blue Spaces

Hong Kong is a coastal area consisting of islands, with a hilly and mountainous terrain and is surrounded by sea except for in the north. With the satellite image of Hong Kong, urban space, green space and blue space are clearly visible and differentiable. These rich natural green and blue resources perform multiple tangible and intangible functions and are important valuable assets for Hong Kong. The Planning Department (2016) has developed a conceptual framework of green and blue space in order to develop Hong Kong into a healthy, liveable and sustainable compact city.

Green space refers to "green features including vegetation cover (such as woodlands, shrublands, and grasslands but excludes agricultural land), open space and recreation space, country parks as well as connectors such as hiking trails, etc"

Blue space refers to **"water bodies including harbour, rivers and streams, conservation-related water space (such as wetlands, marine parks and marine reserves), water sports centres, beaches, reservoirs, artificial lakes, etc"**

Source: Definition of green space and blue space, from Planning Department (2016), and satellite image of Hong Kong, from Wikipedia

Green Space

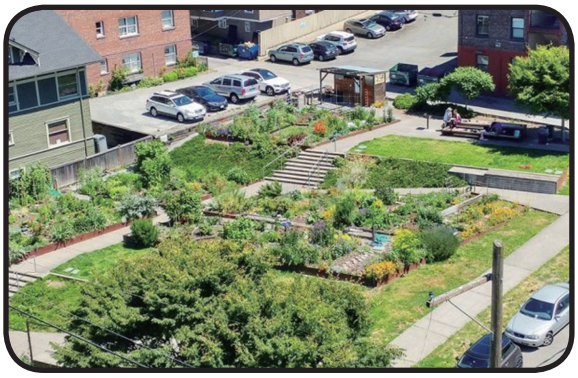
Although Hong Kong is an international city, about three-quarters of 1,108 km^2 of land are green areas with over 1,000 local species. The majority consists of country parks and special areas under statutory protection. In total, 24 country parks and 22 special areas occupy 443 km^2. Since the post-war afforestation from 1948 to 1960, the decision-makers have devoted effort and resources to planning and establishing country parks for nature conservation, recreation and education. Managed by the Agriculture, Fisheries and Conservation Department, facilities, such as hiking trails and campsites, and services, including litter collection, firefighting and education programmes, are provided. Nowadays, hiking has become one of the most popular daily activities. The four long-distance hiking trails have almost connected the major country parks. They are the MacLehose Trail from Sai Kung to Tuen Mun in the New Territories, the Lantau Trail circular on Lantau Island, the Hong Kong Trail on Hong Kong Island, and the Wilson Trail from Stanley to Nam Chung. Not only because of their conservation value, but also due to their heritage and cultural value, existing country parks should be preserved permanently. Decision-makers should attempt to expand the green areas, promote nature reservation, avoid inappropriate development in ecologically sensitive areas, and avoid using it for housing. Hiking in country parks may be the most enjoyable and beneficial activity for the elderly.

Apart from maintaining existing green space, built environment professionals may need to use every square foot of space in this highly compact city. Existing regional parks, such as Victoria Park and Kowloon Park, are good places for residents and tourists. However, such large-scale projects require a large area of land, which can hardly compete with residential and commercial land use. The existing guidelines of the Planning Department (2019) have advised developers to maximize greening and conserve vegetation. They should attempt to preserve existing mature trees at the

Source: A photo of a hiking trail in Hong Kong, from the webpage of Agriculture Fisheries and Conservation Department (2006-2020)

site, and also reserve space for light penetration and future growth. Plants and fences are preferred to walls on the periphery of a site. Planting should be included in any land use areas, including residential, commercial and industrial areas. Any opportunities for planting, whether on a podium, at a road junction, along a road corridor, at a roundabout, on a pedestrian walkway or slopes, should be taken whenever possible.

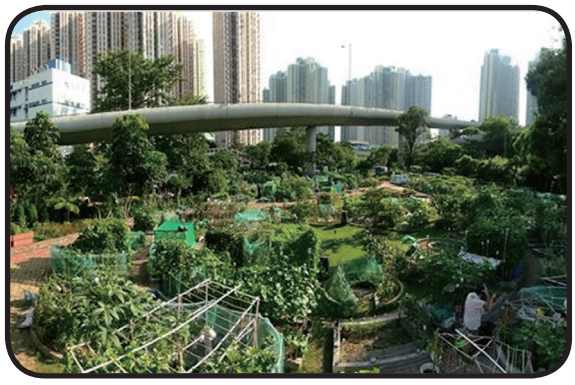
To explore other possibilities of adding urban greening in the built-up area, decision-makers may consider promoting recreational gardening and farming in the community. A systematic review showed that gardening promotes an older adult's overall health and quality of life, physical strength, fitness and flexibility, cognitive ability and socialization (Donna Wang & MacMillan, 2013), when a survey study in Australia also suggested that home and community gardening, regardless of whether doing gardening work or simply being in the garden, enhances older adults' self-esteem, productive endeavours, social engagement and exercise (Scott, Masser, & Pachana, 2020).



P-Patch Community Gardening Program, Seattle, USA
From webpage of Seattle Department of Neighborhoods (1995-2021)

Toronto Urban Farm, Toronto, Canada
From webpage of Toronto and Region Conservation Authority (2021)

Huertocity, Barcelona, Spain
From webpage of huertocity.com (2021)



Urban Oasis, Hong Kong
From Facebook page of Urban Oasis (2021)

Some examples from the USA, Canada, Spain and Hong Kong are highlighted in a topical report of Planning Department (2016b). Although recreational gardening and farming in the community cannot serve a large-scale commercial or subsistence purpose, it can fulfil the purpose of small-scale greening on rooftops, balconies, vacant land or schools.

Another possibility is increasing the greenery coverage of buildings. With more advanced architectural design and building technology, planting is no longer constrained by the available land. The percentage of greenery coverage can be greatly increased by greening on rooves, slopes, walls and other uncovered or covered areas, so that the total greenery areas can be a multiple of site areas. There are two examples of building greenery from Singapore, known as the “Garden City”. The Parkroyal on Pickering is a Singapore hotel completed in 2013 and designed by WOHA. The distinctive features of this hotel are its “hotel-in-a-garden” design and 15,000 m^2 of elevated terraced gardens. The extensive greenery demonstrated a conspicuous fusion of nature and architecture. Tree House is a residential estate completed in 2013 and designed by ADDP Architects. The condominium entered the Guinness World Records in 2014 because of having the largest vertical garden in the world. The great green walls design seems to be a potential solution for the densely populated and urbanized environment in Hong Kong.

Promotion of recreational gardening and farming, and green building design are attractive, but decision-makers need to be aware of the potential issues. Proper irrigation and drainage system are essential for the survival of plants. Old buildings’ structural capacity and loading of the rooftop may not be able to support the additional weight of greenery. The introduction of species has to be compatible with the surrounding environment, as undesirable pest may be attracted, and the particular characteristics of plants may have an unexpected ecological influence. The cost of development and maintenance can be considerable.

