

Chapter 2

Towards Smarter Regional Development of Hong Kong Within the Greater Bay Area



Sujata S. Govada and Timothy Rodgers

Abstract The Greater Pearl River Delta, more recently referred to as the Greater Bay Area (GBA), has and continues to rapidly develop into a significant and influential mega region in China, Southeast Asia and the world. The economic reforms of China and the Open Door Policy in 1978 transformed the primarily rural agricultural region into the highly populated, sprawling and urbanized high-tech value-added manufacturing region it is today. During this period, Hong Kong has played a significant role in the growth and development of the GBA with its more mature economy providing crucial support through its financial institutions, legal and professional services, and developed international trade and logistics hub, allowing businesses in the GBA to scale and reach global markets for their products. This in turn established economic, social, and political connections, collaboration and cooperation between Hong Kong and cities in the GBA such as Shenzhen, Guangzhou, Zhuhai and Macao among others, as well as improvements in infrastructure and transportation networks that have enhanced regional accessibility and integration. Going forward however, Hong Kong's role and competitive advantage in the region is being threatened as other cities in the GBA continue to grow larger than Hong Kong both demographically and economically. As such, Hong Kong is at a time where it must both reposition itself within the region, especially as Hong Kong is gradually becoming more integrated with the rest of the GBA in Mainland China. This chapter will present an overview of the GBA region, assess its current development and regional integration, and review the future spatial development plans and regional cooperation initiatives of the cities in the GBA. Finally, a discussion of how Hong Kong can more effectively integrate itself with the rest of the GBA from economic, social and political levels is presented, and recommendations of key areas to address are suggested in order for Hong Kong and the GBA to further develop into a smarter, more sustainable, and liveable integrated mega region.

S. S. Govada · T. Rodgers (✉)

Institute for Sustainable Urbanisation, UDP International, The Chinese University of Hong Kong, Suite 2207-9, Tower Two, Lippo Centre, 89 Queensway, Admiralty, Hong Kong
e-mail: tim@udpcltd.com

S. S. Govada

e-mail: sujata@udpcltd.com

© Springer Nature Singapore Pte Ltd. 2019

T. M. Vinod Kumar (ed.), *Smart Metropolitan Regional Development*,

Advances in 21st Century Human Settlements,

https://doi.org/10.1007/978-981-10-8588-8_2

Keywords Hong Kong · Pearl River Delta · Greater Bay Area
Mega region · Meta city · Smart metropolitan region · Smart city smart region
Regional integration · Regional development

2.1 Hong Kong and the Pearl River Delta Region (Greater Bay Area)

2.1.1 Introduction and Background

The Pearl River Delta (PRD) region is a 55,000 km² area in Southern China comprised of the ‘9+2’ cities from three jurisdictions as given below [1]. The nine cities comprise one jurisdiction and include the major cities of Dongguan, Foshan, Guangzhou, Huizhou, Jiangmen, Shenzhen, Zhaoqing, Zhongshan, and Zhuhai in the Pearl River Delta Region of Guangdong Province in Mainland China. The second and third jurisdictions comprise the two cities in the Special Administrative Regions; Hong Kong (HKSAR) and Macau (MSAR). Their location surrounding the Pearl River estuary on the coast of the South China Sea has benefitted this region during the past 50 years with a strategic geographic advantage by positioning itself as a gateway into Mainland China and hub for manufacturing and trade within South East Asia and the world.

More recently, the Pearl River Delta has been rebranded as the Greater Bay Area (GBA) to emphasize the updated regional development and integration plans of the Pearl River Delta. First mention of the GBA occurred in the English translation release of the “13th Five Year Plan for Economic and Social Development of the People’s Republic of China” in December 2016, which introduced the concept of the “Guangdong-Hong Kong-Macau Greater Bay Area” [2]. In March 2017, Chinese Premier Li Keqiang announced the plan for a “development of a city cluster in the Guangdong-Hong Kong-Macau Greater Bay Area”, and on 1st July 2017, the “Framework Agreement on Deepening Guangdong-Hong Kong-Macao Cooperation in the Development of the Bay Area”, both further formalizing the term. Since then, all future discussion and mention of regional development and cooperation will be made with reference to the GBA [3, 4] (Figs. 2.1 and 2.2).

In 2015, the nine cities in the GBA region had a total population of around 58 million people [7], Hong Kong’s population was at around 7.3 million people [8], and Macau had a population of about 646,000 people [9]. Therefore, the total population of the GBA was around 66 million people at the end of 2015. As discussed in Chap. 1, this classifies the GBA metropolitan region as a ‘Meta City’, which are “conurbations of more than 20 million people” [10]. The World Bank stated in 2015 that the GBA had become the largest urban area in the world in both size and population [11] (Table 2.1).

Although the GBA currently encompasses an expansive land area and numerous cities, over the years it has developed into a polycentric metropolis with three key



Fig. 2.1 Map of the GBA '9+2' and its location in Southern China. Source Li and Wong [5]



Fig. 2.2 More detailed map of the GBA's '9+2' cities. Source Daxue Consulting [6]

population centers, namely the Hong Kong and Shenzhen Metropolitan Area, the Guangzhou and Foshan Metropolitan Area, and the Macau and Zhuhai Metropolitan Area. The Hong Kong and Shenzhen, and Guangzhou and Foshan Metropolitan Areas make up the majority of the population in the GBA, with populations of 18.68

Table 2.1 Population and land area of major cities in the GBA region in 2015

Cities	Land area (km ²)	Population (millions)
Guangzhou	7434.0	13.50
Shenzhen	1953.0	11.38
Zhuhai	1688.0	1.63
Foshan	3848.0	7.43
Huizhou	11,158.0	4.76
Dongguan	2465.0	8.25
Zhongshan	1800.0	3.21
Jiangmen	9541.0	4.52
Zhaoqing	14,856.0	4.06
Hong Kong SAR	1105.0	7.30
Macau SAR	30.5	0.60
GBA total	55,878.5	66.64

Source Guangdong Statistical Yearbook 2016; Hong Kong Census and Statistics Department 2016; Macau Census and Statistics Service 2016

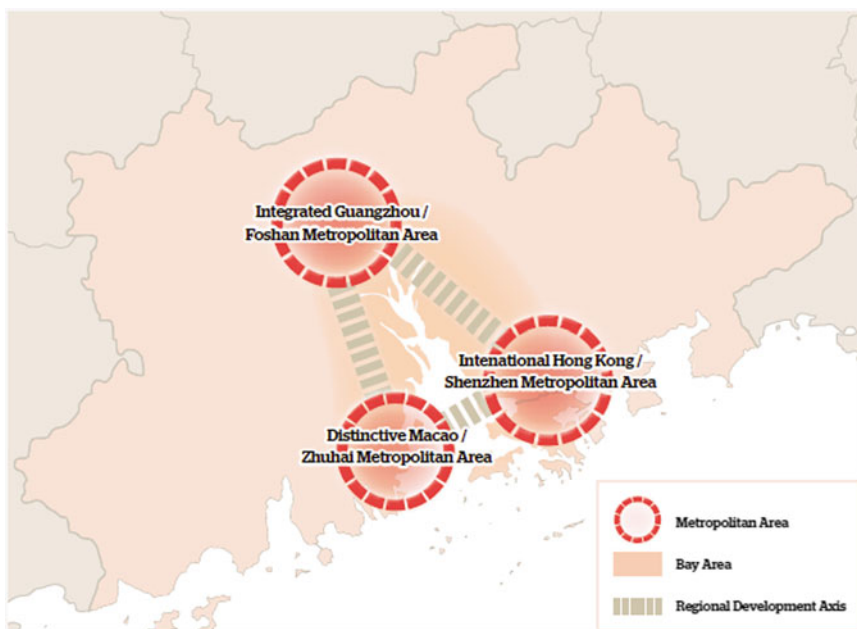


Fig. 2.3 Map of the 3 major metropolitan clusters within the GBA. Source Invest Hong Kong HKSAR [1]

and 20.93 million people respectively. These three population centres are where the majority of the economic growth and population migration have taken place, and now comprise the main nodes of development within the GBA (Fig. 2.3).

2.1.2 Comparison to Other Major Metropolitan (Bay) Areas

The Greater Bay Area became the largest metropolitan region in 2015 according to a World Bank Report, ahead of the Tokyo Bay Metropolitan Area, and the San Francisco Bay Area and New York City Metropolitan Regions [12]. A recent comparison of these major metropolitan regions shows that the GBA is largest in both area and population, and is catching up to New York City and the Greater Tokyo Area in terms of GDP contribution (Table 2.2).

2.1.3 Development of the GBA Throughout the 20th and 21st Centuries

While predominately known today as the low-cost manufacturing center of the world, the GBA was once drastically different and not nearly as large and economically significant as it is today.

The GBA region has evolved rapidly over time since the mid-20th century from a predominantly agricultural based primary economy, to an industrial manufacturing based secondary economy in the late 20th century, and in the 21st century it is now transitioning towards a more innovative high-technology and knowledge-based manufacturing and tertiary economy. The most significant catalyst in the growth of the GBA region was China's Open Door Policy initiated in 1979, which opened up China's economy to the global international marketplace and influenced a significant transformation of the region's industrial composition. At the time of initiation of the Open Door Policy, the GDP composition of the GBA was made up of 25.8% primary industries, 45.3% secondary industries, and 28.9% tertiary industries in 1980. Only 28 years later in 2008, primary industries made up only 2.8% of the GBA's GDP, secondary industries made up 49.9%, and tertiary industries made up 47.7%, signifying that a drastic economic transition, industrialization and urbanisation had taken place in the GBA during the late 20th century

Table 2.2 Comparison of major metropolitan regions

	Greater Bay Area	Greater Tokyo Area	San Francisco Bay Area	New York City
Area (km ²)	~56,000	~36,800	17,900	783.84
Population (million)	66.72	43.84	7.6	8.6
GDP (trillion USD)	1.3	1.8	0.8	1.7
Administrative units	9 cities + 2 SARs	1 capital + 7 counties	9 counties	5 counties

Source Fung Business Intelligence, 2015 [13]

following the opening up of the economy [7]. More recently in 2015, the GDP composition stood at 1.8% for primary industries, 43.6% for secondary industries, and 54.6% for tertiary industries, which signifies that the GBA's economy is further transitioning towards a more advanced secondary industry, and tertiary industry, focused on innovation, technology and knowledge-based manufacturing and services.

The main reasons this drastic demographic, economic and industrial transformation took place were due to policy changes and macro-economic reforms and adjustments by the local governments, and Chinese government's investment incentives for Hong Kong, Taiwan and foreign manufacturing enterprises at a national level. More specifically, the growth of the GBA was a result of the establishment of a Special Economic Zone (SEZ) in the GBA. As part of China's strategy to encourage investment and businesses, SEZs were developed at strategic locations in China. These SEZs were characterized by "special policies and flexible measures" that were less economically restrictive and enjoyed special financial, investment and trade privileges compared with the rest of the country, which attracted increased foreign investment into the region [14]. Shenzhen and Zhuhai were pioneered as two of the first Special Economic Zones (SEZs) in China and chosen for their geographic proximity to Hong Kong and Macau, as at the time Hong Kong and Macau were still under Colonial rule by the British and Portuguese respectively and thus had existing free-market economic trade connections to the rest of the world.

The success of these first SEZs led to their areas of influence being expanded within the GBA, as well as further SEZs developed in the GBA and other parts of China. Combined with the opening up of the Chinese economy, the SEZs propelled foreign direct investment (FDI) into the region and internal rural to urban migration, which rapidly transformed the GBA into a highly populated, highly urbanized, export oriented integrated manufacturing and logistics economy through the end of the 20th century, and now into a technology based industrial and service economy throughout the beginning of the 21st century.

The percentage of urban/built up land area in the GBA increased from 3.56% (1605 km²) in 1990, to 15.18% (3839 km²) in 2010 [15], as well as experienced accelerated urban growth as the "increase in built up land rose from 2234 km² during the 1990s to 2993 km² during the 2000s [15] (Fig. 2.4).

This economic, social and demographic transition has resulted in new challenges facing the GBA region, such as over-urbanisation, increasing densities, internal migration and overcrowding, and rising cost of living fuelled in part by speculative development and floating population due to migrant workers. As the GBA continues to grow economically, socially and demographically, authorities will need to think more carefully about the overall integrated regional planning of the GBA, the adoption of smart thinking, design and planning utilizing smart technologies and innovative approaches to ensure that the future growth of the GBA 'Meta-City' region will result in smart and sustainable urban development.

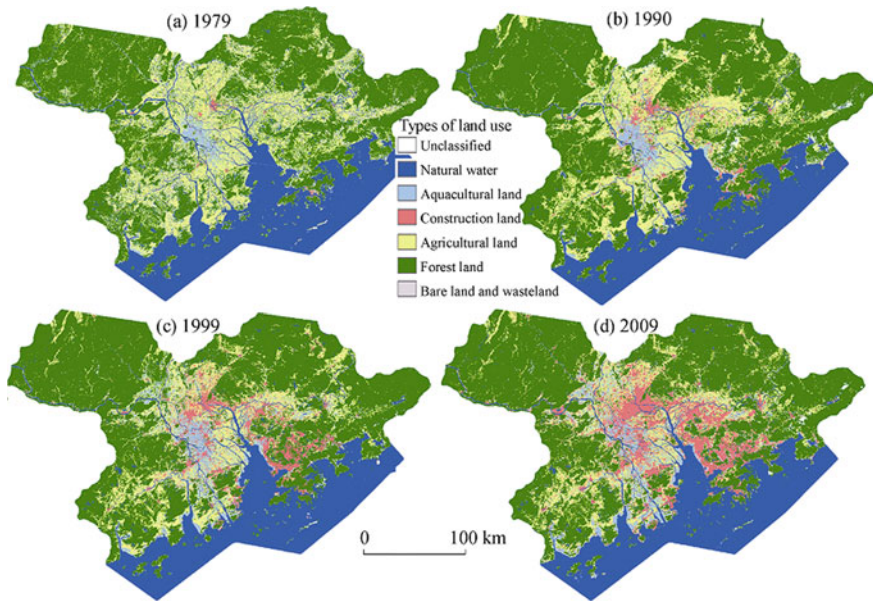


Fig. 2.4 Land use changes in the Pearl River Delta, 1979–2009. *Source* Zhijia et al. [16]

2.1.4 Hong Kong's Role in the Development of the GBA

Hong Kong, on the other hand, has followed a slightly different trajectory than the rest of the GBA. Its economic growth trajectory had been advanced by its history of colonial rule by Britain from the early 20th century to the end of the 20th century, when in 1997 Hong Kong was handed back to China, and transitioned to its current status of Special Administrative Region of the People's Republic of China under the One Country Two Systems arrangement for 50 years [17]. The effect of Hong Kong's colonial rule enabled the city to be governed by different laws and regulations than those cities in the GBA region of Guangdong Province on Mainland China, which enabled Hong Kong to grow and thrive economically during the 20th century in comparison to the rest of Mainland China. The British allowed Hong Kong to become an open market economy, which then grew its industrial manufacturing base and established itself as an important international trading hub between Europe and the emerging Asian markets throughout the 20th century. Hong Kong became the gateway to China, and even South East Asia through which goods, investments and human capital would flow, and where the majority of professional services such as financial, logistics, trading, investment and management services etc. would be located, transforming Hong Kong into the regional servicing hub for the GBA. Much of Hong Kong's industrial and manufacturing sector migrated to the SEZ, attracted by the incentives coupled with cheaper land and labour costs across the border. As a result of Hong Kong's significant

investment, the manufacturing industry grew significantly in the GBA during the late 20th century. As a result, the focus of Hong Kong's economy shifted towards a knowledge-based service economy focused on exporting the low-cost goods manufactured in the GBA through its international trading networks, and providing high quality professional services for companies and businesses operating in Hong Kong and the GBA, and assistance to those wishing to do business internationally.

In the early 21st century, Hong Kong has been proactively repositioning itself within the region by looking to strengthen its economic ties with the GBA and Mainland China. Cooperation between Hong Kong and Mainland China began to develop through a new institutional framework in the form of a preferential trade agreement called the Mainland and Hong Kong Closer Economic Partnership Act (CEPA), as well as Hong Kong's inclusion into China's 11th and 12th Five Year Plans (2006–2015), which have enabled Hong Kong's growth to be more in tune with that of the GBA and Mainland China.

Currently, with a growing economy and established finance, commerce, logistics and professional services industries, the Government is beginning to invest more interest in improving other aspects of society and the environment through the adoption of technology and sustainability initiatives. This future direction has been laid out in the Government's most recent strategic planning study document titled "Hong Kong 2030+—Towards a Planning Vision and Strategy Transcending 2030" (HK2030+), which addresses the future territorial development strategy and spatial planning framework to "guide the future planning, land and infrastructure development and the shaping of the built environment of Hong Kong beyond 2030" [18]. This strategic planning effort is intended to lead the way for the sustainable future development and growth of Hong Kong, by addressing current issues and adopting innovative practices from around the world.

In addition to focusing on its own internal economic, social and political issues, Hong Kong must proactively plan and collaborate with the cities and authorities in the GBA to ensure that strategic regional growth and development is considered within its regional context, to retain Hong Kong's competitive advantages that earned the city its status as Asia's World City and as the gateway to Southern China. Moreover, involvement in the Belt and Road Initiative, promoted internationally by China to connect the trade routes of 60 countries from Asia to Europe, will be essential for Hong Kong and the GBA to further grow its market reach and economic development. The next few chapters will look at the existing regional development and the planned future development of the GBA. Then, assess the future development of Hong Kong to address some of the key issues and concerns, while exploring the potential opportunities presented by the GBA. Finally, some suggested recommendations are discussed for the future development of Hong Kong within the regional context of GBA to push towards a smart metropolitan regional development that benefits all.

2.2 Smart City Framework to Assess Smart Region

2.2.1 *Smart Cities*

The beginning of the 21st century has seen a rise of the ‘Smart City’ phenomenon, primarily spearheaded by technology companies such as IBM, Cisco and joined by numerous others with a focus on providing software and hardware solutions and expanding their businesses. Whereby new and existing cities have been developed and implemented with a number of smart technologies, both internet-connected hardware and software solutions by leveraging Internet of Things (IoT) and Big Data that aim to provide benefits in areas such as productivity, time savings, production efficiencies, cost savings, environmental sustainability and human health to improve the quality of life of local people and visitors alike. The initial growth of the Smart City phenomenon was focused primarily on technology with the idea using technology to evaluate and monitor the urban environment. Further the Smart City and sustainability lead to the development of some new master planned cities such as Songdo in South Korea, Tianjin Eco City in China and Masdar in the Middle East with big data and a focus on green technologies, although with some success offering valuable lessons. While many existing cities that adopted smart technologies still tend to suffer from the same critical urban challenges such as urbanization through migration, infrastructure development and mobility issues due to traffic congestion, car-oriented development, poor accessibility and walkability, lack of high quality public space with landscaped green spaces, higher densities with over-crowding, and poor quality of life. Technology alone cannot solve all of our current and future urban challenges, and bring about improved quality of life. While technology can clearly play a significant role to improve the efficiency and accessibility of certain city functions, such as e-governance, energy and water monitoring through the use of sensors, or real time public transit information with the help of GPS and mobile applications, these individual ‘smart’ initiatives divert attention away from the overarching characteristics that enable a city to be truly smart and sustainable. More recently, the definition of a Smart City addresses the city’s ability to effectively solve or mitigate societal issues and the impact of urban and environmental challenges in cities by adopting more smart and sustainable development, through the creation of innovative and effective solutions that ensure the efficient use of resources and are enabled by embedded technologies, IoT and big data.

A more holistic approach to defining and assessing Smart Cities evolved over time, with one of the most prominent concepts and characterizations of Smart Cities was identified by Giffinger et al. [19] and developed further by Boyd Cohen in his Smart City Wheel [20]. Giffinger et al. identified six key elements that characterize a Smart City: Smart People; Smart Economy; Smart Environment; Smart Governance; Smart Living; and Smart Mobility. Boyd Cohen developed the Smart City Wheel in 2012, and by combining aspects and findings of Smart City research previously studied, the framework he constructed was one of the first to enable

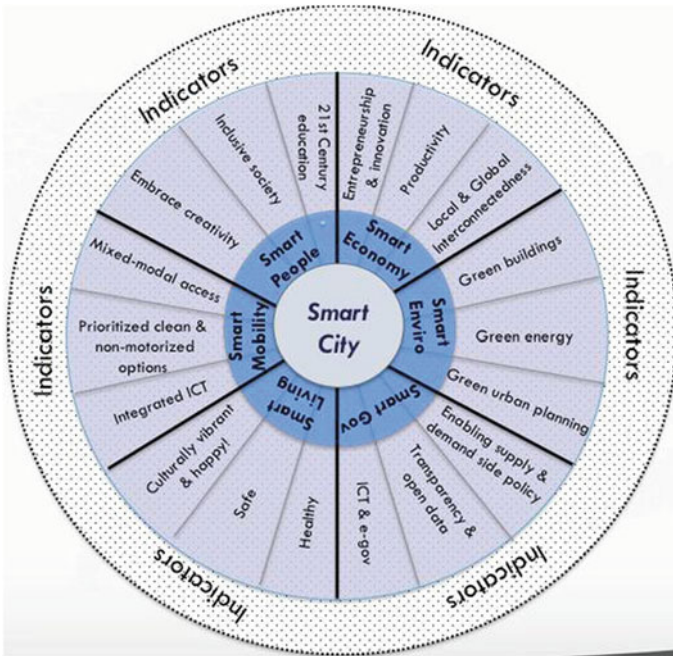


Fig. 2.5 Boyd Cohen’s smart city wheel. Source Cohen, 2012 [20]

readers to easily understand what classifies as and comprises a Smart City. Different criteria and indicators define these Six Elements and facilitate comparisons between cities. Cohen’s Smart City Wheel and other similar concepts are a good start in forming a holistic framework of city development, as Cohen includes and emphasizes the importance of all six Elements to the success of Smart Cities. It is considered, however, that a modified approach would be required to develop an enhanced framework to more closely define the purpose of a Smart City (Fig. 2.5).

2.2.2 Smart City Framework—People, Place and Planet

To address the gap in the existing smart city framework discussion surrounding urban planning, design and the built environment, an emphasis on People, Place and Planet with a focus on ‘Smart Thinking, Design and Planning’ as the core to Smart Cities has been developed as an enhancement to Boyd Cohen’s Smart City Wheel [21]. By highlighting the importance of Smart Thinking, Design and Planning as central themes enabled with technology in developing successful and sustainable Smart Cities. This framework encourages governments, city leaders, businesses and the public to understand and approach the Smart City phenomenon in a more bottom-up people first perspective.

These central themes combine with three core values ‘Smart People’, ‘Smart Place’, and ‘Smart Planet’, to offer a greater holistic view of existing and future development. Like Cohen’s model, there are six elements of city development, but “Smart People” is elevated to a higher level to signify its greater importance and contribution to developing truly smart cities. The values and indicators regarding Smart People remain the same, the only difference is its position and ranking within the Smart City Framework is heightened. An important new element, “Smart Infrastructure”, is introduced following the elevation of People as a core value thereby maintaining the six smart city elements as represented in Cohen’s model. Smart Infrastructure comprises of the both physical (example road network, public realm, electricity, water, drainage, sensors etc.) and non-physical infrastructure (ICT, internet etc.). Indicators that are able to evaluate and also encourage the planning, development, implementation of advanced both soft and hard infrastructure that support the vision of a smart city by ensuring a well-integrated and highly connected physical network and technologies for data collection, monitoring, analysis, evaluation and dissemination of information. This technological infrastructure must be well thought out, planned and designed, allowing for the efficient and ease of use while at the same time ensuring the safety and security of the data and information collected. Throughout the whole model, ever-advancing technology is viewed as an enabling factor to bring the potential of the elements to fruition, yet focusing on the People, Place and Planet as the core factors that define a Smart City, see Fig. 2.6.

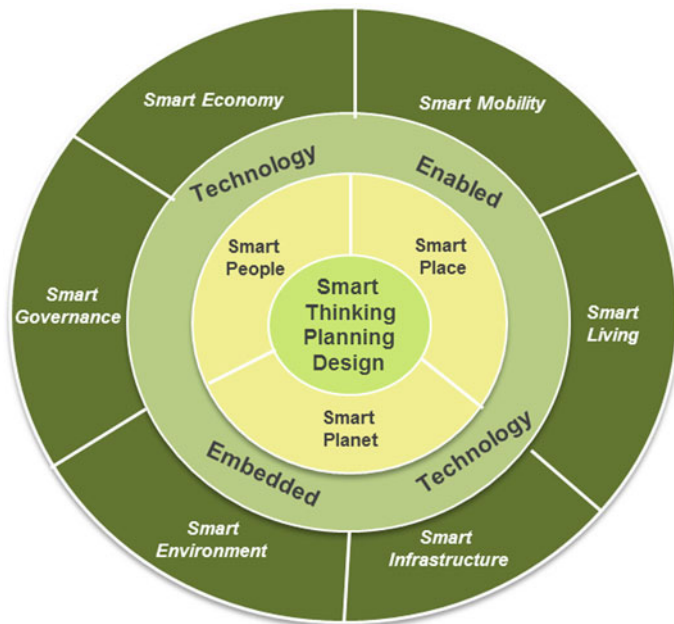


Fig. 2.6 Smart city framework wheel with people, place and planet as core values. *Source* UDP International/Institute for Sustainable Urbanisation [21]

This new Smart City Framework and model highlights that technology is a tool and should be effectively used but is not the primary driver to guide smart and sustainable city development. A poorly planned and designed city that does not focus on the people, place and planet, yet which is technologically advanced and internet-connected cannot become a truly smart and sustainable city as the fundamental premise of the city is lost. The current global attention to Smart Cities in its tech-driven connotation is in danger of overshadowing good city planning concepts and models. While the Smart City idea is being hailed as the modern way forward for new and existing urban areas both in the developed and the developing world, it is very important that the approach be based on smart thinking with a focus on people, place and planet, and technology enabled rather than being technology driven with little or no emphasis on sound planning and design principles. This new enhanced Smart City Framework attempts to point out that a truly smart and sustainable urban environment depends much more on the basic fundamental aspects of people, place and planet than on integrating the newest technological invention. Keeping the central focus on people, place and planet with Smart Thinking, Planning and Design, would enable a more comprehensive approach to our existing and future development of both urban and rural environments. A truly smart society is one where digital technology, thoughtfully deployed by the public and private sector, academia and civil society can significantly improve our existing and future cities and communities with five broad outcomes: the well-being of citizens, improving the quality of life, livability and affordability, the strength and diversity of the economy, opportunities for learning, employment, leisure and recreation with good governance and effective institutions.

2.2.3 A Smart GBA Region?

The same core values and smart city elements that define Smart Cities can be expanded and applied to a larger regional context. In this case, we are looking at the ever expanding and innovating metropolitan region that is the Greater Bay Area.

At an individual city level, cities such as Hong Kong, Shenzhen, Guangzhou and Macau have all begun to develop and implement smart city initiatives and technologies into their urban environment. Looking beyond the local city level, the urban development of the GBA has morphed the individual cities in the GBA region into one mega/meta city, and therefore smart city solutions should be considered at the regional scale as well as local scale. However it is not only technology that defines a smart city or smart region, but how the different cities interact and cooperate, the accessibility and mobility of citizens, quality of infrastructure and transportation network, environmental protection, education, healthcare, awareness and social cohesion, are all important issues that can also be addressed at a regional level that will have a positive and significant impact on the development and integration of the metropolitan region.

Smart Design and Planning

Central to Smart Design and Planning is recognition of the overall goal and impact of the city or regional area. Indicating a transition towards smarter thinking about regional planning and design is that the Chinese Central Government positioned the GBA as a ‘National Optimized Development Zone’, one of three under China’s National Territory Development Plan released in December 2010, and the only region in southern China [22], which aimed to accelerate and support the economic and urban development of the region.

At a higher level, there have been studies, planning and policies implemented that address the need for an integrated development approach to the GBA region, with the recognition that the GBA has the potential to maximize its productivity and value by planning at a regional level as well as local city level within the GBA.

Smart People Place and Planet

When considering the GBA, the importance of smart thinking that goes into the planning and design within the GBA or in the various cities with an emphasis on the People, Place and Planet must be recognised.