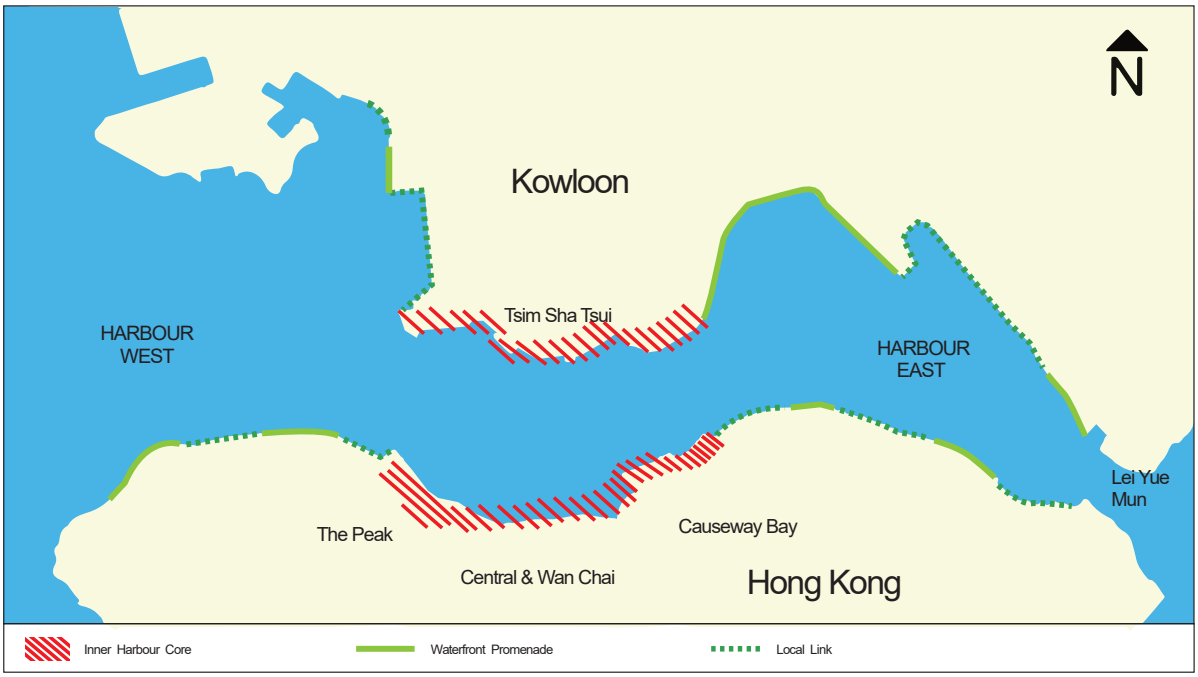
Source: Photo of the Parkroyal on Pickering, from Terrapin Bright Green (2017)

Source: Photos of Tree House, from the webpage of ADDP Architects (1986-2020)

Blue Space

The most well-known blue space in Hong Kong is Victoria Harbour, located at the centre of Hong Kong, separating the Kowloon Peninsula and Hong Kong Island. The deep water and important strategic location have turned Hong Kong into an international trading port and attracted many tourists. To maximize the utility of the treasurable blue space, the Planning Department (2011) has introduced a planning framework. Flagship Projects include 4 waterfront promenades in East Kowloon, West Kowloon Cultural District, Kai Tak New Development Area, and New Central Development Area. Together with the existing inner harbour core, natural coastline, waterfront parks and local links, the coastline of Victoria Harbour will all become connected and walkable for pedestrians. The new face of Victoria Harbour will fulfil the purpose of connecting local attractions, existing touring points, vantage points and cruise terminals. Therefore, the space of Victoria Harbour can be shared and serve a wide variety of land use, including tourism, recreation, residence, industry, port, government, marine, commercial and water events.

Until spring in 2021, the development projects of Victoria Harbour are under planning, implementation or partly completed separately. Among them, the first batch of facility in West Kowloon Cultural District, including the Xiqu Centre and Art Park, has opened to the public. To ensure everyone can enjoy the natural blue assets of Hong Kong, accessible and inclusive design has been adopted. Everyone, including the elderly, can enjoy wheelchair accessible and guide dog accessible space, audio descriptions and assistive listening of events, large subtitles and print information, tactile tools and braille information. These are considered a promising development toward an age-friendly city.



Source: A Planning Framework for Victoria Harbourfront, from Planning Department (2011)

Art Park

Xiqu Centre

Source: Photos of West Kowloon Cultural District, from the website of West Kowloon Cultural District Authority (2021)

Source: Photo of Shing Mun River upstream (Top left), Yuen Long Nullah (Top Right) and Cheonggyecheon (Bottom right) from Wikipedia;
Preliminary Design Concept of Tsui Ping River (Bottom left), from Drainage Services Department (2018)

Apart from the harbour and sea, there are many relatively shorter and smaller rivers in Hong Kong. They are mainly found in New Territories and were concrete-lined to become nullahs (明渠) to prevent flooding or drainage of industrial wastewater. Although these nullahs have functioned well for years, most of the time, they are open, and the dry canals lack aesthetic pleasure. And they have also caused other environmental problems, such as an unpleasant smell and ecological damage. Examples are the Shing Mun River and Yuen Long Nullah. In fact, they may be able to make further contributions and become valuable blue spaces for citizens. A successful transformation is the Cheonggyecheon in Seoul. It was a sewer for seasonal rain water discharge in the past. But it has been restored and has become an internationally renowned tourist attraction, despite the high cost. Long parks are located on both sides of the stream, where people can walk, rest and enjoy live entertainment or festivals. The revitalization of Kwun Tong Nullah into Tsui Ping River is a similar project in Hong Kong under planning and public consultation. The release of precious riverside public space may lead to it becoming a new meeting point for the elderly in the future.

Over the past few years, the Hong Kong government has shown increasing consideration about building a liveable city, including enhancing the facilities in country parks, hiking trails and harbourfront facilities. According to the 2021-22 Budget, resources are continuing to be allocated to relevant projects. HK$500 million will be set aside to enhance country parks, and HK$55 million is designated for the enhancement of hiking trails. To complete the Victoria Harbourfront promenades, the Boardwalk underneath the Island Eastern Corridor and the harbour front park at Eastern Street North in Sai Ying Pun will commence soon. These projects are expected to make green space and blue space open and available, to cater to the needs of all age groups, including the older people.

3.2 Social and Play Spaces

Figure. 13 A Pyramid Framework of Ideal Open Space
Source: Adapted from Hong Kong Public Space Initiative (2011-2015)

Contrary to blue and green space, social and play space can be anywhere people socialize and play. It can be a bare ground without any green/blue resources and facilities. Common social and play spaces include but are not limited to parks, public space and private space. As mentioned in previous chapters, we have discussed some guidelines, standards and principles for the physical setting of age-friendly space. However, the psychological and social needs of the general public, including the elderly, cannot be merely satisfied by accessibility, environment and facilities. Ideally, a successful open space should also be well utilized and encourage social and recreation purposes. In a Hong Kong qualitative study, the elderly thought that their main reason for visiting open spaces, such as parks, was for social and physical activities (Yung, Conejos, & Chan, 2016). It is good to see the planning and design's stress on safety and accessibility due to their importance, but the social and recreation needs of the older people are sometimes not addressed. A pyramid framework of ideal open space is shown in Figure 13.

A photo showing “Aloneness”: An old man sitting alone on a bench, reading a newspaper. Behind him, there is a group of young people.
Source: Ayalon and Ben-Noon (2018)

Ayalon and Ben-Noon (2018) used a visual research method (reviewing still photographs) to record, observe and explore the behaviour of older adults spending time in public spaces in Israel. Despite potential cultural differences, the findings of this natural social laboratory are insightful. First, intergenerational interaction was almost absent, as the only observed activity which involved young and older people was a caregiver transferring an older adult. Older adults tended to spend time there and were sedentary, whereas young adults tended to be commuting. Second, over 90% of older adults arrived alone and half of them remained alone during the observation. This indicated that visiting public spaces does not guarantee an increase in social contact. Finally, gender segregation is observed. Men were more likely to have activities, such as table games, when women were more likely to have a spontaneous conversation. Men and women rarely spoke with each other. These findings formulated an essential message to policymakers that putting individuals together in a single space is not enough to naturally establish social contacts. As shown in the above photo, the aloneness of older adults does not seem to be alleviated by the mere attendance of a public space, which is supposed to be for social and play activities.

Illustrative Examples of Older Adults' Usage of Community Green Spaces in Taipei
Source: Pleson et al. (2014)

To better understand the older people's behaviour in public spaces, we can examine the study on older adult's usage of community green spaces in Taipei (Pleson et al., 2014). Older adults reported that they visit green spaces for meaningful activities, including structured activities, unstructured activities and taking care of grandchildren. Structured activities refer to classes or exercise, such as morning exercise, dance, chi gong, badminton, petanque and Frisbee. Unstructured activities refer to walking, bicycling, stretching and strength training. Moreover, grandparents are often caregivers for their grandchildren in Chinese culture, so taking them to playgrounds may be their daily task. The picture and story have changed greatly and are different from the observations in the Israel study. The presence of activities and recreational facilities has been a good way to encourage social and play activities in public spaces.

Good management of social and play space goes beyond the routine maintenance of physical facilities and environment, such as cleaning and repairing. In the USA, hiring staff to provide activities is a suggested strategy for improving existing parks (AARP, 2018). A wide range of events can attract a constant stream of visitors, making the place dynamic and vibrant. Events can be on a different scale, ranging from concerts and festivals to dance classes and knitting groups. Activities are preferred to be for all ages, and there is a variety throughout the year, the season or the day. Klyde Warren Park in Dallas, Texas, is populated from morning to night due to its array of activities, including free yoga and dance classes, storytelling, lectures, newspaper, board games, and outdoor performances and movies.

Opened in 1957, Victoria Park is one of the most well-known social and play spaces in Hong Kong. The park includes a variety of physical facilities, such as the central lawn, tennis courts, swimming pool, children's playground and football pitches. In addition, major events attract a crowd every year. Examples are the Lunar New Year Fair, the Hong Kong Brands and Products Expo, the Mid-Autumn Lantern Displays, the Hong Kong Marathon and the Hong Kong Flower Show. Because of its convenient transportation and large-scale activities, Victoria Park is the most frequently visited park by the public, including the older people.

The Hong Kong Marathon

The Hong Kong Flower Show

The Lunar New Year Fair

The Mid-Autumn Lantern Displays

Source: Photos of Victoria Park and its events, from Wikipedia

Apart from the presence of activities and services, the inclusion of social and play space is critical for reducing the feeling of aloneness of the elderly, as many of them are caregivers for their grandchildren. The inclusive playground in Tuen Mun Park seems to be a successful space for children and the elderly to spend time together. It is worth noting that this playground is designed with a bottom-up approach which involved potential players in the design and building process. Therefore, the inclusive playground in Tuen Mun Park is not created for users, but with them. The inclusive design is a good start and an example that elderly and children do not need to spend their time separately. Sharing space together also promotes intergenerational interactions and uses the limited space efficiently. To make the park inclusive, the park's entry and area are almost completely barrier-free for wheelchair users. Multisensory, natural and progressive-challenge playscapes are available, such as sand play, water play, interesting plants, slides for different ages and large swings

for the whole family. As a result, older adults are included to join activities, instead of sitting and waiting for their grandchildren.

Photos of an Inclusive Playground in Tuen Mun Park
Source: Playright Children's Play Association (2019)

Social and play spaces can reduce the feeling of aloneness if they provide inclusive activities. However, the Hong Kong social unrest and COVID-19 pandemic have forced us to think in a different way. The lockdown and self-distancing initiatives have made it difficult for people to enjoy the social and play space outside, even though they are well designed. For safety and risk reasons, government services and public spaces, including elderly services and playgrounds, were suspended or closed, except for those conducted through visual or online means. As shown in the table below, the elder quality of life has dropped markedly. The rise of digital solutions, such as online social media and communication tools, has provided alternatives and substitutes.

Domain and indicators	2017 score	2018 score	2019 score	2020 score	Change (2019-2020)
Income Security	25.00	25.19	25.27	24.73	-0.54
Health Status	25.00	24.99	23.85	22.06	-1.79
Capability	25.00	26.43	27.83	22.82	-5.01
Enabling Environment	25.00	24.37	24.00	23.61	-0.39
Total	100.00	100.99	100.95	93.22	-7.73

Table 5 Hong Kong Elder Quality of Life Index
Source: Woo et al. (2021)

Obviously, virtual or online communication and interactions cannot completely replace physical gathering and contacts. However, it is an irreversible development trend and a good option if a physical meeting is impossible. Inevitably, some elderly may be left behind by the spread of digital services and become digitally excluded if only the online version is provided. According to the Census and Statistics Department (2020), percentages of Hong Kong residents using PC, smartphones and the Internet are over 90% except for the elderly group, which ranges from 43.3% to 65.1%. Age differences exist, however, the increase in usage of PC, smartphone and the Internet is significant, especially among the elderly. From 2018 to 2019, the percentage of elderly who had knowledge of using a PC increased from 40.8% to 52.2%; the usage of smartphones among the elderly increased from around 3 in 5 persons to 2 in 3 persons; the percentage of using the Internet increased from 56.3% to 62.2%. We expect the increase to be more rapid due to software growth such as Zoom during the COVID-19 pandemic from 2019 to 2021. Decision-makers may have to study the possibility and importance of virtual and online social and play space for the elderly, and provide relevant devices and facilities, such as free and stable WIFI coverage.

Source: A photo of a closed fitness station for the elderly during the COVID-19 pandemic (Left), from HK01 (2020); A photo of a robot for video telephony in an elderly home during COVID-19 pandemic (right), from Mingpao (2020)

Chapter 4 Buildings

Regarding buildings, the issues of planning and design, including Double Ageing and the four principles in building design were discussed in Chapter 2. In this chapter, we are gratified to introduce how some recently completed projects in Hong Kong may have embraced an elderly-friendly design and met certain age-friendly principles and standards. Examples of public buildings and residential buildings are introduced separately.

4.1 Public Buildings in Hong Kong

Photos of the Tuen Mun Siu Lun Government Complex (Top Left), Che Kung Temple Sports Centre (Top Right) and Tsing Yi Southwest Sports Centre (Bottom)
Source: The webpage of Architectural Services Department (2021)

The first example is the Tuen Mun Siu Lun Government Complex, which includes multiple facilities, such as the sports centre, climbing wall, community hall, post office, offices of the Immigration Department and offices of the Social Welfare Department. In addition to the challenge of putting various functions together, the architecture teams have incorporated the elements of age-friendliness. The main entrance is easily identifiable and accessible and its large central atrium is covered by a skylight, enhancing air ventilation and is open for visual connection. Furniture, such as benches, are designed with eased corners and armrests for the elderly. The interior

design has used contrasting colours for easy identification, while gentle ramps, a door-less design, hands-free sensors and wave switches for automatic doors are provided for easy access. Visiting the complex appears pleasant for the elderly, and may sometimes be enjoyable if they visit with their grandchildren.

The Tsing Yi Southwest Sports Centre and Che Kung Temple Sports Centre are newly opened venues for local people to hold social gatherings and engage in leisure and sports activities. In each case, the entrance is provided with shelter and adequate seating. Vehicular and pedestrian entrances are separated, and natural light and air circulation are incorporated into the lobby or courtyard. Facilities such as the children's play area and swimming pool are designed for all ages. The level of greenery provides a casual and relaxing environment for cross-generational communication. In general, we can acknowledge the designer's attempts to follow the safety, support, cognition and wellbeing principle suggested by the Architectural Services Department (2019).

Intuitively, the hospital is the most frequently visited place by the elderly, and therefore its age-friendliness is the most prioritized. Opened in January 2021, the CUHK Medical Centre is a pioneering non-profit, private teaching hospital. It has 16 special medical centres, including an Emergency Medicine Centre, Cardiology Centre, Eye Centre and Elderly Care Centre. Most advanced in-patient and out-patient services are offered. It intends to develop into a "smart hospital" with a fully electronic and paperless medical record system, a one-stop service platform utilizing information and communications technology and real-time data, and the use of the Internet of Things technologies to improve efficiency. Most importantly, the built environment is tailor-made for the elderly.

A photo of CUHK Medical Centre
Source: The webpage of CUHK Medical Centre (2021)

Completely different from the ageing building blocks mentioned in Chapter 2, the recently completed public buildings projects seem modern and are doing well to meet the various needs of the ageing population. They have demonstrated smart design and advanced technologies, aiming to achieve the target of Active Ageing and following the age-friendly principle in building design. We will further look at the projects of residential buildings and examine whether they can achieve the target of Ageing in Place.

4.2 Residential Buildings in Hong Kong

As mentioned in Chapter 2, “Ageing in Place” is an important age-friendly concept promoted by the Hong Kong government. Nevertheless, the implementation in residential buildings may be more difficult than in public buildings, because housing problems have remained unsolved for many years, due to certain challenges, including the dense population, lack of land for building and unaffordable house prices. Tiny, expensive and poor living quarters are an observable phenomenon in Hong Kong, which is one of the most economically unequal cities in the world. During the rapid economic growth since the 1950s, a distorted housing phenomenon, including rooftop slums (天台屋), cage homes (籠屋), coffin rooms (棺材房), street sleepers and McRefugees (麥難民), continuously have appeared simultaneously, and many sufferers are elderly.