An overview of some of the past and current projects, initiatives and cooperation agreements within the GBA between Hong Kong and Mainland China are outlined below, to provide an overview of the progress of the GBA into a smart, integrated and sustainable metropolitan region.

2.2.3.1 Smart Mobility

Smart Mobility concerns the efficient and sustainable movement of goods and people, and within a region as large as the GBA, sustainable mobility is a critical factor and one of the key drivers in the growth and sustainable urban development of the region.

For the movement of people, the most sustainable modes of transport are transit, biking and walking and these should form the basis for most movements, due to their resource, physical and mental health benefits, as well as minimal impact on pollution and congestion within the built environment. Given the large numbers of people moving about an urban environment, mass transit and other forms of public transportation are essential ingredients of smart mobility. Public transportation can readily be integrated with specific ICT services such as smart provision of information on real-time vehicle tracking and arrival times, scheduling, routing etc., that can greatly improve the user experience. A certain amount of private travel is inevitable in cities around the world, but smart mobility aims to discourage inefficient modes of transport, in particular motorized vehicles and single occupant rides. Zero-carbon forms of transportation, such as electric cars, commercial vehicles, taxis and buses, should also be encouraged to reduce roadside emissions and improve the pedestrian walking environment. Promoting ride sharing and driverless cars is another possible solution to help lower the dependence on

automobiles and also reduce traffic congestion, the need for having parking spaces, and a resultant impact on the built environment ensuring more effective and efficient use of resources.

For the movement of goods, the use of technology to plan optimally efficient routes and tracking of truck fleet movements are examples of how freight travel can also be enhanced and regulated in smart ways to avoid excessive road side or maritime air and noise pollution, including promoting the use of more environmentally friendly fuels, engines or even electric commercial vehicles. All of the above is not possible without smart city planning that gives a central role to mass transit, walking and, where possible, biking. Public Transit and Pedestrian Oriented Developments (TPOD) is a promising way forward as development model in cities and metropolitan regions that are experiencing congestion challenges as a result of planning that was more car-oriented.

More importantly, with more integrated land use and transportation planning supported by more mixed use development ensures that smart mobility with high levels of accessibility on local, regional and international levels. Hong Kong should strive to retain its strategic competitiveness as the leading offshore investment and trading hub as other major Chinese cities, such as Shanghai, emerge and grow in national and international economic significance. In this regard, Hong Kong must look to continually differentiate itself and capitalize on its strengths by focusing on services that add value while enhancing its regional accessibility and connectivity. The city is working towards achieving this in a variety of ways, such as increasing transportation links and capacity, the number of border crossings, and technologies to assess optimal routes, monitor congestion, and improve the efficiency of travel throughout Hong Kong.

Border Control Points

The current border between Hong Kong and Mainland China, as a result of the colonization of Hong Kong by the British and effective till 2047, is controlled by several border control points. The number of border crossings, have increased over the years and more so since Hong Kong became a Special Administrative Region of Mainland China under the One Country Two Systems rule. Since 1997 the Hong Kong and Mainland governments have been coordinating on increasing the number of border crossing control points to enhance accessibility and mobility across the border for road, rail, air and marine transportation. As of 2017, there are a total of 12 border control points where immigration checks are conducted for individuals entering Hong Kong Special Administrative Region (HKSAR) and vice versa. The border control points include ground control points; comprising four road crossings (Lok Ma Chau, Shenzhen Bay, Man Kam To, and Sha Tau Kok) and three rail crossings (Lo Wu, Lok Ma Chau Spur Line, and Hung Hom), four marine port control points (Macau Ferry Terminal, Kai Tak Cruise Terminal, Tuen Mun Ferry Terminal, and China Ferry Terminal), as well as one aviation control point at the Hong Kong International Airport (HKIA) [23]. These control points provide entry and exit points to and from HKSAR and Mainland China, which are essential to

Hong Kong’s economy and society for enabling the flows of people, goods and services across the border (Fig. 2.7).

With the Shenzhen Bay boundary control point, the Hong Kong and Shenzhen governments implemented the first ‘co-location of boundary crossing facility’ for pedestrians and vehicular traffic, meaning that vehicular passengers travelling by coaches that pass through the control point only need to get on and off the vehicle once rather than twice when passing through immigration authorities. This speeds up the border crossing time for passengers, making the process of travelling to and from Hong Kong more efficient and enjoyable.

Since 1999, the total average number of daily cross-boundary trips between Hong Kong and Mainland China, and Hong Kong and Macao has been steadily increasing, from 304,300 total average trips in 1999 to 701,600 in 2015 [25]. When considering passenger type of cross-boundary trips, there has also been a significant change. In 1999, 84.3% of passengers making cross-boundary trips were people living in Hong Kong, 6.6% were Hong Kong residents living in Mainland, 5.0% were Mainland visitors to Hong Kong, and 4.1% were people living in other places; however in 2015, the percentage of people living in Hong Kong making cross-boundary trips fell to 52.2% of total average trips, while the number of Hong Kong residents living in Mainland China increased to 15.5% and the number of Mainland visitors to Hong Kong increased to 30.2%. The number of cross-boundary trips by people living in other places fell slightly to 2.0%. This shift



Fig. 2.7 Hong Kong and Shenzhen cross boundary infrastructure and border control points. Source Leung [24]

in the total average number and types of cross-border passenger trips indicates Hong Kong's growing attractiveness and importance to Mainland Chinese people, as well as Hong Kong people's closer connection and integration with living in Mainland China. Although the percentage of total average cross boundary trips made by people living in Hong Kong as decreased since 1999, the total number of passenger trips has continued to increase, from 239,900 in 1999 to 338,900 in 2015. In fact, the average number of cross boundary trips has increased for all categories of people since 1999, as shown in Table 2.3.

Moreover, between 1999 and 2015 the total number of vehicular average daily trips between Hong Kong and the Mainland has also increased from 30,000 to 43,200. While the total number of average daily vehicle trips has not increased substantially, the percentage of vehicle type has changed considerably. While in 1999, cargo vehicles (container trucks and goods vehicles) made up 85.6% of total average daily trips and passenger vehicles (private cars, coaches and shuttle buses) made up 14.4%, in 2015 cargo vehicles made up only 47.2% of trips and passenger vehicles made up 52.8% of trips, with private vehicles contributing 43.7% of total average trips [26]. This transition partly reflects the economic transition of Hong Kong towards a more knowledge-based service economy and the increase in cross-boundary passenger trips between the GBA and Hong Kong. However the decrease in cargo vehicles could also be a result of the opening of the Hong Kong International Airport in 1998, and a shift towards greater air cargo transportation, which increased from 1,974,300 tonnes in 1999 to 4,521,000 in 2016 [27, 28].

Table 2.3 Average daily passenger trips between Hong Kong and the Mainland by passenger type

		Number of passenger trips								
		跨境旅遊統計調查								
		Cross-boundary Travel Survey								
旅客類別	Passenger type	1999	2001	2003	2006	2007	2009	2011	2013/14	2015
居於香港人士	People Living in Hong Kong	239 900 (84.3%)	275 400 (82.7%)	299 400 (78.2%)	329 300 (73.5%)	349 300 (71.2%)	342 600 (67.9%)	341 800 (60.8%)	314 200 (51.9%)	338 900 (52.2%)
居於內地的香港居民	Hong Kong Residents Living in the Mainland	18 900 (6.6%)	33 100 (9.9%)	36 200 (9.5%)	38 400 (8.6%)	49 500 (10.1%)	53 000 (10.5%)	70 800 (12.6%)	82 400 (13.6%)	100 800 (15.5%)
來自內地的旅客	Visitors from the Mainland	14 100 (5.0%)	17 600 (5.3%)	39 200 (10.2%)	65 200 (14.6%)	76 800 (15.6%)	94 400 (18.7%)	136 600 (24.3%)	195 800 (32.4%)	196 200 (30.2%)
居於其他地方人士	People Living in Other Places	11 700 (4.1%)	7 100 (2.1%)	8 100 (2.1%)	15 100 (3.4%)	15 200 (3.1%)	14 600 (2.9%)	13 200 (2.3%)	12 400 (2.1%)	12 800 (2.0%)
總計	Total	284 600 (100.0%)	333 200 (100.0%)	382 800 (100.0%)	448 100 (100.0%)	490 900 (100.0%)	504 600 (100.0%)	562 400 (100.0%)	604 900 (100.0%)	648 800 (100.0%)
註釋：數字已進位至最接近的百位數。		Notes: Figures are rounded to the nearest hundred.								
括號內的數字指以未經進位數字計算所佔往來香港及內地的旅客人次的百分比。		Figures in brackets refer to the percentage shares of passenger trips between Hong Kong and the Mainland, which are derived from unrounded figures.								
由於四捨五入關係，個別數字加起來可能與總數不符。		Figures may not add up to totals due to rounding.								

To cope with the increase in border-crossings between Hong Kong and Mainland China, new additional transportation infrastructure and border-crossings are being planned and constructed. A new ground border crossing point is currently under construction on the Eastern side of the Hong Kong-Shenzhen boundary the new Liantang/Heung Yuen Wai Boundary Control Point (LT/HYW BCP) to alleviate the traffic congestion at the Lok Ma Chau border crossing control point, which is currently the busiest land boundary control point for cross boundary vehicles. When completed at the end of 2018, LT/HYW BCP will bring significant benefits to Hong Kong and eastern Shenzhen and Guangdong Province. The new LT/HYW BCP will reduce travel time between Hong Kong and eastern Guangdong region of the GBA and further towards southern Fujian and Jiangxi province, greatly enhancing and facilitating future regional cooperation and development along this eastern axis. Moreover, the existing border control points on the eastern side of the Hong Kong Shenzhen border at Man Kam To and Sha Tau Kok are served mainly by smaller busy local roads rather than high capacity expressways. The new LY/HYW BCP project also comprises a new 11 km dual-two lane trunk road connecting the BCP with Fanling Highway in Hong Kong, which will help redistribute the cross-boundary traffic from the busy Lok Ma Chau BCP, and the smaller Man Kam To and Sha Tau Kok BCPs, while ensuring smoother and more efficient pedestrian and cargo vehicular flows.

In addition to the LT/HYW BCP, two more new BCPs are under construction as part of new regional transportation infrastructure projects, the Hong Kong Express Rail Link (XRL) and the Hong Kong-Zhuhai-Macau Bridge.

Express Rail Link—High Speed Rail in China

With railways as the backbone of the GBA—for more smart and sustainable development, as railways are much more efficient in carrying people short and medium distances in terms of passenger capacity, energy consumption and pollution emissions, and land resource consumption needed to build tracks and stations. This sustainable development of transportation infrastructure is also reflected in China's plan to rapidly building out its High-Speed Rail Network throughout China to connect and enhance accessibility between major cities throughout the country by significantly reducing travel times.

In 2000, the HKSAR Government and the Governments of the GBA envisaged the need for a 'Regional Express Line' in the Rail Development Strategy 2000. The Express Rail Link (XRL) is the Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link. Since 2010, Hong Kong began the construction of the XRL, which will be 26 km in length and run from the planned station in West Kowloon to the north to the Shenzhen/Hong Kong boundary, where it connects with the Mainland Section [29]. The new XRL will drastically reduce the travel time from Guangzhou to Hong Kong's West Kowloon station down from 1 h and 55 min by ordinary rail to only 48 min. This will significantly reduce the effective distance by improving the accessibility and mobility between Guangzhou and Shenzhen, and Hong Kong, enhancing regional



Fig. 2.8 Route map of the Guangzhou-Shenzhen-Hong Kong Express Rail Link

commuter capabilities for those living and working in different cities, as well as make other cities within the GBA and Hong Kong more easily reachable for tourists. Hence, fostering closer social and economic ties between Hong Kong and the GBA thereby supporting and creating new opportunities for development in the future (Fig. 2.8).

Hong Kong Zhuhai Macau Bridge

The GBA is situated around the Pearl River Estuary. This expansive water body separates the city of Hong Kong on the eastern banks of the GBA, and the cities of Macao and Zhuhai on the western banks of the GBA. Currently, there is a lack of direct road connectivity between the east bank and west banks, with vehicles currently having to travel to the north bank of the GBA and utilize the Humen Bridge to travel between the east and west banks. However, this is a considerable detour and increases both travel time and pollution emissions from private and cargo vehicles. The Hong Kong-Zhuhai-Macau Bridge (HZMB) was proposed in 2002 as an essential sea crossing to link the Hong Kong SAR, Macao SAR and Zhuhai in order to take advantages of the three cities through closer physical integration [30] (Fig. 2.9).

The HZMB is the first large scale infrastructure project jointly planned and developed by the three regional governments of Guangdong, Hong Kong SAR and Macao SAR under the “One Country, Two Systems” policy, which is a good sign



Fig. 2.9 HZMB connectivity map

for cooperation on future spatial and infrastructure development in the region. The bridge crossing has a total length of about 35.6 km from the Hong Kong Boundary Crossing Facilities at the eastern end to the Zhuhai/Macao Boundary Crossing Facilities at the western end of the bridge, of which 6 km is in Hong Kong territory and 29.6 km is in the territory of Guangdong. The HZMB is expected to reduce the road travel time between these two banks by 60–80%, from 3.5 to 4 h down to about 45–75 min depending on the final destination point [31]. The economic and social benefits of the HZMB include in addition to time saving, and also logistics cost savings for businesses, increased business between Hong Kong (East GBA) and Macau/Zhuhai (West GBA), as well as reduced vehicular emissions as a result of shorter journey times. In addition, the HZMB is likely to spur the development of the western part of the GBA including Zhuhai and Macau as well as Hong Kong.

Electric Vehicles

Pushing the envelope on sustainable low-carbon transportation is the growth of plug-in hybrid and electric vehicles in Hong Kong and cities in the GBA. Incentives such as tax rebates on newly registered electric vehicles and the piloting of electric vehicles, in particular from Chinese car manufacturer BYD, as taxis show that there is a vision for sustainable mobility [32]. While Mainland China is planning to extend its exemption of the 10% purchase tax on new electric vehicles through at least 2020, however, Hong Kong's adoption of electric vehicles has been stifled recently as on 31 March 2017, the Hong Kong government drastically reduced the tax rebate on newly registered private electric vehicles from a full waiver of first vehicle registration tax, which can range up to 115% of the vehicles retail value, down to a capped discount of only HK\$97,500 [33, 34] giving the reason it was to curb the increase in road traffic congestion. This significantly affected the number of new electric private vehicle registrations in the months that followed, although it did

not affect the full waiver on electric commercial vehicles (including goods vehicles, buses, light buses, and taxis) [35]. In this regard, Hong Kong and Shenzhen have been piloting the use of hybrid and fully electric buses on some bus routes, with Shenzhen looking to have the world's first all-electric public bus fleet, a positive sign for the transition to more environmentally transportation in the city [36].