Since the 1990s, the elderly service in Hong Kong has been transforming and making progress. In the 1990s, elderly services were “piecemeal”, as each kind of institution only served a particular need of the elderly. Medical services were mainly medical and nursing care, provided by hospitals, when social services were the responsibility of Social Centres for the Elderly, and residential services were the responsibility of the Homes for the Aged and Care and Attention Homes. In the 2000s, medical-social interfacing was started. The more frequent and closer collaboration between social workers and medical professions bridged the gap of medical-social services and extended healthcare from hospital to the community. In addition to social and emotional support, elderly centres started to provide basic nursing and rehab services. From 2003 to 2012, elderly services were characterized by medical-social-housing interfacing. The Hong Kong Housing Society launched the Senior Citizen Residences Scheme projects (including Jolly Place and Cheerful Court) and Tanner Hill, which provided a residence integrating housing, social, medical and care services under one roof for the middle-income elderly. Now, “all-inclusive” retirement options are provided by the private sector. Like the Continuing Care Retirement Community model, senior living integrates medical and social services with advanced age-friendly technology. Examples are Patina Wellness and Ventria Residence.

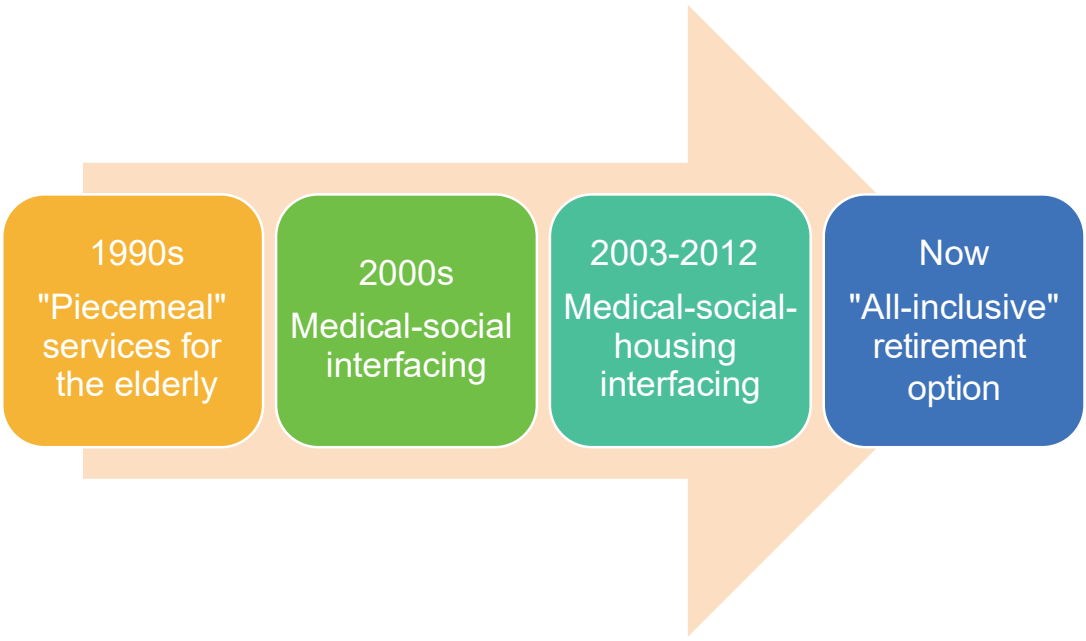


Figure. 14 The Development of Services for the Elderly in Hong Kong

The Senior Citizen Residences Scheme projects launched by the Hong Kong Housing Society was first piloted in 1999. Completed in 2003 and 2004 respectively, Jolly Place and Cheerful Court provide 576 residential units for the elderly. Based on the "user pays" concept, residents are required to be financially independent. They have to pay a lump sum entry contribution and pay a monthly management and services fee. In return, long lease residence is guaranteed, no monthly rent is required and a wide range of optional and high-quality services and amenities are available. The project is considered successful elderly-friendly housing that offers polyclinic (doctors, dentists and Chinese medicine practitioners) and clubhouse facilities (swimming pool, restaurant, gymnasium, games room, art room, music room). Completed in 2015, Tanner Hill has copied the success of previous pilot schemes. However, it is an entirely non-subsidized housing project designed for the comparatively wealthy elderly who aspire to a thoughtful lifestyle and professional care services. Various unit types are available, including a studio, 1-bedroom, 2-bedroom and combined, with or without ensuite or storeroom, open or closed kitchen. Skilled care facilities are more comprehensive, including a residential care home for the elderly, a day care and training centre and a rehabilitation centre. Although the public criticized that these projects are only for the rich because of their high lump sum entry contribution (around 1 million up to 16 million Hong Kong dollars), it is a pioneering initiative drawing society's attention to the tailor-made buildings and planning for retirees.

Photos of Jolly Place (Top left), Cheerful Court (Top right) and Tanner Hill (Bottom),
Source: The webpage of the Hong Kong Housing Society (2021)

To meet the rising demand for a more elegant living environment, Patina Wellness and Ventria Residence offer elderly service apartments with medical and nursing care created by the private sector. As the first-of-its-kind project in Hong Kong, they are not just a vertically inclusive community, but they also integrate various kinds of smart home technology and a cutting-edge management system. In Patina Wellness, a smoke detector, gas detector and water leakage sensor are installed in the kitchen or bathroom for safety purposes. If any abnormal activity is detected, residents, family members and staffs will receive a real-time alert. A PIR motion sensor, temperature & humidity sensor, and smart vacuum cleaner provide smart housekeeping for the elderly, such as automatically switching on lights, air-conditioning, dehumidifier and cleaners. Residents can also use apps or a smart device to remotely control or voice control the appliances with preset and personalized functions. In Ventria Residence, each unit is provided with a companion robot, which functions for activity and medication reminders, health and fall monitoring, communication and entertainment. An electronic security system with face recognition can function as an anti-wandering and location tracing of cognitively impaired elderly, and the exercise management of elderly. A 24-hour nurse call system is on standby for emergencies. Most importantly, Ventria Residence uses the most sophisticated network system and IT infrastructures, such as the 5G Mobile system, Wi-Fi 6 platform, secure cloud platform, data centre, firewall and virtual technologies, which are crucial for flexibility to upgrade in the future.