Autonomous cars could be next in line to provide mobility between Hong Kong and the GBA, as well as within the various cities in the GBA. However, caution must be taken however as although the mass adoption of electric and autonomous vehicles could help reduce pollution and roadside emissions, it may not solve the problem of traffic congestion, or may even worsen it. As such, the spatial and infrastructure development should remain in line with sustainable development principles and not continue to expand so as to further encourage the use of other public transportation or active transportation such as walking and cycling.

Bike Sharing Systems

Dock-less Bike Sharing systems have sprung up across cities in Mainland China, whereby users can unlock and lock shared bikes at any location in the city, without being constrained to renting and returning bikes at docking stations at specific locations across the city, as the traditional bike sharing systems have done. Two of the most predominant across cities in the GBA are Oppo and Mobike. Currently, these bike sharing systems are most predominant in Mainland Chinese cities including Shenzhen and Guangzhou, whereas they have had less penetration into Hong Kong due to the city's slow adoption of cycling as a form of transportation. Mass cycling adoption is stifled in Hong Kong due to its compact high-density development and the government's stance that only recognizes cycling as a 'recreational activity' and mainly for transportation in the more spacious New Territories rather than a form of community in the dense urban areas of Kowloon and Hong Kong Island. It is promising to see one company, Gobeer Bike that ventured into the Hong Kong market by starting operations in the New Territories where cycling infrastructure is more developed. However it is unlikely to translate into increased cycle commuting numbers in urban areas due to limited road space and lack of suitable cycling infrastructure. The spatial design of the cities has been transformed over time by the automobile as a result of rapid economic growth, urban development and the rising middle class in the GBA region. It should be noted that before the proliferation of private automobile usage, cycling was the norm for the majority of citizens in Hong Kong and cities in the GBA.

2.2.3.2 Smart Economy

Smart Economy is with regards to an open, transparent, diverse economy that adds value to the city and the region. Characteristics include a strong and diverse economy offering varied employment opportunities with labour market flexibility, promoting diversification, startup culture, entrepreneurship and innovation as well

as more productivity through local, regional and global interconnectedness. These characteristics allow a smart economy to embody a high level of competitiveness globally as well as locally, and one that is well-connected to the global economy. A Smart Economy will facilitate an efficient and effective business environment, one that promotes and encourages innovation regardless of the outcome. It will also ensure a stable employment market with the resources and ability to adapt and transform if needed. A Smart Economy guarantees the economic success and growth of a city and the region, as well as the livelihood of its citizens. As such it should be a focus of any Government to be forward thinking, innovative and with a global outreach with regards to economic policies in order to remain attractive and competitive in the global economy. There should be availability of well-educated and skilled workforce to attract MNCs and large companies to set up within the city or the region.

In recent years, Hong Kong has been looking to expand and diversify its economy to supplement its strong financial, real estate, professional services, and trade and logistics sectors. It hopes to achieve this by opening up its economy in collaboration with the Mainland Chinese market, as well as invest and promote the high-tech, innovation and creative industries by forging economic partnerships and investments in institutions and infrastructure for better regional integration.

Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA)

A free trade agreement signed in June 2003 between the Mainland and Hong Kong Governments, which covers preferential provisions for trade in goods, services, investment, and economic and technical cooperation to facilitate increased business and economic integration within the GBA. CEPA has expanded the markets for Hong Kong goods and services, and will further strengthen the trade relationship, as well as foster trade and investment between Hong Kong and cities in the GBA, and further accelerate the close economic integration and trade development of the two areas. While Hong Kong business gain from greater access to the huge and growing GBA and Mainland markets, businesses in Guangdong and the rest of China will have easier access to the international and global markets through Hong Kong, allowing both sides to capitalize on the strengths of one another [37] (Fig. 2.10).

More recently in June 2017, two additional agreements to CEPA were signed: the Investment Agreement and Agreement on Economic and Technical Cooperation. The Investment Agreement aims to “promote and protect investments by investors of the Mainland and Hong Kong SAR; progressively reduce or eliminate substantially all discriminatory measures on investments between the two sides; protect the rights of investors; promote achieving progressive liberalization and facilitation of investments from both sides, and; enhance the level of bilateral economic and trade exchanges and cooperation” between both sides to strengthen investment opportunities [38]. The Agreement on Economic and Technical Cooperation aims to “promote trade and investment facilitation between the Mainland and Hong Kong, and to fully enhance the level of economic and technical exchanges and cooperation” [39].



Fig. 2.10 CEPA signing in 2003

With regards to technology and innovation, cooperation and collaboration has occurred in various forms over the years. In 2003, the “Guangdong-Hong Kong Expert Group on Cooperation in Innovation and Technology” was established, which was the first cooperation in technology between Hong Kong and Guangdong Province. In 2004, the “Guangdong-Hong Kong Technology Cooperation Funding Scheme” was launched which aimed to support and encourage research institutes and businesses to cooperate and collaborate on applied research and development projects [1]. In May 2007, the governments of Hong Kong and Shenzhen signed a cooperation agreement on the “Shenzhen-Hong Kong Innovation Circle”, which aims to promote and enhance technology cooperation between the two cities by enhancing the exchange and sharing of innovative ideas and information, talent, equipment and resources through the launch of exchange programmes, cooperation between science and technology parks, academic and research institutions, and providing funding support for enterprises and R&D institutes to jointly conduct innovative projects and initiatives [40].

Science and Technology Parks

Hong Kong has invested in developing technology and innovation hubs to foster innovation and small business start-ups. Two main existing developments are Cyberport Business Park near Pok Fu Lam on Hong Kong Island and the Hong Kong Science and Technology Park Corporation (HKSTP) at Pak Shek Kok in the New Territories and the Inno Centre in Kowloon Tong. Cyberport was not as successful to begin with as it was considered more as a real estate development than a technology hub. More recently it has been successful in attracting more technology companies and starting new initiatives to promote hi-tech investment opportunities. The Inno Centre has been instrumental in promoting and supporting innovation and startup companies as an incubator within the urban area, while the Hong Kong Science and Technology Park located near the Chinese University of Hong Kong in the New Territories has been successful as well in promoting innovation and hi-tech industries.

Hong Kong Science Technology Park (HKSTP)

The HKSTP was set up as a statutory body in 2001 with the goal to transform Hong Kong into a regional hub for innovation and technology [41]. It aims to achieve this by raising Hong Kong's status as a global powerhouse through diversifying the city's economy, expanding employment opportunities across a number of industries, fostering talent and development in the Science, Technology, Engineering and Mathematics (STEM) sectors, and overall create a more sustainable future for the next generations. To facilitate its vision and mission, in 2002, the Hong Kong Science and Technology Park at Pak Shek Kok was constructed as a 330,000 m² knowledge-based campus environment for high technology startups and enterprises. The campus comprises a Science Park, Inno Centre and Industrial Estates which include R&D offices, modern infrastructure, laboratories, and technical centres with professional services to provide spaces and facilities for companies of all sizes and stages of development to nurture and accelerate the growth and innovation of companies, and promote interaction and innovation at the local, regional and global levels. As of June 2017, there are a total of 623 companies based in the park with a split of 72% local and 28% overseas technology companies, a working population of 12,791 of which about 9110 persons are involved in R&D related activities [42] (Fig. 2.11).

The HKSTP is smart and innovative solution for Hong Kong to promote and advance its technology and innovation sectors that delivers social and economic benefits to Hong Kong and the GBA region. By providing a collaborative space and



Fig. 2.11 Hong Kong Science and Technology Park

platform for connecting stakeholders, facilitating knowledge transfer and nurturing talent and enterprises, it will support the acceleration of technological innovation and commercialization towards a smarter society further up the value chain. Future plans for provision of housing within the site will bode well as it will make the HKSTP more convenient for the people working there.

Hong Kong—Shenzhen Innovation and IT Park

The Lok Ma Chau Loop is a future development site on the Hong Kong Shenzhen border that has been agreed to be jointly developed by the Hong Kong and Shenzhen governments into the Hong Kong Shenzhen Innovation and IT Park that fosters high-technology to support sustained economic growth of the region [43]. Announced in January 2017 with the signing of a “Memorandum of Understanding on Jointly Developing the Lok Ma Chau Loop of Hong Kong and Shenzhen”, the site has a size of 87 hectares, four times the size of the current HKSTP at Pak Shek Kok, and is projected to provide an estimated total floor area of 1.2 million square meter [44]. Its strategic location close to the border in Hong Kong and Shenzhen makes it convenient for cooperation and collaboration between the top enterprises, research institutions and higher education institutes of Hong Kong and Shenzhen. With its location and size there is an opportunity it provide related higher education, cultural and creative, as well as other complementary facilities and create more interaction between Hong Kong, Shenzhen and the GBA. The joint development of the Innovation and IT Park aims to combine the competitive advantages of both cities, Shenzhen will contribute start-ups and capital, and Hong Kong will bring to the table its professional expertise in scaling, branding, intellectual property, and expanding and managing companies at an international scale (Fig. 2.12).

Nansha IT Park—Hong Kong/Guangdong Science Park Collaboration

Hong Kong is also involved in the investment and development of Science and IT Parks outside of Hong Kong in the GBA. For example, the Hong Kong University of Science and Technology (HKUST), the Fok Ying Tung Foundation and the Guangzhou Government have collaborated in building the ‘Nansha IT Park’, as a commitment to the advancement of technology and knowledge in the GBA region [45]. The Nansha IT Park is a 2.5 km². development built within Nansha City’s Hi-Technology Zone, designated by the Guangzhou Government, for the purposes of “research, creativity, development and incubation of technology projects, and for training, education, cooperate/strategic planning meetings and retreats” [46]. The Nansha IT Park was completed in two phases in 2004 and 2007, and features modern facilities and infrastructure, such as campus wide fiber optic wireless intranet and internet connectivity, a central data center, building automation, smart card access, business centres, a fitness and health club and more, in order to foster a high quality, service oriented environment for technology and talent to converge, and innovative and creative ideas to flourish. The collaboration and development enabled by the Nansha IT Park, sets the vision to promote and support



Fig. 2.12 Lok Ma Chau Loop site for potential development of an IT and Innovation Park

the development of the GBA into a world class technology metropolis by nurturing and providing a platform for startups to incubate and grow, facilitating opportunities for Hong Kong based companies to expand into the region, and enhance the productivity and efficiency of companies within the GBA.

The construction, support and promotion of these high-tech, innovative Science, Technology and IT Parks in Hong Kong and cities within the GBA has facilitated the progress of research and innovation within the region, that will benefit educated and skilled workers, the economy, and society with new job opportunities and the advancement of technology to improve the quality of life of people.

Hong Kong as the Wealth Management Centre for Chinese Investors

Supporting the economic growth and integration of businesses and industries within the region are significant flows of investment and capital between Hong Kong and the GBA. Hong Kong's reputable and established financial institutions provide a secure and stable source of finance as well as investment opportunities for both businesses and individuals from Mainland China. Moreover, as China's economy grows, so has the size of the middle and upper-middle classes in China, and the number of high-net worth individuals. The success of the GBA has led to Guangdong Province having the highest number of high-net worth individuals in China, 17–18% of China's total high-net worth individual population, and is estimated to comprise approximately RMB28 trillion. As a result of this explosion in wealth, the flows of capital and investment into Hong Kong have been increasing, as it is the most popular destination for the Chinese to invest their wealth in

financial products such as stocks and funds, due to Hong Kong's favourable tax policies, geographical location and open economic environment. This in turn, is leading to the growth in number of Mainland Chinese banks setting up branches and offices in Hong Kong to serve these Chinese high net worth individuals [47]. In addition to investing in financial products, many high net worth Chinese individuals are also heavily investing in Hong Kong real estate, as well as overseas in international markets such as North America, Europe and Australia. Combined with Hong Kong's limited land and new housing supply, this increased investment demand in the property market for both housing and commercial office space is causing the prices of real estate to rise [47]. On the one hand while this has led to healthy investment returns for property owners, it is causing housing and commercial space to become much less affordable for Hong Kong citizens.

2.2.3.3 Smart Living

Smart Living encompasses in addition to housing all aspects of human life that have an influence on the quality of life. Smart Living should aim to provide a high quality of life, with a priority placed on the people. A smart city that exhibits Smart Living characteristics should foster an inclusive society and social cohesion amongst all members of society. No one person or group of people should feel excluded or discriminated against in any way, as social equity and equality are important considerations. A Smart Living environment must also ensure the safety and security of its citizens and the urban environment. The public should not have to fear for their safety at any time of the day and night, and should feel safe with other people and protected by the authorities that are responsible for safeguarding the city. A healthy and liveable environment with high quality public space, educational, institutional and community facilities are a key indicator of Smart Living in a smart city, as these will influence the health and well being of the general population and future generations. Aside from accessible and affordable healthcare and education, there should be adequate provision of high quality public spaces such as parks, streets and plazas etc., with abundant green spaces and greening. Similarly, the urban life in the city should cultivate a civic culture between the public and Government, where citizens express characteristics of pride in their nation, freedom of speech, value in public participation in the decision-making process and to be treated fairly by authorities. Furthermore, a Smart Living environment implies there exists the provision of affordable quality housing, so everyone no matter of status or income has a minimum standard of living that is affordable. Like many other cities this is an area Hong Kong does not do too well and the Hong Kong Government under the leadership of the current Chief Executive Carrie Lam is focussing to provide more affordable and decent housing for the people of Hong Kong. Unless the affordable housing issue is resolved it will be difficult for Hong Kong people to be more welcoming and embrace regional integration.

To promote and highlight the growing integration and urbanisation of the GBA and its impact of quality of life, since 2007 every two years Hong Kong and Shenzhen have jointly held a Bi-City Biennale on Urbanism, Planning and Architecture, co-organised by the Hong Kong Institute of Architects, Hong Kong Institute of Planners, Hong Kong Designers Association, and in collaboration with the Shenzhen Planning Bureau. The aim of the exhibition is to share and showcase the work by leading professionals and academics in the fields of Urban Planning, Design, Architecture, and Arts, with a different common theme for each Biennale. This sharing of ideas and creative work facilitates the interaction and integration of the two cities with regards to making smarter, more sustainable and liveable cities within the GBA and beyond [48].