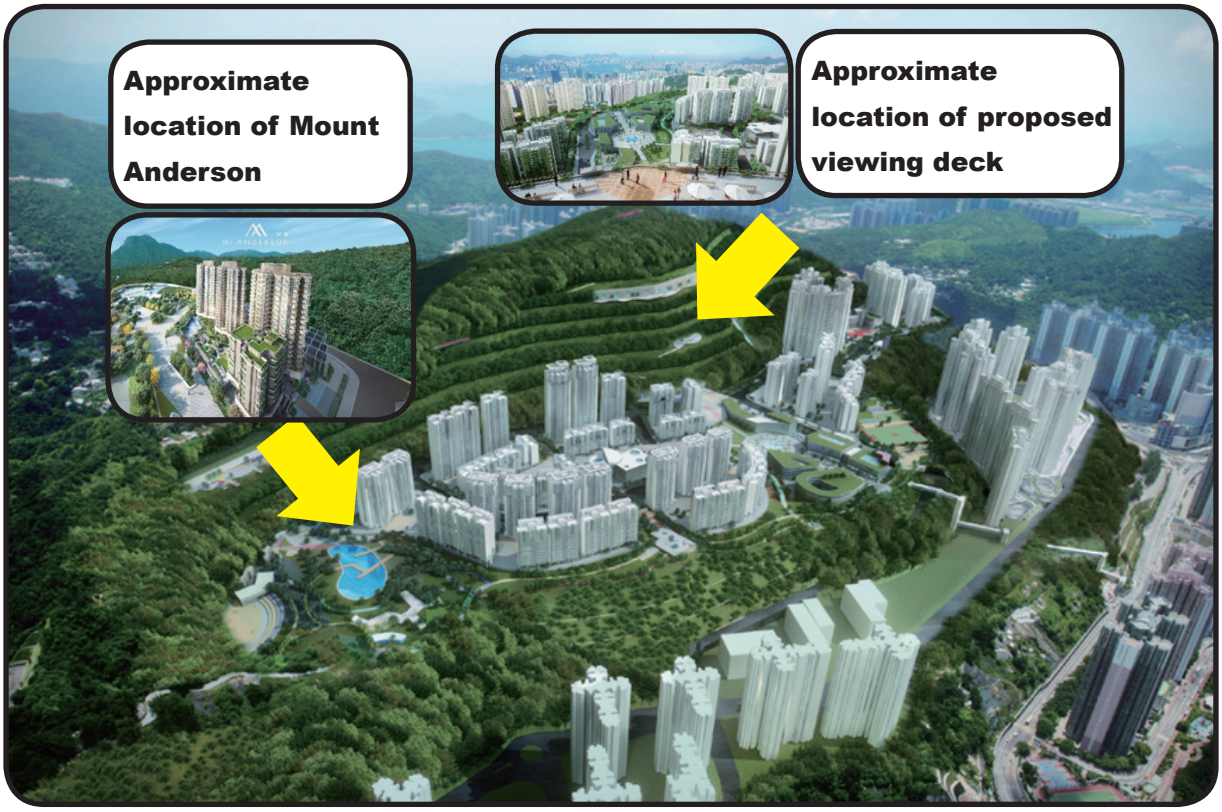

Photo of Ventria Residence,
Source: The webpage of Ventria Residence (2021)

In spite of the above buildings' all-round services, they are for lease only, not for sale. As per the traditional wisdom in Chinese culture, Hong Kong people have a strong preference for property ownership, which is treated as a safe investment. Reviewing the existing private housing market, Fairview Park is a very reputable private estate that is commonly considered as the first choice for retirement. Although it was developed in 1976, it still demonstrates excellent and up-to-date planning, design, management and community. The developer decided to build the 5,024 semi-detached residential houses next to the Mai Po Nature Reserve. The natural environment makes this a low-density development surrounded by fish ponds, hills, sunshine, trees, flowers and birds. For external transport, multiple bus links connect the estate to the MTR East Rail Line and MTR West Rail Line respectively, and bus stops are located within a 5-minute walk from home. Regarding internal transport, the flat development is good for walking, cycling and wheelchairs, and free shuttles are available to transport and serve residents inside the estate. Facilities and shops at the centre make the community self-sustainable, such as clubs, churches, community centres, a management office, a children's playground, restaurants, theatres, parks, supermarkets, a wet market, a post office, a salon and kindergartens. In addition, there are large artificial lakes, lakeside paths and lawns, providing open and public spaces for exercise, leisure and social gatherings. In addition, the architects designed 13 houses types (79 to 157 m^2,2 to 3 storeys) for residents to choose from, depending on ability and preference. The large front and back gardens, also community programmes, enable an individual lifestyle and the expression of personality, such as recreational gardening and farming. For management, the property management team appears to be doing a good job in upkeeping and upgrading the estate. Despite the years since it was built, the outlook of houses still looks consistent, new and clean, because there are standards on the use of colour, the height of gates and the design of fences. Ultimately, residents in the community are welcome to share and care. For example, children can play trick-or-treat freely and safely at Halloween. Homemakers can easily borrow cooking tools or ingredients from neighbours, which is becoming increasingly rare in Hong Kong nowadays.

A photo of Fairview Park,
Source: The webpage of TimeOut (2020)

Apart from Fairview Park, society demands more options that are tailored to the elderly, such as apartments. Almost all private apartments in Hong Kong are designed for the public, except for the current sales of the Mount Anderson apartments. It is the first pioneer residential development in Hong Kong that incorporates a multi-generation design and it consulted the Jockey Club Institute of Ageing, Chinese University of Hong Kong. As a pilot project of Chinachem Group, one of four towers, around 10% of the total 334 units, clubhouse and public area of Mount Anderson has adopted a tailored and thoughtful elderly-friendly design. The location provides plenty of green, blue, social and play spaces for view and activities. A large artificial lake is in front of the construction site surrounded by approximately 85,000 m^2 Quarry Park. The planned shopping area, multiple-purpose plaza, viewing deck and government complex will provide recreational activities in addition to physical activities. Connected with hiking trails and cycling paths, older adults can visit the community and country parks easily. The large bus terminus next to Mount Anderson will provide various low-cost public transportation routes. Apart from the desirable external environment, Mount Anderson fulfils the WELL building standard and has over 33% green coverage with an elevated landscape. All corridors are wider than is usual with more handrails and a design with colour contrast. Similar to the community garden of Kampung Admiralty in Singapore, there are inclusive playground facilities and community farming area in the clubhouse, which further increases the greening effect and promotes intergenerational activities. As well as the building hardware, Chinachem Group is also aware of the importance of the property service team. The property service team may include social workers and nurses to provide social and medical services, such as regular phone conversations and health checks. The most thoughtful and smart designs are inside the apartment. The whole apartment uses a slip-resistant floor, universal accessible entry and movable or adaptable furniture.

Installed smoke and water leakage sensors, emergency calls and smart appliances are remotely connected and controlled by mobile apps. Soft light and night lights further ensure the elderly person's safety at night. The door and wall of the kitchen are specially made of transparent fire-resistant glass, which makes the kitchen visible in the living room. The bathroom is comparatively wider, and its curbless shower design is suitable for wheelchair users and to prevent falls. The deck and railing on the terrace are wooden, to give a warm sensory feeling. The multi-perspective and elderly-centre design of Mount Anderson is an excellent start and deserves appreciation.



Source: Photomontages of the proposed development at Anderson Road, from the feasibility study of the Planning Department and ARUP (2014), and Mount Anderson, from the webpage of Mount Anderson (Chinachem Group, 2021)

4.3 Evidence Linking Buildings and Health

A range of research evidence has shown the influence of building and housing on health outcomes. In this section, we will list some of them. First of all, a UK study found an association between housing and health using biomarker data, instead of self-reported measures used in many studies (Clair & Hughes, 2019). In the study, C-reactive protein, associated with infection and stress, was associated with housing tenure, type and cost burden. According to the results, private renters' health may be poorer than owners with a mortgage. Detached home residents' health seems better than those living in semidetached, terraced houses or flats. A high housing cost burden may lead to better health because of potentially better housing conditions. Despite the differences from Chinese culture, these results implied that housing policies need to consider the elderly's health outcomes.

The association between health and buildings is complex, as buildings are the most immediate environment, where people spend most of their time, especially in developed countries and when working from home during the COVID-19 pandemic. According to a systematic review, a set of building and housing conditions are connected with both physical health and mental health (Sarkar et al., 2014). The first factor is temperature. Even though Hong Kong has a subtropical climate, hypothermia still occurs in the lower range of environmental temperatures such as around 10 °C, particularly among frail, older people living in residential care, since there is a physiological adaptation towards a higher temperature range. Extremes of temperature have been shown to result in different types of adverse health outcomes with respect to excess mortality, falls, ischaemic heart disease and stroke admissions, as well as suicide (Chau, Chan, & Woo, 2009; Chau, Wong, & Woo, 2014; Chau & Woo, 2015; Chau et al., 2020; Yeung, Chau, Woo, Yim, & Rainer, 2011). The design and management of building, such as providing air conditioning and shelter, are important factors in maintaining a comfortable temperature and helping older adults adapt to climate change.

The second factor is dampness. Hong Kong's humidity can be very high, particularly in the foggy spring and rainy summer. For certain buildings, most of the sunlight may be blocked either by other taller buildings or due to property orientation. Water leakage in aged buildings or windowless bathroom can also result in dampness, which breeds viruses, bacteria and mould. Older adults living in damp conditions in the long term are more likely to have illnesses, such as respiratory problems, headaches, fever and nausea. In Chinese society, excessive dampness is well-known to be harmful to elderly people's health from the perspective of traditional Chinese Medicine. It commonly causes a heavy or painful feeling in the head and body. These physical complaints have a deteriorating effect on the quality of life of older adults.