Hong Kong and the GBA governments have cooperated on a number of educational initiatives, with Hong Kong public tertiary institutions providing support in establishing educational and even healthcare facilities in the GBA. In 1999, the Peking University (PKU) and the Hong Kong Science and Technology of Science and Technology (HKUST) established the PKU-HKUST Shenzhen-Hong Kong Institution as a joint venture between the Shenzhen Municipal Government, PKU and HKUST [49]. It acts as an incubator for high-tech professionals in Shenzhen-Hong Kong region and is located in the Shenzhen Hi-tech Industrial Park to capitalize on knowledge-transfer and proximity to related industries and services. In 2006, the Beijing Normal University-Hong Kong Baptist University United International College was founded in Zhuhai by the joint Mainland and Hong Kong University. Then in 2007, the HKUST established and set up the HKUST Fok Ying Tung Graduate School in Nansha, Guangzhou, to assist the university in “fulfilling its mission of technology innovation and advancement in the Pearl River Delta region through research and postgraduate education by fostering knowledge transfer and industry collaboration” [50]. In 2013, the Chinese University of Hong Kong signed an agreement with Shenzhen University and the Shenzhen Government to collaboratively develop the Chinese University of Hong Kong, Shenzhen, marking the establishment of another Hong Kong tertiary academic and research institution in the GBA to improve education offerings in Shenzhen and further promote the long term social and economic development of the region through collaboration in education, technology and culture [51] (Fig. 2.13).

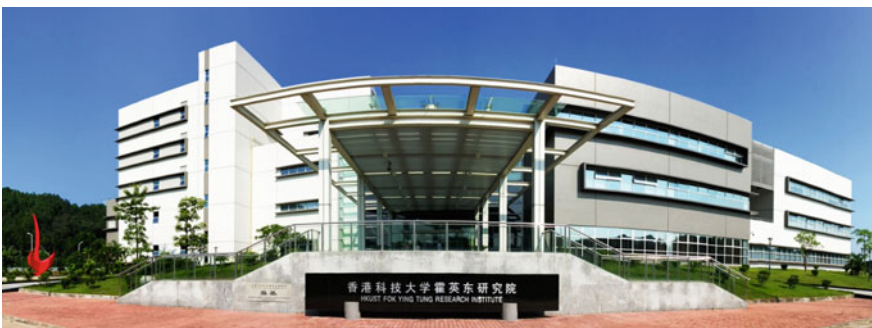


Fig. 2.13 HKUST Fok Ying Tong Research Institute in Guangzhou

Schools in Hong Kong, especially international schools, are perceived to provide a higher quality standard of education and many Chinese parents believe that their children's chances of getting into prestigious universities overseas will be higher if their children attend international schools in Hong Kong at primary and secondary level institutions. Hong Kong universities are also typically ranked higher than the majority of universities on Mainland China, as for example in the 2013/14 QS World University Ranks, three Hong Kong universities (The University of Hong Kong, The Hong Kong University of Science and Technology, and The Chinese University of Hong Kong) ranked higher than the two most prestigious universities in Mainland China, Peking University and Tsinghua University [52].

Every year thousands of young students from Mainland China enroll in the primary, secondary and tertiary educational institutions in Hong Kong to learn but also to experience life in Hong Kong. Since 2011, the number of cross-border students from Shenzhen who come to attend school in Hong Kong has risen by 118% to 2016, from 12,865 students in the 2011–2012 school year to 28,106 students in the 2015–2016 school year [53]. This helps diversify the student bodies in Hong Kong but raises some challenges due to cultural differences and also tests the Hong Kong students further in their ability to accept the growing trend. Often, these students will find employment in Hong Kong after graduation, bringing knowledge and talent benefits to Hong Kong, as well as potential for Mainland China-Hong Kong future cooperation and collaboration, but also creates more competition for local graduates in finding suitable jobs. However, the number of Hong Kong students studying in China is not on the same scale as the GBA or the Mainland is less attractive for Hong Kong students and there are some issues such as cultural difference and also limited employment opportunities available for Hong Kong students after graduation in Mainland China.

Healthcare services are also perceived to be of better quality in Hong Kong than in many cities in the GBA and across China. As such, it is common for Mainland women to travel to Hong Kong to give birth so that they can receive better treatment, but also so that their children are eligible for Hong Kong citizenship, which is seen as an advantage to have. This also creates issues with local people as it is seen as a growing burden on Hong Kong and its resources to deliver services to people from the Mainland. There are also an increasing number of cross-border marriages between Hong Kong and Mainland Chinese citizens, thus indicating that there is more social interaction between the people of Hong Kong with those from the GBA or the Mainland. This indicates that there is a potential need for joint hospital, healthcare and/or urgent care collaborations and possible cooperation between Hong Kong and the GBA.

Recently, Hong Kong has fallen behind other major cities with regards to quality of life and smart city indicators. In 2012, a report by Boyd Cohen on the Top 10 Smart Cities on the Planet found Hong Kong to perform well in key areas of smart city development such as innovation (15) and digital governance (3), use of RFID in business and industry, and adoption of smart card technologies throughout society for everyday payment and access uses. However, its quality of life score was much lower than other areas as it ranked 70th, which is significantly lower

compared to its other smart city rankings [54]. Released in November 2017, the EasyPark Smart City Index ranked Hong Kong 68th in the world, not an admirable achievement for one of the world's most globally connected financial, business, trade and logistics hub [55]. This demonstrates that much more needs to be done in terms of making Hong Kong a smart, sustainable and liveable city that will be able to capitalize on the rapid development of the GBA. Although, according to the recent EasyPark Smart City Index Hong Kong is the highest ranking city in China, above Beijing (81st) and Shanghai (85th), with no other city in the GBA making it in the top 100, this is far from satisfactory for Hong Kong's performance which looks at Singapore and other cities in the region as competition.

2.2.3.4 Smart Environment

Smart Environment encompasses concepts of green building and sustainable development concerning the natural and built environment in the city. A smart environment implements smart resource management for public open space, in which ecology and biodiversity should play an important role as a balance to the urban city and to provide a stimulating milieu for people to live, work and spend time in leisure and recreation. Open spaces should be plentiful and abundant in greenery, as these spaces provide a place for social interactions and leisure activities, facilitating an inclusive and cohesive society that will provide physical, psychological and social health benefits for individuals and communities. A smart environment also encompasses the built environment, promoting and encouraging Green Building designs and sustainable neighbourhoods that implement energy saving techniques, utilize sustainable materials, and manage waste, water and electricity usage efficiently can influence behavioural changes and significant energy savings.

The Government of a smart environment should also substantially advocate for environmental protection and play a leading role in educating the public of the dangers of unsustainable living, and also in introducing policies and regulations to safeguard the natural environment from excessive development or detrimental emissions, such as pollution control and management.

At a government and policy level, the governments of Hong Kong and Guangdong have been cooperating to improve air quality and reduce emissions across the border over the years. In January 2009, National Development and Reform Commission released the "Outline of the Plan for the Reform and Development of the Pearl River Delta (2008–2020)", in which transforming the GBA into a 'quality living area' was embraced. This plan aimed to enhance the environmental quality and ecology of the GBA, promote low-carbon development, cross-boundary cultural exchange, education, social welfare, food safety, and green transportation.

Two cooperative plans that directly address the issue of environmental emissions and air quality are the "Pearl River Delta Regional Air Quality Management Plan" enacted in 2003, and the "Emission Reduction Plan" introduced in 2012. These aim

to collectively encourage the GBA region to have the same goals and ambitions for improving environmental air quality in the region, so as to enhance quality of life for people of Hong Kong and within the GBA.

Pollution emissions from marine vessels operating within the Hong Kong and the GBA has been a growing concern in the region, as emissions of harmful chemicals such as Sulfer Oxide (SO_x), Nitrogen Oxide (NO_x) and Respirable Suspended Particulates (RSPs), have been found to negatively affect both marine life and people living in coastal urban areas near shipping routes. Hong Kong took steps to reducing vessel emissions by introducing the first regulation in 2014 to cap the sulphur content of locally-supplied marine light diesel at 0.05%, and in 2015 mandated that ocean-going vessels switch to low-sulphur fuel while at berth, meaning having a sulphur content not exceeding 0.5%. This led to a roughly 50% reduction in Sulphur Dioxide levels [56]. In December 2015, a domestic emissions control area (DECA), was established in the waters of the GBA by the Ministry of Transport of the Mainland. Signifying that for the first time, the governments of Guangdong and Hong Kong will coordinate and jointly promote the establishment of a DECA in the GBA Waters to regulate and reduce emissions from marine vessels, to eventually achieve by 2019 enforcement that regulates all ships entering the DECA should use marine fuel with 0.5% m/m sulphur content or lower [57, 58] (Fig. 2.14).

Hong Kong is now focussing on the environment after a rather late start with the Hong Kong Green Building Council established in 2009, and the Zero Carbon Building to promote green and sustainable practices in building design, construction, and living. Also, it is good to note that the Hong Kong Environmental



Fig. 2.14 Zero carbon building in Hong Kong

Protection Department recently received the Urban Land Institute (ULI) award and American Institute of Architects, Hong Kong Chapter (AIAHK) Citation for its efforts in education and awareness among the public on waste reduction and recycling with the Hong Kong East Community Green Station [59].

However, Hong Kong falls far behind with regards to actual recycling efforts and public awareness and involvement in this regard. Although Hong Kong has done much to promote waste reduction and more sustainable living through the development of plans, frameworks and blueprints for future strategies, targets, policies and action plans for waste reduction, less progress has been made on the recycling front [60]. Other than promoting recycling efforts through the launch of a \$1 billion Recycling Fund in October 2005, programmes such as the 2011 Community Recycling Network and 2005 Programme on Source Separation of Domestic Waste, development of a 20-ha Eco-Park aimed at facility, publicity and public education programmes, it has been found that still only a small percentage of waste in Hong Kong is actually recycled locally. In 2015, about 2.03 million tonnes of municipal solid waste was recovered in Hong Kong, of which only 2% was recycled locally and 98% exported to Mainland China and other countries for recycling [61]. Of the 2.03 million tonnes of solid municipal waste recovered in 2015, only 4.3% comprised recycling for plastics, with paper comprising 44%, ferrous metals comprising 42.4%, non-ferrous metals comprising 4.1%, and others comprising 4.6%. While both paper and ferrous metals were the most collected in 2015, none of it was recycled locally, with 100% being exported, and of the 4.3% of plastics collected, only 6% was recycled locally with the rest exported overseas [61]. This clearly indicates that although the policies, targets, programmes, and actions plans to promote sustainable measures, the local recycling infrastructure in Hong Kong is significantly lacking to make a significant difference. Moreover, it the government's efforts to encourage the public and private sector to recycle may not be as successful as the data may indicate, as figures released by the government for plastic recycling showed that of all the polyethylene terephthalate (PET) plastic bottles in Hong Kong, only 7.6% were actually recycled, and up to 96% of plastic bottles were in fact recycled by government bodies. This situation has in fact worsened since 2010, when the recycling rate of plastics as a whole in Hong Kong was 69%, it has since fallen to 11% in 2015 due to a combination of less incentives from the private sector to recycle due to falling crude oil prices making it less commercially attractive, as well as Mainland China cracking down on the imports of waste materials and dirty plastic waste such as electronics and white goods. In addition, in 2017 China enacted new restrictions on its national recycling policy, banning 24 types of polluting "foreign rubbish" imports. This has for example restricted the import of paper products for recycling to only paperboard, newspaper and office paper [62], meaning in the future both the public and government of Hong Kong must be more stringent on properly separating the types of plastic and paper in order for them to be accepted for recycling. Going forward, more public education and awareness including cooperation and collaboration between Hong Kong and the GBA should be considered regarding recycling efforts so as to facilitate a greater shift towards more environmentally friendly smart and sustainable region as a whole.

2.2.3.5 Smart Infrastructure

Smart Infrastructure comprises physical elements (road network, public realm, utilities, sensors, meters etc.) as well as non-physical infrastructure (ICT, internet). Both the physical and non-physical infrastructure are connected to one another and integrated with a software application that enables the communication and transfer of data to assist the efficient management of resources. Smart Infrastructure enables smart resource management for water, energy and waste through smart grids, sensors, and sustainable monitoring and usage of public utilities. Smart applications provide transparent data management for the public, business, organizations and government. By utilizing the advantages of the Internet of Things (IoT), the data and information acquired from the built environment and connected products should be able to be accessed by anyone through the Internet or smartphone applications. A smart city smart region should also have Resiliency and Disaster Management systems and procedures to react in the case of an emergency, and also provide rigorous security from cyber-attacks. As spatial and economic integration between Hong Kong and the GBA progresses in the coming years, planning and development of more integrated infrastructure systems and networks is also crucial to support the growth of both Hong Kong and the GBA and bring mutual benefits to cities within the GBA.

Existing integration of energy between Hong Kong and the GBA exists in some forms, as China Light and Power (CLP), one of the leading electric companies in Hong Kong, connected its power stations to the Chinese mainland grid and in 1979 began supplying power to Guangdong Province [63]. This energy transmission network allowed power to be supplied back and forth between Hong Kong and Guangdong. In 1985, CLP began building a 1968 MW pressurised water reactor nuclear power station in joint venture with Guangdong Nuclear Investment Company in Daya Bay in Guangdong Province, which was commissioned in 1994 and became the first nuclear power plant in China and remains the largest commercial nuclear installation today. Nuclear power from the plant was imported to Hong Kong, which enhanced the city's fuel supply reliability and enabled electric power to be supplied back to Guangdong Province from Hong Kong. Since then, CLP has invested in developing a number of power stations in Guangdong Province and Mainland China, including the Guangzhou Pumped Storage Power Station at Conghua in 1994, and the Huaiji hydro power project [63]. Additionally, since 1996 Hong Kong has been provided with natural gas from Guangdong province via an 800 km pipeline between Hainan and the Black Point Power Station in Tuen Mun District of Hong Kong [64].

Hong Kong and Guangdong province cooperate on clean energy provision, which was formalised in 2008 with the signing of a Memorandum of Understanding (MoU) on energy cooperation between Hong Kong and the China Central Government [65, 66]. This MoU promised the provision new sources of energy for Hong Kong, including new natural gas sources, Liquefied Petroleum Natural Gas and offshore gas supplies from the South China Sea that are to be developed.

Moreover, at a government and policy level the governments of Hong Kong and Guangdong have been cooperating to improve air quality and reduce emissions over the years. Two cooperative plans that address this issue are the “Pearl River Delta Regional Air Quality Management Plan” enacted in 2003, and the “Emission Reduction Plan” introduced in 2012. These aim to collectively encourage the GBA region to have the same goals and ambitions for improving environmental air quality in the region, so has to enhance quality of life for society.

2.2.3.6 Smart Governance

Smart Governance is arguably one of the most important elements of a Smart City’s development since the content and vision of public policies, or the lack thereof, will dictate whether a particular issue is tackled ‘smartly’ or not. Smart Governance includes a promoting a common vision, public participation; public services, transparency; access to information; public-private and community partnerships; e-governance; pro-active public policy; and effective leadership. The smart and effective coordinated spatial and economic development of the GBA has begun to emerge between the three jurisdictions governments of Hong Kong, Macao and the Pearl River Delta through joint studies on regional planning and cross-boundary infrastructure links.

In October 2009, the regional governments of the three jurisdictions released “The Planning Study on the Coordinated Development of the Greater Pearl River Delta Township”, which is the first planning exercise jointly commissioned by the governments of the three jurisdictions. It mainly comprises a high level strategic outline of recommendations on key planning issues for the region, and a blueprint for key cross-boundary infrastructure links. The overall development objectives included “to build: a world-class city-region of global competitiveness and influences; a world-class advanced manufacturing base with innovation abilities; a highly open world-class centre of modern services; a world-class domestic and international transportation hub; a cultural centre of global influences, and; a quality living area that is affluent, civilized, harmonious and livable” [67]. These objectives clearly indicate that the regional governments of the GBA are committed to ensuring the smart and sustainable development of the region in economic, social, and livability aspects. Moreover, in order to effectively plan this large-scale urbanization project, three major developments strategies for the region are recommended: (1) an optimized spatial structure that creates a “focus at the Bay Area and three Metropolitan Areas, development of three Axes and four Tiers, and the development of three Sub-regions in a poly-centric pattern”; (2) high accessibility to “establish a systematic transport network with the Bay Area as the hub of external links, an intercity one-hour commuting circle and seamless connections in cross-boundary traffic”; and (3) a quality living environment to “establish a comprehensive regional eco-security system, cooperate in regional environmental management and demarcate environmental protection duties of each city” [67]. Within these three major development strategies, a spatial structure of ‘City

Regions’, an intra-regional ‘One Hour Intercity Commuting Circle’, and a ‘Multi-Tier Development Space’ linked the GBA to its surrounding regions is devised. Since its publishing, most of the recommendations stated in the Planning Study have already been developed, or are in process.

The second joint study commissioned by the regional governments of the three jurisdictions, Guangdong Province, Hong Kong SAR, and Macao is the “Regional Cooperation Plan on Building a Quality Living Area”, commissioned in 2012. This plan focuses more on sustainable development of the GBA at a regional level, and strives to create a balance between economic, social development, and environmental protection so as to transform the GBA into a “low-carbon, high -technology, and low-pollution city cluster for quality living” [68]. On 1st July 2017, the governments of the three jurisdictions signed the “Framework Agreement on Deepening Guangdong-Hong Kong-Macao Cooperation in the Development of the Bay Area”, which formalizes the objective to cooperate in implementing the principle of “one country, two systems”, improve and innovate the cooperation mechanism and establish a mutually beneficial cooperative relationship in order to effectively and jointly move forward with the development of the GBA [69]. This framework agreement is elaborated on in Sect. 2.3.4.3 (Fig. 2.15).

2.2.4 Realizing Smart City Smart Region

As outlined in the examples above, over the past 20–30 years Hong Kong and the Mainland have been working towards improving better interaction and promoting



Fig. 2.15 Signing ceremony for the framework agreement on deepening Guangdong-Hong Kong-Macau cooperation in the development of the Bay Area

more integration by developing both hard and soft connections between Hong Kong and the GBA. Investments in transportation and utilities infrastructure have supported the spatial, economic and social development of the cities and region, cooperation and collaboration through economic partnerships, environmental agreements, and investments in real estate, R&D, and technological innovation have fostered the growth of new and existing industries, and gradual integration of the Hong Kong and Mainland Chinese populations through education and corporate environments have begun to pave the way for future social integration and cooperation towards a more cohesive and mutually beneficial working and living environment for all people and businesses in the GBA metropolitan region. However, not too much of this is known to the general public especially in Hong Kong who are more focused on local issues such as wages, affordable housing, basic law etc. There seems to be a need to address the local issues but also communicate to the general public about these policies and initiatives and their impact in improving the quality of life of the people of Hong Kong and the GBA.

How this growth, development and integration will continue going forward will be crucial for the successful, smart and sustainable development of this mega region, and will require extensive collaboration and planning among the governments of Hong Kong, Shenzhen, Guangzhou and other major cities and stakeholders within the GBA.

2.3 Future Development Plans and Cooperation Initiatives of the Greater Bay Area Region

2.3.1 Introduction

This chapter will look at the published future plans and policy directions of the Greater Bay Area (GBA) region that will guide and influence its development in the coming years. These plans provide higher level cooperation and development initiatives between Hong Kong and cities in the GBA, which can be studied and discussed at the small, medium and large scales. The smaller scale focuses on cooperation between the two Special Administrative Regions (SAR)s, Hong Kong and Macau, and how the two SARs can cooperate for better economic and social integration; the medium scale focuses on the core GBA metropolis region of Guangdong-Hong Kong-Macau, looking at China's Thirteenth Five-year Plan, the China (Guangdong) Free Trade Zone, the future development of city clusters within the region, and the Framework Agreement on Deepening Guangdong-Hong Kong-Macao Cooperation in the Development of the Bay Area; and the larger scale looks beyond the GBA and towards the One-Belt-One Road vision, and what role Hong Kong will play in the bigger picture of the Belt and Road Initiative (BRI).

2.3.2 *Hong Kong*

2.3.2.1 **Hong Kong 2030+ Towards a Planning Vision and Strategy Transcending 2030**

“Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030” (Hong Kong 2030+)” provides spatial planning framework to plan and guide land and infrastructure development and shaping of built environment in Hong Kong beyond 2030 [70].

Positioning Hong Kong as “Asia’s World City”, it put forwards three building blocks.

Building Block 1: Planning for a Liveable High-density City

To create a liveable compact high-density city, Hong Kong 2030+ proposes four key strategic directions to enhance the quality of overall living environment: (i) Adopting the concepts of “age-friendly” planning, (ii) Leveraging green and blue spaces, (iii) Reinventing public space, and (iv) Rejuvenating urban fabric.

Building Block 2: Embracing New Economic Challenges and Opportunities

In recent years, the Gross Domestic Product growth in Hong Kong has been relatively modest while its neighbouring cities are experiencing rapid advancement, which poses economic challenges to Hong Kong. On the other hand, Hong Kong can capitalize on its geographical proximity, improved connectivity by regional transport infrastructure and new regional cooperative initiatives such as “Belt and Road Initiative”, “China (Guangdong) Free Trade Zone”, “Guangdong-Hong Kong-Macau Bay (the Plan)”.

To embrace future challenges and opportunities, Hong Kong 2030+ proposes a few strategies highlighting the importance of providing adequate land for growth and supporting infrastructure, diversifying economic sectors, and promoting innovation and technology.

Building Block 3: Creating Capability for Sustainable Growth

Hong Kong 2030+ adopts an enhanced strategic planning approach to spatial development. It does not only aim to cater the predicted land use demand in the future, but also to enhance the quality of living and be responsive to any potential changes due to unforeseen circumstances. Few strategic directions are (1) Optimising the use of land; (2) Lifting transport and transport capacity; (3) Integrating biodiversity consideration into planning, and; (4) Adopting a smart, green and resilient (SGR) city strategy.

Ideas proposed under the three building blocks are then translated spatially to a conceptual spatial framework. It outlines the future development of Hong Kong with one metropolitan business core, two Strategic Growth Areas (SGAs) and three development axes.

One Metropolitan Business Core

The Metropolitan Business Core covers the mature central Business District (CBD) on Hong Kong Island, fast-growing CBD2 in Kowloon East and future CBD3 in the East Lantau Metropolis (ELM). Locating at a strategic location with its high proximity to Hong Kong International Airport and Hong Kong Island West, the proposed CBD3 at ELM plays a strong role in reinforcing the existing business core and also Hong Kong's connector function in the region.

Two Strategic Growth Areas (SGAs)

The two SGAs are East Lantau Metropolis (ELM) and New Territories North (NTN).

East Lantau Metropolis (ELM): The idea of ELM is creating a smart, liveable and low-carbon development cluster on reclaimed artificial islands near Kau Yi Chau and the Hei Ling Chau Typhoon Shelter and the underutilised land in Mui Wo. ELM enjoys the fortified regional transport infrastructure connecting both the main urban area and the GBA east and west.

New Territories North (NTN): The planning intention of NTN is to provide efficient use of land for new residential clusters, and modern industries, which can take advantage of its proximity to the border.

Three Development Axes

Three Development Axes are Western Economic Corridor, Eastern Knowledge and Technology Corridor and Northern Economic Belt.

Western Economic Corridor: The Western Corridor is designed to capture future economic opportunities in the GBA with various strategic transport infrastructures in place. It shapes the Western part of the territory become the international and regional gateway to Hong Kong. Coupled with strategic development projects, it can potentially give rise to substantial economic opportunities. These includes topside development at the Hong Kong Boundary Crossing Facilities Island of the Hong Kong-Zhuhai Macao Bridge (HZMB) and modern logistics development in Tuen Mun West,

Eastern Knowledge and Technology Corridor: The Eastern Corridor is comprised of six universities, industrial and service support centres, high- technology and knowledge industries in different districts on the Eastern part of Hong Kong. It goes all the way from northern Hong Kong (Tung North, the Lok ma Chau Loop and Liantang/Heung Yuen Wai) to the CBD2 in Kowloon East where growing number of innovation and technology related start-ups cluster around.

Northern Economic Belt: Situating close to Shenzhen, which is strong in R&D, the designated role of North Economic Belt is supporting the existing and future communities around the area with the development warehousing, R&D, modern logistics and other merging industries. The Belt also converges with the Eastern Knowledge and Technology Corridor at the proposed science park near future Liang Tang/Heung Yuen Wai Boundary Control Point to achieve greater synergy.

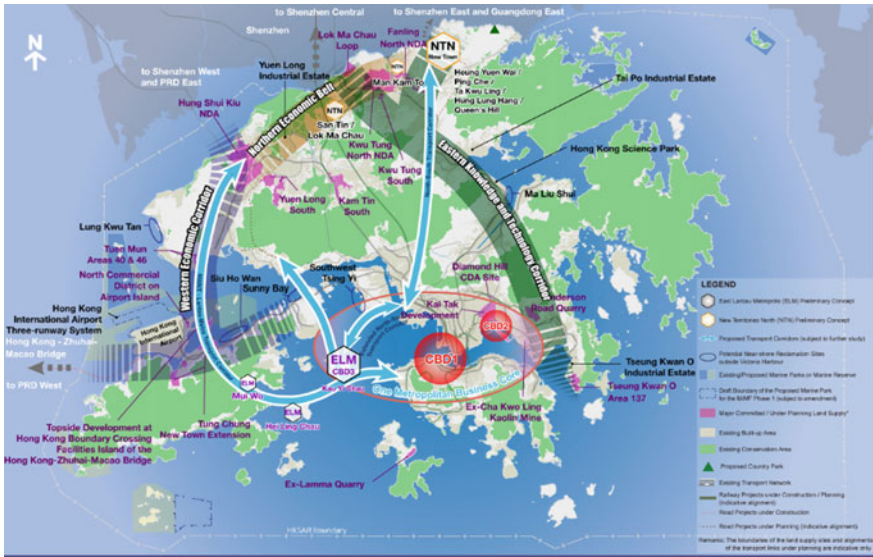


Fig. 2.16 HK2030+ spatial and territorial planning strategies. *Source* Development Bureau, Planning Department HKSAR [70]

These spatial and territorial planning strategies aim to guide and influence the future development of Hong Kong’s infrastructure, transportation, businesses, and built environment to create more sustainable long-term development for Hong Kong and support its integration with the GBA region (Fig. 2.16).

2.3.3 Shenzhen

2.3.3.1 Comprehensive Plan of Shenzhen 2010–2020

The Comprehensive Plan for Shenzhen 2010–2020 stated that by 2020 Shenzhen aims to be a high-tech innovation base, international logistics hub, as well as a financial and cultural centre. Its current positioning in the GBA and China is that of a national special economic area, economic hub and international city. It plays a role as a service base for the prosperous and stable development of Hong Kong, as well as services in international finance, trade and shipping in co-development with Hong Kong under the “One Country, Two Systems” concept.

One of the major goals of Shenzhen’s Comprehensive Plan is for greater regional coordination and cooperation in the GBA, and to strengthen cooperation with Hong Kong in the areas of regional infrastructure construction, industrial development, resource and energy utilization, and market cultivation regarding regional economic factors, social livelihood, technology innovation and

environmental protection. To achieve greater cooperation between Shenzhen and Hong Kong, seven areas were identified which include to:

- Promote in-depth financial cooperation, such as free cash flow
- Encourage innovation, through cooperation between corporations, universities and research institutes in the field of R&D, technology innovation, intellectual property management, among others to develop the Shenzhen into an innovation centre and transformation base in the Asia Pacific region
- Focus on the pillar industries, such as hi-tech, financial services, modern logistics and the cultural sector
- Improve airport infrastructure by creating a railway connection between Hong Kong International Airport and Shenzhen Baoan International Airport
- Enhance the customs clearance and trans-boundary transportation process and procedure to facilitate more efficient cross-border movements
- Increased cooperation and development at territorial boundaries, such as construction of the Lok Ma Chau Loop, and Liantang Boundary Crossing
- Greater emphasis on ecological and environmental treatment and conservation.