The third factor is overcrowding. As mentioned in Chapter 1, the challenges in Hong Kong, including high population density, lack of ground and unaffordable housing price, inevitably squeeze both private and shared space in community, building and interior residential areas. A higher propensity for disease transmission and infection of the respiratory tract has become the greatest concern during the pandemic. In regular days, overcrowding creates pressure, stress and psychological discomfort. Older adults may feel oppressed and trapped because of unavoidable and unwanted social interaction. Family disputes can be an enhanced issue, particularly since disputes between mother-in-law and daughter-in-law are common in Chinese culture. It is a tragedy that family members are forced to separate or leave home due to insufficient living space. Recently, the direction of building strategy and housing policy in Hong Kong is to supply “nano flats”, which intends to increase the number of supplies at the expense of size. Overcrowding may further intensify in the future and cause both physical, mental and social problems at an individual and societal level.

The fourth factor is maintenance. The majority of older adults may prefer to live in the old apartment they bought when they were young, even though it has gradually fallen into disrepair. Because of maintenance cost or physical inability, structural defects, such as leaking pipes, cracks and holes, may appear in the building. In addition to inappropriate food storage and waste disposal, sanitary issues and pest infestations can be a serious problem for some older adults. The appearance of pests such as mites, cockroaches and rodents, is persistently annoying and is not always solved by using insecticides. The following photos show a resurgence case of bed bugs due to insecticide resistance and incomplete nest removal. The victim suffered from repeated bed bug bites until they received voluntary help. However, the problem may return if the disrepair continues. The government may need to support older adults to maintain regularly their old buildings.

Photos of a Case of Bed Bugs

The fifth factor is lighting. Because of declining visual ability, sufficient lighting is important for older adults, to prevent the risk of falls and accidents, particularly in kitchens, bathrooms and staircases. Moreover, brightness and the availability of natural light may influence comfort and performance. The lack of natural light increases older adults' stress and tiredness when performing activities that require a high concentration level, such as reading or sewing. An abundance of natural light promotes a better mood, improves emotions and psychological well-being whereas cloudy weather tends to affect people's moods. Therefore, it is recommended that architects design buildings with a greater number of larger windows or a terrace.

The sixth factor is noise. As a densely populated metropolitan area, Hong Kong has set up a Noise Control Ordinance to regulate the noise of busy transportation and commercial activities. Although ambient noise rarely induces hearing loss, long-term exposure to noise has negative impacts. Physically, it may increase stress, blood pressure and cardiovascular risks. Mentally, it is annoying and distracting. The most serious impact may be sleep deprivation, which has a negative influence on older adults' rest, concentration and equanimity. Indirectly, reduced daily functioning may increase the risk of injury and accidents. The use of soundproof building materials can minimize unnecessary noise.

The last factor is housing type. It is suggested that inhabitants of multi-unit dwellings divided into small apartments find it more difficult to develop and maintain social networks, because of reduced mutual visual exposure and access to neighbours. Echoing the general impression of Hong Kong, there is an increased sense of isolation and loneliness among neighbourhoods in multi-unit dwellings. Moreover, the Hong Kong housing market is clearly divided into public housing, subsidized housing and private housing, implying obvious differences in socio-economic status, respectively. Inhabitants of public or subsidized housing may have a negative perception of stigma, when middle-class inhabitants may feel excluded from government support. Furthermore, because of the extremely high housing costs and rent, housing tenure and occupancy status are influential factors of mental health. People who own their home outright probably report a better health status than those who have an expensive mortgage or rent, because these high living costs can be a significant stressor which continuously threatens their feeling of security. Therefore, building and housing are important factors in elderly policy.

Chapter 5 Hong Kong Policies

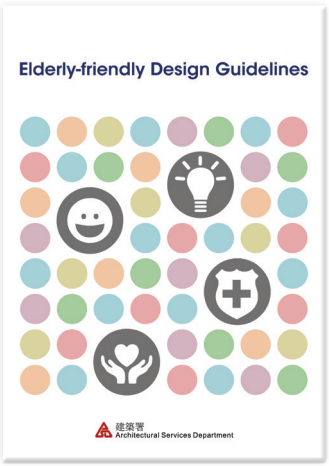
This chapter will introduce elderly-related initiatives provided by the government, NGOs, businesses or academic institutions in Hong Kong. Some of them may have been mentioned in previous chapters, but they will appear in a more structured way to demonstrate the general direction of Hong Kong policies.

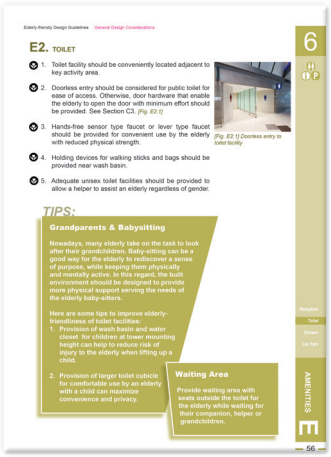
5.1 Government Initiatives

Regarding outdoor spaces and buildings, the elderly-friendly initiatives of the Hong Kong Government can be divided into three categories, including 1) age-friendly facilities, 2) walkability, and 3) housing scheme.

Age-friendly Facilities

The first initiative is the published Elderly-friendly Design Guidelines (Architectural Services Department, 2019). As introduced in Chapter 2, there are four principles in building design, intended for designers, project proponents and public advocates. Although they are not mandatory rules to follow, they raise public awareness of an elderly-friendly environment that supports active ageing. Consequently, the newly completed buildings have shown improvement from an age-friendly perspective, such as the Tsing Yi Southwest Sports Centre and Che Kung Temple Sports Centre mentioned in Chapter 4. The influences of guidelines may continue and foster the age-friendliness of new buildings.





Source: Photo of the Elderly-friendly Design Guidelines published by the Architectural Services Department (2019).

In addition to the general guidelines, enhancement, transformation and modernisation initiatives have been implemented in public toilets, libraries, public play spaces and markets. The Food and Environmental Hygiene Department is responsible for newly built or refurbished public toilets, which will be provided with priority cubicles for the elderly. In addition, unisex toilets will be available to allow helpers to assist an elderly person, regardless of gender. Public libraries have adapted their equipment to suit the needs of elderly people. Examples are chairs with armrests and desktop video magnifiers. As mentioned in Chapter 3, the latest government budget will use its resources to upgrade country parks, hiking trails and harbour front facilities. Together with the processing flagship projects in Victoria Harbour and the opening of an Inclusive Playground in Tuen Mun Park, there will be more outdoor spaces for older adults. A 10-year Market Modernization Programme was also launched in 2018, which is carrying out hardware improvement works, such as providing barrier-free access, increasing public space and seating, and increasing the number of toilets. As a place frequently visited by older adults, those modernized markets will provide a pleasant shopping environment and serve a greater social function. With the Government's efforts and resources, age-friendly facilities are more often present in different locations visited daily.

Walkability

Development into a walkable city is a global trend. To provide strategic directions transcending 2030, the Hong Kong 2030+ report highlighted the importance of walkability for a liveable city (Development Bureau & Planning Department, 2016). A walkable city caters for the needs of an ageing society in terms of inclusion and support. The government realizes that a walkable street is fundamental for the concept of "ageing in place". As a result, a series of programmes or projects have been launched at the district level over the past years.

Since 2012, the government has implemented the Universal Accessibility Programme, which has expanded several times in response to public requests. The programme retrofitted barrier-free access facilities to public walkways. Contrary to past practice, lifts are being prioritized over ramps, because the former is less bulky and releases space which may be utilized for more spacious pavements or greening. Moreover, the projects connecting the coastline of Victoria Harbour for pedestrians mentioned in Chapter 2 is in line with the "Walk in HK" initiative promoting connection, safety, enjoyment and smartness introduced in Chapter 1. Numerous small-scale schemes cannot be introduced exhaustively, such as road improvements, a review study of enhancing accessibility, curbing shop extension and the clearance of illegally parked bicycles. The continual efforts of the Government aim to promote the walkability of streets.

Source: Photos of shop extension and illegally parked bicycle, from the webpage of Home Affairs Department (2021)

Housing Scheme

The housing schemes of the Hong Kong Government are mainly planned and implemented by 1) the Hong Kong Housing Society, 2) the Housing Authority and 3) the Urban Renewal Authority. The Hong Kong Housing Society upholds the strategic direction of “ageing-in-place as the core, institutional care as back-up”. As introduced in Chapter 2, the "Ageing-in-Place" Scheme relies on the estate-based social workers to provide community care services. Because the scheme targets older residents in public rental housing estates, it is aimed at low-income elderly people. For the middle- and high-income level, the Jolly Place and Cheerful Court of the Senior Citizen Residence Scheme, and the Tanner Hill introduced in Chapter 4 are integrated housing units for lease to more wealthy, elderly people. Attempting to build an intergenerational community where elderly and young people can live together in harmony, the Hong Kong Housing Society carried out the development of Harmony Place and the redevelopment of Ming Wah Dai Ha. According to the integrated model, flats on lower floors in the two projects are designated as elderly housing and the remaining flats are targeted at younger families, where facilities are shared between all residents. To construct faster and less costly buildings, a trial modular public housing for the elderly in Jat Min Chuen is expected to be completed in 2023. If modular housing is successful, it may be able to increase housing supply in the short term. Another trial called “Flat for Flat Pilot Scheme for Elderly Owners” enables older adults to first sell their larger subsidized unit without paying a premium and then buy a smaller one without a premium, to facilitate the circulation of subsidized flats and suit the potentially changing needs of the elderly. Playing the role of a housing laboratory, the above schemes and trials indicate that the Hong Kong Housing Society are continuously attending to the needs of Hong Kong older adults.

Source: Photos of Harmony Place (Left) and redevelopment of Ming Wah Dai Ha (Right), from the website of the Hong Kong Housing Society (2021)

As a statutory body under the Housing Ordinance, the Housing Authority also develops and implements public housing programmes to achieve the Government's housing objective. To encourage younger families to take care of their elderly parents, the Harmonious Families Priority Scheme prioritises public rental housing applicants with elderly family members. Considering the difficulties or disabilities of the elderly, the Under-occupation Policy makes an exception for older adults. Instead of compulsory relocation to smaller units, older adults are allowed to remain in the living unit or enjoy full rent exemption upon their transfer to smaller units. At the same time, the Housing Authority requires their existing and newly constructed buildings to comply with the latest age-friendly design standards. For example, buildings are required to adopt universally accessible design and provide recreational facilities for the elderly.

Established in 2001, the Urban Renewal Authority is the statutory body which undertakes, encourages, promotes and facilitates the urban renewal of Hong Kong. Addressing the problem of Double Ageing mentioned in Chapter 2, the Urban Renewal Authority launched the Pilot Scheme of Elderly Home Improvement Community Programme in 2020 (Urban Renewal Authority, 2021). Eligible elderly people in redevelopment projects may be relocated to a public housing unit and face difficulties in adapting to and settling in this new environment. This pilot scheme provided customized elderly-friendly home design and arranged suitable furniture for six chosen needy older adults. For a petite woman with impaired eyesight, the team designed and installed an electric clothes airer, a movable wardrobe hanging bar and an extra-low bed, which was appropriate for her height and avoided the need to go up and down. For a man suffering from cataracts, the team designed a unit with strongly contrasting colours and installed a night light with an auto-switching sensor, which reduced many of the inconveniences caused by his blurred vision. Depending on the review of its effectiveness, the programme may continue in the future. Before this pilot scheme, the Urban Renewal Authority's support to elderly owners of old buildings was mainly in terms of grants or subsidies. Examples are the Building Maintenance Grant

Scheme for Elderly Owners, the Operation Building Bright and the Lift Modernization Subsidy Scheme. Although they provide financial incentives to eligible owners to repair or enhance old facilities, technical assistance and professional support may not be as in place as with the Pilot Scheme of the Elderly Home Improvement Community Programme.

Source: Photos of the Pilot Scheme of Elderly Home Improvement Community Programme, from Urban Renewal Authority (2021).

For owners of private housing, the Hong Kong Mortgage Corporation Limited provide retirees with the Reverse Mortgage Programme, which serves as an additional financial planning option to enhance their quality of life. All the shares of the Corporation are held by the Government of the Hong Kong Special Administrative Region for the account of the Exchange Fund. Under the Reverse Mortgage Programme, people aged 55 or above are enabled to use their residential properties in Hong Kong as security to obtain a loan, while remaining the owner of their properties. While they can continue to live in their properties, they can either receive monthly payouts over a period of time or throughout the rest of their lives, or borrow a lump sum for specific purposes. It produces a sense of security and makes older adults more able to manage unexpected expenses and outlays, such as home improvement, repairs and maintenance.

5.2 NGO, Business and Academic Initiatives

The Government is the primary provider of initiatives, but NGOs, businesses and academic units also play an important role in developing an age-friendly city. For example, Civic Exchange is one of the NGOs in Hong Kong which uses in-depth research and dialogue to inform and engage policy stakeholders on addressing environmental and development challenges. Funded by The Hong Kong Jockey Club Charities Trust, Civic Exchange led a public engagement project named “Reconnecting Open Space” to study open space in Hong Kong. The one-year project includes a public survey, capacity-building programmes, a workshop, a public forum and a research report. One major finding is that open space is important in an ageing society, as retirees and people living with elderly relatives visit an open space most frequently (Lai, 2018). Meanwhile, the elderly respondents can prioritize accessibility, safety features and space for exercise. Although similar programmes may not directly influence the elderly policy, they can raise societal awareness of age-friendliness and develop evidence-based policy recommendations for built environment professionals.

Nowadays, academic units, especially universities, perform a multitude of tasks to develop a city and become innovation leaders to make changes and improvements. Academic leaders are responsible for knowledge transfer and research practice but are also pressured to initiate social innovation projects. In view of the trend, the Knowledge Transfer Project Fund of the Chinese University of Hong Kong encourages professors to be involved in projects that apply new knowledge and ideas from research and impact society. In response, the Nutcrackers Team, formed by health and the built environment professionals, elders and students has started to explore the grand concept and create a subtle design that will improve the building quality environment for older adults. Since 2019, the Nutcrackers Team has invited different reputable guests from the fields of medicine, architecture and urban planning to share their knowledge of the health of elderly people and the environment. Both the elderly and students can benefit considerably from the seminars, workshops or architectural tours.

Source: Photos of a seminar (Left) and architectural tour (Right) of the Nutcrackers Team

Another academic programme is “Operation SoInno”, organized by the Jockey Club Design Institute for Social Innovation at The Hong Kong Polytechnic University and funded by The Hong Kong Jockey Club Charities Trust. Focusing on the combined impact of “Double Ageing”, this programme tackles issues through inter-disciplinary community collaboration. In collaboration with the Hong Kong Housing Society, Leisure and Cultural Services Department and Architectural Services Department, the programme encouraged the public to co-design existing areas into an intergenerational play space, including the Kowloon Park Fitness Trail and Prosperous Garden. Although the collaborating government departments do not have solid plans to implement the design, competitive design proposals from professionals and students are received. The government departments will assess the feasibility of implementation and take this as a reference point to ascertain whether improvement can be confirmed. Public engagement in built environment design successfully generates innovative design ideas and speeds up the transformation of public space.

Source: Photos of Prosperous Garden and design proposals, from the website of PolyU Jockey Club Operation SoInno (2021)

Regarding the age-friendly design of a building, we are glad to see the first collaboration between business and academic units at Anderson Road, as introduced in Chapter 4. As a test point, the Chinachem Group and The Jockey Club Institute of Ageing, Chinese University of Hong Kong, adopted a humanistic approach, focusing on older people’s needs, values and preferences, instead of the traditional disease-oriented methods. In addition to desirable physical facilities and environment, the provision of a one-stop service hub and community organiser has created a comfortable and welcoming atmosphere. The Mount Anderson project is a milestone indicating a preliminary development of the private housing market, aimed at the

elderly and intergenerational inclusion in Hong Kong. If private developers can continue with their plans, there will be more housing options to meet the various needs of older adults.