The Comprehensive Plan also discussed the spatial structure for Shenzhen, where the government has strategically identified 3 north-south axis, 2 east-west belts, and 8 clusters each with a specialized focus to facilitate the future growth and development of Shenzhen, as shown in Fig. 2.17. The three north-south axes



Source: Urban Planning/Land & Resources Commission of Shenzhen Municipality

Fig. 2.17 Spatial master plan of Shenzhen (2010–2020). Source Fung Global Retail & Technology [71]

include the (1) western development axis, comprising mainly of service industry and high value added manufacturing, and key projects such as the Shenzhen airport expansion, and Shenzhen-Hong Kong airport connection railway line; (2) central development axis, comprising mainly service industry, hi-tech and advanced manufacturing, and key projects such as the North Railway Station, and Guangzhou-Shenzhen-Hong Kong Express Rail Link; and (3) the eastern development axis, comprising mainly hi-tech and advanced manufacturing services, and key projects such as the Liantang Boundary Control Point. The two east-west belts include the northern economic belt and the southern metropolitan belt, the latter of which will be the metropolitan functional belt connected and integrated with Hong Kong. The identified strategic clusters include:

- (1) Qianhai: A Hong Kong-Shenzhen service center, focusing on high tech, education, art and logistics services.
- (2) Futian: A political, financial and trading center.
- (3) Luohu: A financial and trading services center.
- (4) Longgang and Pingshan: A modern heavy industrial base.
- (5) Longhua: A transportation and logistics hub.
- (6) Guangming: A local high-tech and eco-agricultural base.
- (7) Aerotropolis: An international logistics and supply-chain base.
- (8) Yantian: A leisure tourism and logistics hub.

2.3.4 *Guangzhou*

Guangzhou has positioned itself as a national central city, international trade center, comprehensive transportation hub and shipping hub of south China. Its strategies to accomplish this at the Pan-Pearl River Delta level include strengthening regional cooperation, expanding the hinterland and for Guangzhou to serve as the regional centre for advanced manufacturing services. At the Pearl River Delta level, Guangzhou aims to deepen its cooperation between the rest of Guangdong Province, Hong Kong and Macau. Within Guangzhou, Nansha Area is poised to become the new R&D Innovation area (Fig. 2.18).

2.3.5 *Zhuhai and Macau*

2.3.5.1 *Zhuhai*

The Master Plan of Zhuhai (2001–2020) stated the overall positioning of Zhuhai as an international metropolitan area in collaboration with Hong Kong and Macao, and a core city in the west coast of the GBA. Functionally, it is positioned as a national special economic zone, and also as a business travel resort. Future

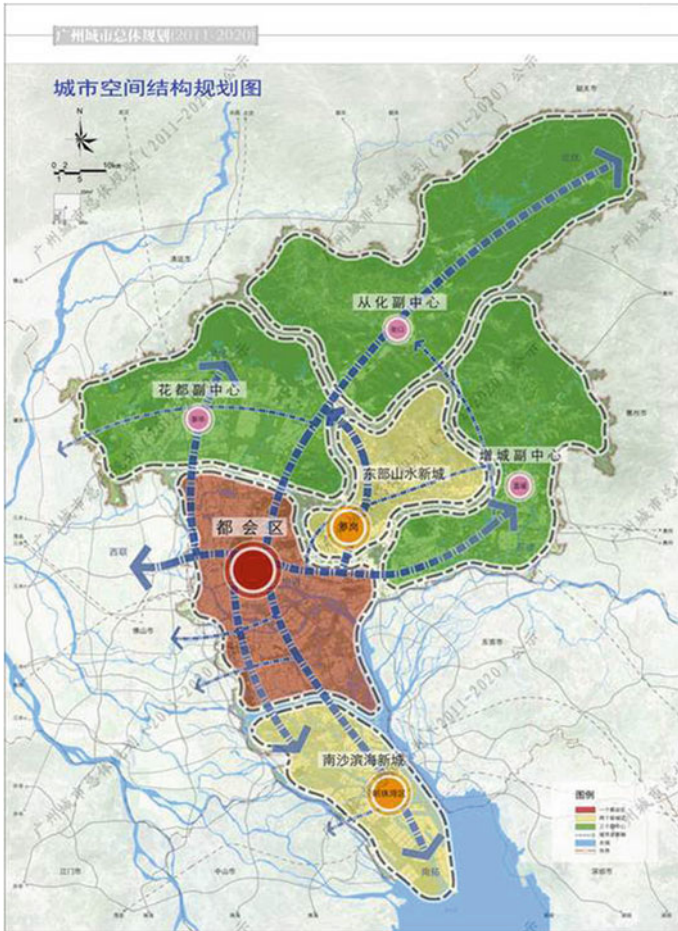


Fig. 2.18 Spatial plan for Guangzhou (2011–2020)

opportunities for Zhuhai’s economic and spatial growth are coming in the form of the completion of the Hong Kong-Zhuhai-Macau Bridge (HZMB) in 2018, the Hengqin New Area economic zone, and the Guangzhou-Zhuhai intercity railway.

The regional development strategies to achieve its master plan vision include: greater collaboration with Hong Kong and Macau in marine ports and airports; increased infrastructure construction, enhanced industrial collaboration between the modern service industries, hi-tech and advanced manufacturing services; a high quality living environment; improved communication in legal affairs; more flexible and supportive business environment; and, greater regional resource utilization and environmental protection (Fig. 2.19).

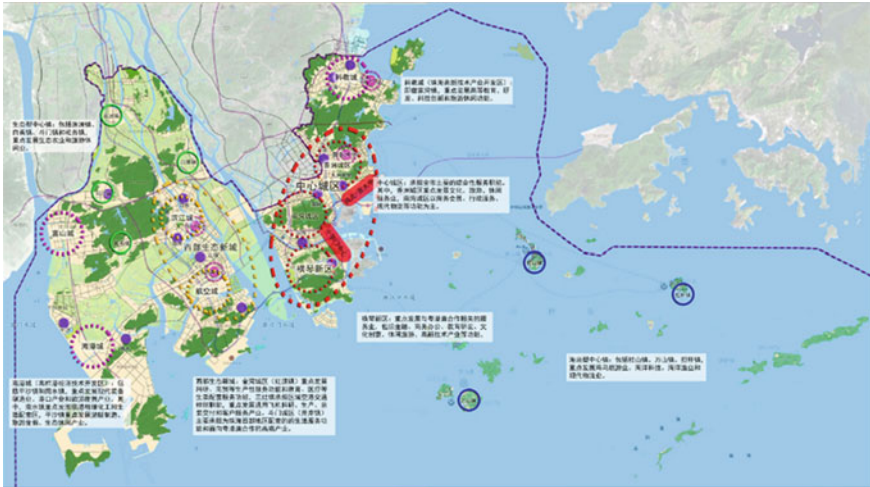


Fig. 2.19 Spatial plan for Zhuhai

2.3.5.2 Macau

Macau's Five Year Plan published in 2016, laying out its blueprint up to 2020, envisioned the city as a world class tourism hub around the year 2035 [72]. Its goals were to:

1. Ensure Stable development of the overall economy
2. Further optimization of industrial structure
3. Gradual formation of business environment for tourism and leisure industries
4. Continuous improvement in people's quality of life
5. Continuous development of culture and education
6. Efficient and effective environmental protection
7. Further improvement in administrative efficiency and legal governance.

Macau's development strategies to be adopted to achieve these goals are to:

1. Enhance the concept of innovative development and establish a cooperation network in this regard
2. Build a new image of "cultural Macao" and raise the city's competitiveness
3. Implement the strategy of "letting Macao thrive through education" and "building Macao with talent"
4. Improve soft and hard infrastructure and quality of tourism services
5. Expedite smart city development and facilitate integration industries of the internet
6. Optimise the public decision-making system and enhance the effectiveness of macro policies

- 7. Improve the collaborative governance system and coordinate the development of “One Centre, One Platform”
- 8. Deepen regional cooperation and platform-based economic strategies, promote moderate economic diversification and integrate with national development (Fig. 2.20).

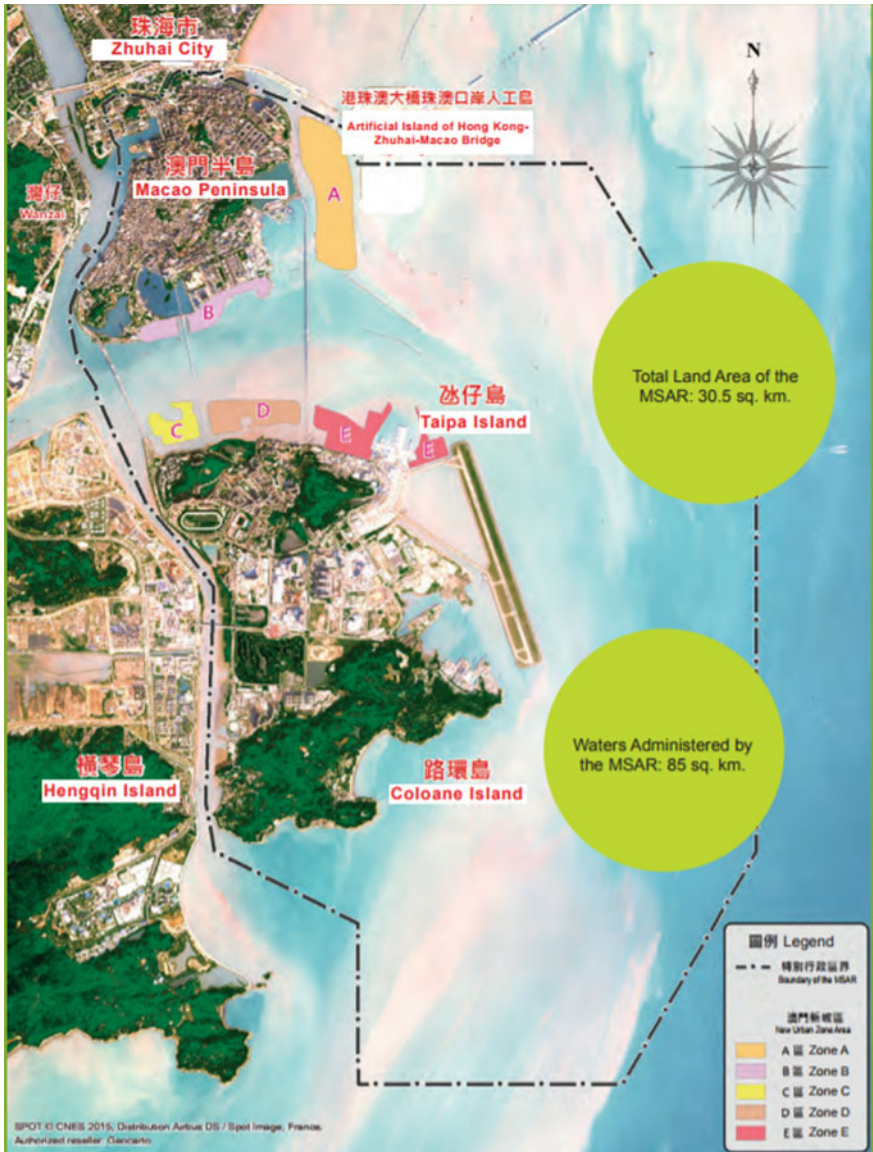


Fig. 2.20 Land area and waters administered by the Macau SAR government [72]

The 8th development strategy will be crucial for the future development of Macao, as Macao must leverage its unique complementary advantages in expanding and deepening its cooperation with the rest of Guangdong province and Hong Kong. This is in line with the development of a mutually beneficial relationship of the GBA, which is already beginning to be implemented with initiatives such as the Closer Economic Partnership Agreement (CEPA) with Hong Kong, and the Framework Agreement on Deepening Cooperation between Guangdong Hong Kong and Macau.

2.3.6 Hong Kong-Macao Cooperation

Hong Kong and Macau have signed the Hong Kong-Macao Closer Economic Partnership Agreement (CEPA), which will come into effect on January 1st 2018, and is the first free trade arrangement between Hong Kong and Macau. Once in effect, the agreement will advance the liberalization of trade and services between the two cities, and create favourable conditions for further regional integration. The Hong Kong-Macao CEPA covers items such as the expansion of trade in goods and services, the simplification of customs procedures, collaboration in matters relating to intellectual property, and establishment of a work program on economic and technical cooperation [73]. Moreover, the agreement states that the two cities will pledge to continue creating a business-friendly environment for companies in both cities, and jointly promote multi-destination itineraries, investment, and trade and exhibition. In addition, it formalizes that Hong Kong and Macau will work together with Guangdong province to press ahead with the development of the Guangdong-Hong Kong-Macao Greater Bay Area.

2.3.7 Hong Kong-Guangdong-Macao Cooperation and Development

2.3.7.1 National Thirteenth Five-Year Plan

The National Thirteenth Five-year Plan was officially enacted in March 2017, in which the deepening cooperation between the Mainland and Hong Kong is emphasized. It also recognizes and acknowledges the significant functioning and positioning of Hong Kong and Macao in the country's overall development plans [74]. The Plan provides opportunities for Hong Kong to strengthen its exchanges and cooperation with the Mainland in various areas, and expresses support in streamlining the development of cooperation platforms among Guangdong-Hong Kong-Macao, such as Qianhai, Nansha and Hengqin, the three Free Trade Zones of the GBA collectively known as the China (Guangdong) Free Trade Zone [75].

The Plan states much support for Hong Kong and Macau to play a greater important role in the Pan-Pearl River Delta Region cooperation, and the development of the Guangdong-Hong Kong-Macao Big Bay Area, in order to open up more opportunities for cooperation between Hong Kong and the Mainland. To maintain its competitive role in the region in this regard, Hong Kong has much to do in upgrading its financial services, business and commerce, logistics and professional services and associated industries into higher-end value added products and services, so as to enhance its position as the international financial, transport and trading centre in the GBA, as a strong and stable offshore Renminbi (RMB) business hub, international asset management and legal centre to both Hong Kong and Mainland Chinese businesses, and to foster greater innovation and technology advancement [76].