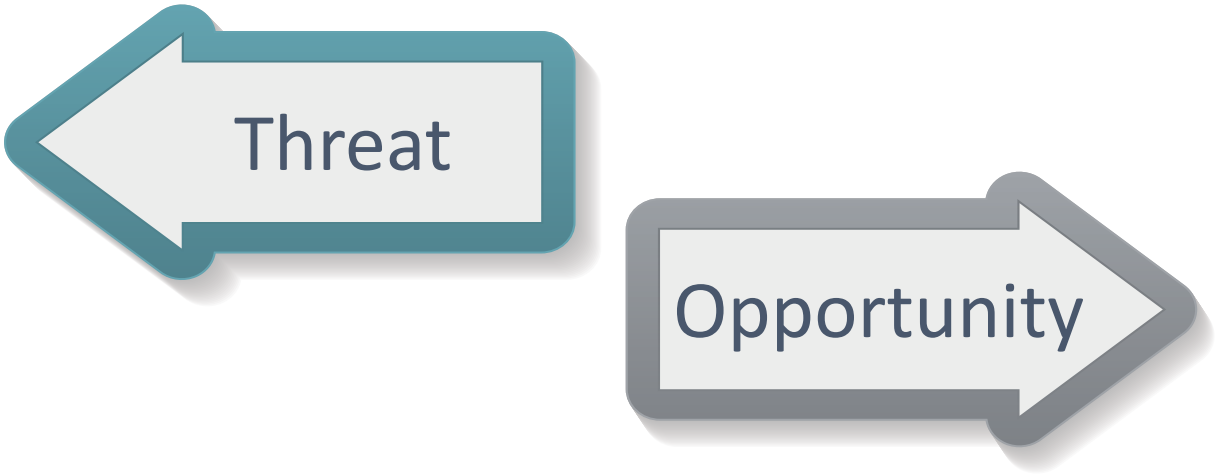
Finally, we noted that different organizations provide home modification services. The Jockey Club Age-friendly City Project implemented Home Improvement Project and Home Modification and Safety Project for the elderly. They trained volunteers to conduct home visits to the elderly in need and provide home modification / tidy-up exercise / pest control for the elderly households. A social enterprise called Longevity Design Home helps the elderly and physically disabled to renovate their living space, regardless of financial background. Beyond home modification, they may also provide temporary accommodation, aid applications for government grants and offer occupational therapy support. A project called NWCON Artisan Volunteer Service organized by New World Construction Company Ltd and CNEC Kei Shek Social Service Centre provided free home repairs and cleaning services to 300 senior citizens and low-income families at Sau Mau Ping in 2018. Their living environment is improved, when regular contact and psychological care are provided at the same time. For Eastern District residents, the “Welcome Home: Elderly Safe Living Scheme” co-organised by the Swire Properties’ Community Ambassador Programme, Hong Kong Young Women’s Christian Association and Hong Kong Housing Society, provides home environment assessment and free elderly-friendly equipment, using volunteers. This enhances home safety and raises the elderly’s awareness. As a part of the Elderly Integrated Home Safety Projects, St. James’ Settlement also offers elderly home maintenance services by volunteer workers. In the meantime, donations for electrical appliances and a home hairdressing service are provided.

Source: Photos of a project of Longevity Design House (2021) (Left) and “Welcome Home: Elderly Safe Living Scheme” (Swire Properties, 2020) (Right)

To sum up, government, NGO, business and academic units are implementing age-friendly policies at different levels in Hong Kong. The Government may lead the general strategic direction, when small NGOs, businesses and academic units are dedicated to serving a particular group or district of older adults. We encourage more cross-discipline and cross-unit collaboration, because the policies of outdoor spaces and buildings tend to require the involvement of the health profession, architects and urban planners, among others.

Chapter 6 Conclusion

Most elderly people will probably want to stay in the community, enjoy the environment and not feel trapped. The age-friendliness of outdoor spaces and buildings becomes a critical factor. The development of an age-friendly city is not solely for the elderly, but for everyone who will inevitably become old in the future. An age-friendly city can be a haven where all people can live well despite of their declining physical and mental capacities. Instead of stereotyping ageing as a threat, it can be an opportunity to move toward the age of ageing better.



We want to engage communities in the planning, design and management of outdoor spaces and buildings. Different users have different priorities and varied preferences. To build a successful space, we need the cooperation of different units. For example, the inclusive playground in Tuen Mun Park, which is mentioned in Chapter 3, has incorporated the ideas of primary school children; the development of West Kowloon Cultural District was confirmed after a public consultation and an opinion survey. Built environment professionals and developers should listen to both young and old users in order to meet their actual needs.

Outdoor spaces and buildings is highly interrelated with the remaining domains of an age-friendly city, such as Housing and Transportation. In this report, we have unavoidably mentioned issues of other domains because of this overlap. In fact, this thematic report series covered four domains of an age-friendly city in total. We recommend reading the other three reports in 1) Community support and health services, 2) Transportation and 3) Communication and information. It will provide a more comprehensive understanding of an age-friendly city.

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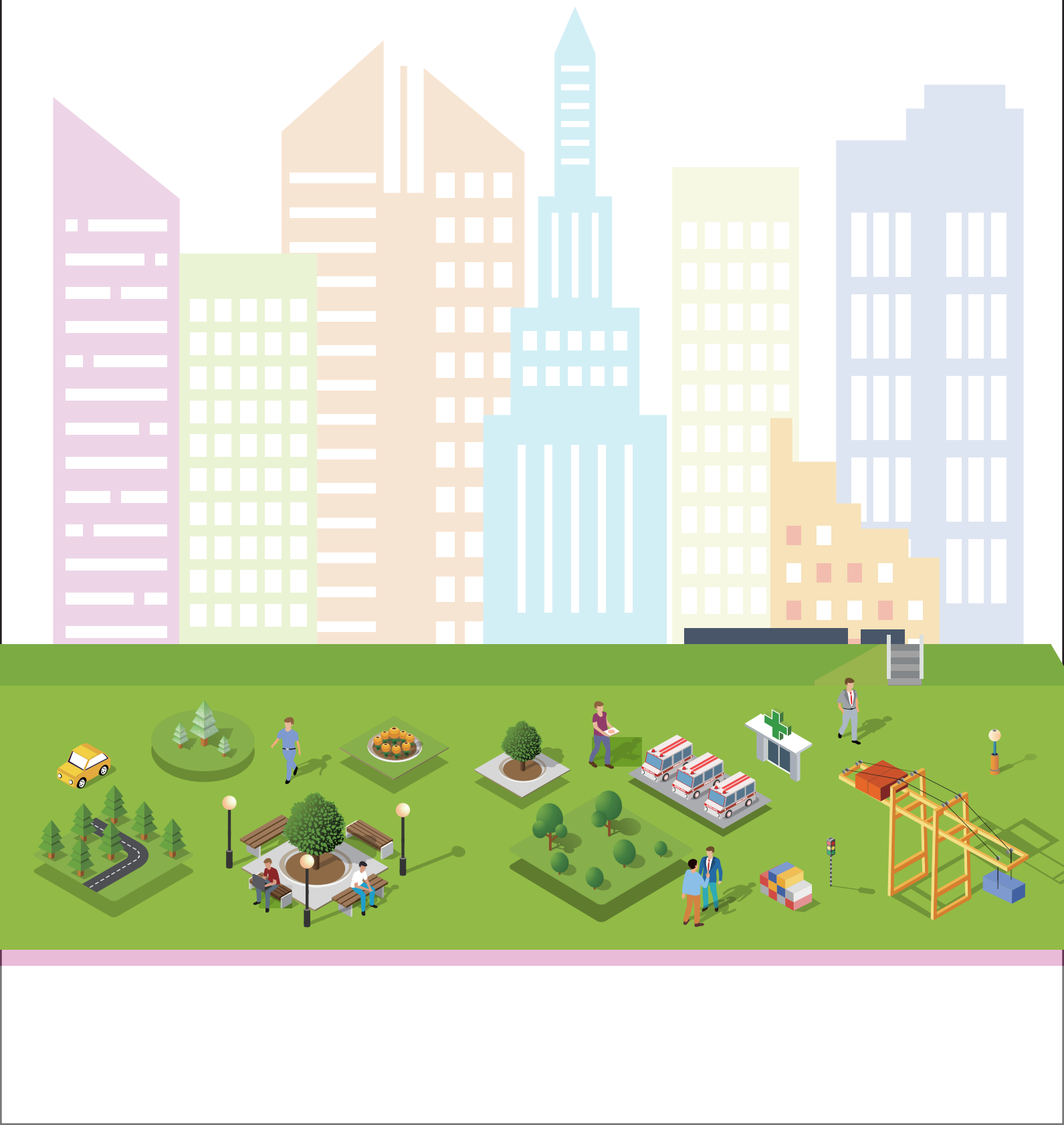

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