2.3.7.2 China (Guangdong) Pilot Free Trade Zone

The China (Guangdong) Pilot Free Trade Zone (GDFTZ) was established in December 2014 by the Chinese State Council, which covers a scope of 116.2 km² over three main areas: the Nansha Area of Guangzhou (60 km², including the 7.06 km² Guangzhou Nansha Bonded Port Area); the Qianhai-Shekou Area of Shenzhen (28.2 km², including the 3.71 km² Shenzhen Qianhai Bay Bonded Port Area), and the Hengqin Area of Zhuhai (a 28 km² district) [77]. Through smart planning and development, each of the three areas has its own industrial specialization: the Nansha Area will be established as a new modern manufacturing industrial base and comprehensive service hub prioritizing shipping logistics, special finance, international trade, high-end manufacturing and other industries; the Qianhai & Shekou Area will become an experimental financial and global service trade and port hub that prioritizes finance, modern logistics, information services, science and technology among other strategic energy innovative service industries, and; the Hengqin Area is being developed into a leading creative, cultural and educational cluster, and leisure and recreational base for international commercial services that prioritize tourism, leisure and health, business financial services culture, science, high-tech and other similar industries. By integrating and connecting the three significant areas of specialization, the GDFTZ will become a model to demonstrate the possibilities for deep meaningful collaboration within an expansive metropolitan region between Guangdong, Hong Kong and Macao, and an important hub of the 21st century's maritime silk road and pilot area for future reforms in China. This Free Trade Zone will also embrace Hong Kong and Macao to better serve the rest of the GBA and Mainland, and open itself up further to the rest of the world (Fig. 2.21).



Fig. 2.21 Map showing locations of the Free Trade Zones under the GDFZ. *Source* HKTDC Research [78]

2.3.7.3 Development Plan for a City Cluster in the Guangdong-Hong Kong-Macau Bay Area

To facilitate the smart and effective development of the GBA under the National Thirteenth Five-year Plan, on 1st July 2017, a cooperation framework agreement on “Deepening Guangdong-Hong Kong-Macao Cooperation in the Development of the Bay Area” was signed by the governments of Guangdong, Hong Kong and Macau, and the National Development and Reform Commission (NDRC) of the People’s Republic of China [69]. Since then, a draft development plan for a city cluster in the Bay Area was completed, which is aimed to provide a blueprint for building a world-class city cluster through complementary co-operation among the three places [79]. In doing so, the Government of Hong Kong is signifying that it will take an active participatory role in taking forward the development of the Bay

Area given the opportunities it can bring for Hong Kong, such as creating favourable conditions for diversifying its industries in particular the promotion of innovation and technology development, and seeking greater methods and support for the people of Hong Kong to study, work, start up and operate businesses, as well as live and retire in the Bay Area. Essential to this goal will be to further facilitate the flows of people, goods, capital and information between Hong Kong and cities in the GBA, and by creating a “quality living circle” for the people of Hong Kong.

In order to achieve the aims of the cooperation framework and Bay Area Plan, certain policy level changes have been made. To more effectively develop Hong Kong’s integration with the GBA, the Steering Committee on Co-operation with the Mainland has been proposed to be renamed the “Steering Committee on Taking Forward Bay Area Development and Mainland Cooperation”, which will help focus efforts on capitalizing on the unique advantages of Hong Kong within the GBA, and formulate concrete work plans in a more focused manner. Furthermore, to improve cooperation and collaboration among key stakeholders and decision makers, such as relevant central authorities, the Guangdong Provincial Government, Macao SAR Government and relevant bureaux and departments of the HKSAR Government, the Constitutional and Mainland Affairs Bureau of Hong Kong will set up a “Guangdong-Hong Kong-Macao Bay Area Development Office” which will be specifically responsible for proactively engaging and working with trade associations, professional bodies and other relevant stakeholders to coordinate the effort towards implementation of the Bay Area Plan [79].

2.3.8 Hong Kong-Guangdong-Macao and the Belt and Road Initiative

China has grandiose plans to revive the historical Silk Road, as the Silk Road Economic Belt and the 21st Century Maritime Silk Road, the overall project is known as the Belt and Road Initiative (BRI). By connecting over 60 countries and regions from Asia to Europe via Southeast Asia, South Asia, Central Asia, West Africa and the Middle East, and offering a modern-day solution to the successful ancient trade routes, the BRI aims to foster inclusive growth and development in the 21st century [80]. For Hong Kong, this means even greater access to, and collaboration with, a much wider market for business, trade, investment and financial integration, talent, and cultural exchange, and policy coordination.

The integration, cooperation, and spatial and economic development of the GBA is bound to have an influence to inspire, fuel and in some cases even mold some of the BRI’s key projects, and associated developments in the region. It will be essential for the progress and success of the GBA to give full scope to the dedicated roles of Qianhai (Shenzhen), Nansha (Guangzhou), Hengqin (Zhuhai), and Pingtan (Fujian) in opening up and cooperation, deepening their cooperation and relationships with Hong Kong, Macao and Taiwan, and to collective work towards building the Guangdong-Hong Kong-Macao Greater Bay Area.

2.3.9 Hong Kong Policy Address 2017

The 2017 Hong Kong Policy Address discussed a number of initiatives and policy directions for Hong Kong to enhance its integration and cooperation with the GBA and Mainland China. In addition to addressing various social and environmental issues the recent Policy Address by the current Chief Executive of Hong Kong SAR Government Mrs. Carrie Lam also highlights opportunities arising out of Hong Kong's regional context. As highlighted in the 2017 Policy Address Hong Kong faces grave challenges due to increased competition from other economies in the region as well as the rise of protectionism within in recent years. Therefore it is good to see the recognition for the need to develop high value added and a diversified economy with policy initiatives to explore development opportunities in the Mainland. These include (i) enhanced cooperation with the Mainland; (ii) actively participate in China's Belt and Road Initiative; and (iii) explore and capitalize on the opportunities in the development of the GBA.

Enhanced Cooperation with the Mainland

Enhanced cooperation with the Mainland is stated, including a more extended network and upgraded functions of the offices in Mainland China to better understand and capitalize on opportunities in the Mainland while strengthening economic and legal infrastructure.

Actively Participate in China's Belt and Road Initiative

China's Belt and Road Initiative is viewed as the new engine for Hong Kong's economic development. The Commerce and Economic Development Bureau (CEDB) is tasked to coordinate the work of the HKSAR on this initiative with the provision of additional resources and manpower. Building on the success of the second Belt and Road Summit recently held in Hong Kong, the HKSAR is keen to become the international commerce and trading platform for the BRI.

Capitalize on the Opportunities of the Greater Bay Area (GBA)

The GBA including the Guangdong-Hong Kong-Macau area has caught a lot of attention and interest since it was first announced in March 2017 by Premier Li Keqiang. The signing of the joint co-operation framework agreement by the governments of Guangdong, Hong Kong, Macau and the NDRC on July 1st 2017 in the presence of the President Xi Jinping is quite significant. The development plan of the city cluster within the GBA will provide the blueprint to guide the future development of the area. The HKSAR Government will work to create favourable conditions to diversify industries specifically promoting innovation and technology development.

The HKSAR Government will also facilitate and encourage more interaction within the GBA for Hong Kong people to explore opportunities to study, work, set up and operate businesses and also live and retire in the GBA. This will not only facilitate the flow of people, goods, capital and information between Hong Kong

and the other cities within GBA but offer more choices for Hong Kong people for a better quality of life.

To capitalize on Hong Kong's strength in education and talent, further nurturing of talent in the city by enhancing training resources and policy initiatives to fully realize Hong Kong's soft power and strength in training capacity is needed. This would provide suitable talent for the high-value added and diversified development of Hong Kong in the long run, as well as contribute to training talents in the GBA region for greater social and economic benefits. Furthermore, increased government to government business, and political cooperation with the Mainland is crucial to effective coordinated growth and development. Hong Kong has upgraded the network and functions of its offices on the Mainland, with now 5 offices that cover 31 provinces, municipalities and autonomous regions. More dialogue between the governments is required, greater bilateral and multilateral ties will be explored with the Mainland and overseas. Doing so will better promote Hong Kong's advantages and attract more Mainland and international enterprises, investment and talent to Hong Kong.

Enhancing government to government connections at both the central and local levels, establishing platforms of direct communication between Hong Kong's business sector and relevant Mainland authorities, and strengthening the promotion of cooperation between Hong Kong and the Mainland would do much in supporting the Hong Kong people and businesses to fully grasp the development and social opportunities that the GBA will bring. Also needed to improve the efficiency and effectiveness of government communication and decision-making will be the greater facilitation of resolutions among cross-boundary civil and commercial disputes through a clear and user-friendly legal regime with the aim to further safeguard the rights of the parties from both Hong Kong and Mainland China. This will be achieved by expanding the scope of arrangements on mutual legal assistance between the two places in civil and commercial matters. Additionally, the 2017 Policy Address stated the need for a renewing of the "Co-operative Arrangement on Legal Matters" with the Shenzhen Municipal People's government to enhance legal collaboration and exchanges between Hong Kong and Shenzhen.

For Hong Kong to progress its economy and society in the right direction with the growth and development of the Greater Bay Area, a bold and innovative new policy direction must be adopted by the government. The government has stated it must enact policies that develop a high-value added and diversified economy, embrace the development of new economic sectors such as innovation, technology and creative industries, and to capitalise on the opportunities arising from the Guangdong-Hong Kong-Macao Bay Area development as this all will generate new incentives and support for the future economic development of Hong Kong.

2.3.9.1 Innovation and Technology

Although rather late in the game, finally in 2015 the Innovation and Technology Bureau was established in Hong Kong to promote the development of innovation

and technology. Hong Kong is now beginning to realize the huge potential of focussing on Innovation and Technology can lead to new industries and create more employment opportunities for the young. However, recognizing there is a lot of catching up to do compared to other cities such as Shenzhen and Singapore, the HKSAR is stepping its efforts to develop innovation and technology in eight major areas.

- Increase resources in Research and Development: R&D resources have been increased to about HK\$ 45 billion a year from 0.73 to 1.5% of Gross Domestic Expenditure. Encourage universities to increase research in innovation and technology and also provide tax incentives for the private sector;
- Pool together technology talent: A “Technology Talent Scheme” with a HK \$500 million is started to recruit more postdoctoral students for scientific research and product development. The Government is also striving to attract overseas scientific research institutes to Hong Kong with MIT setting up an innovation node and Karolinska Institute from Sweden establishing a research centre in Hong Kong. There is a lack of local talent and it will take another 3–5 years to create a talent pool in Hong Kong;
- Provide investment funding: recently the Innovation and Technology Commission rolled out a HK\$2 billion Innovation and Technology Venture Fund Scheme to co-invest with matching funds from venture capital funds to promote local technology startups;
- Provide technological research infrastructure: The joint development of the “Hong Kong-Shenzhen Innovation and Technology Park” at the Lok Ma Chau Loop to connect the upstream, midstream and downstream sectors of innovation and technology industries is aimed at developing an international innovation and technology hub in the GBA;
- Review existing legislation and regulations: Promote development of innovation and technology by removing outdated provisions in existing legislation and regulations to foster and nurture new industries creating embracing disruption through shared economies;
- Government to lead changes to procurement arrangements: Explore the inclusion of innovation and technology as a tender requirement and encourage local technological innovation and the ITB to promote the use of technology by government departments to enhance the quality of their services;
- Popularize science education: The Education Development Bureau (EDB) has updated the curricula of the Science, Technology and Mathematics Education Key Learning Areas to enhance students’ knowledge, abilities and skills nurturing their creativity, collaborative problem-solving capabilities.

2.3.9.2 Smart City Initiatives

The HKSAR views Smart City development as a way to improve people’s daily lives and make Hong Kong a more liveable city. With the consultation on the Smart

City Blueprint just completed and Government is targeting to release the Smart City Blueprint soon. An interdepartmental Steering Committee on Innovation and Technology will guide and oversee the implementation of innovation, technology and smart city initiatives.

The Hong Kong Government can be inefficient due to its many separate departments that oversee varying areas and functions of the city, this causes projects and simple decision making to drag on longer than necessary, or for departments to avoid action and responsibility if they feel it does not fall directly under their jurisdiction. Therefore, when developing the plan for Energizing East Kowloon, it was needed to break the silo view of individual departments in order to develop a effective and cohesive overall vision for the district. Kowloon East was selected as a smart city pilot area and since 2014 efforts have been made to improve Kowloon East.

In the case of Kowloon East, the vision and the master plan for Kowloon East was developed, and by starting with small changes that have localised positive impacts, quick wins were achieved. Then gradually worked up to larger changes with a broader impact, and the accumulation of small improvements leading to a big impact and influence on the area to improve the quality of life for residents and workers in the district. It seems that the Hong Kong government as a whole is too big to effectively handle and implement small beneficial changes at a local level, and decentralisation of decision-making at a local level as in EKEO would be more effective in getting things done. It is suggested to establish district level visions and responsibilities with executives at a higher level that make decisions at a geographical level, to break the barriers of traditional government process and thinking, and to do the right things, at the right place and at the right time.

In addition, the HKSAR is also investing HK\$ 700 million in smart city development for the following key infrastructure projects.

- Provide an eID for all Hong Kong residents to facilitate the use of single digital identity and authentication to conduct government and commercial transactions online and provide key digital infrastructure for smart city development;
- Launch a pilot Multi-Functional Smart Lampposts scheme to provide real time data at selected urban locations to enhance city and traffic management and complement 5G mobile communications services for the future infrastructure development in Hong Kong;
- Reform the development technology of e-government systems and build a big data analytics platform to enhance operational efficiency and cyber security;
- Extend universal broadband coverage to cover the territory including the villages and remote areas of Hong Kong as well;
- Smart mobility initiatives and ITS including apps and smart parking meters to reduce traffic congestion. Provide an all-in-one platform to access information and real time traffic information for the public to better plan their trips and usage of public transit.

2.3.10 Hong Kong's Future Role in the Region

It is predicted that the demand from finance, business services and innovation and technology industries will push the GBA economy to reach USD 3.6 trillion by 2030 [81]. Demand for residential, office, and retail spaces across the GBA will rise as a result, but most significantly in Tier 2 cities in less developed areas of the GBA such as Futian, Zhuhai, Zhongshan, Dongguan and Huizhou, due to an influx of population and investment from more populated and expensive areas such as Shenzhen, Hong Kong and Guangzhou as a result of reduced travel times connecting all areas of the GBA, improving accessibility and mobility to areas that were previously less desirable. Moreover, the rise of e-commerce industries in the GBA will generate greater cross-border e-commerce services and transportation for Hong Kong, and cause shopping malls to reposition and rethink their strategies to stay competitive in the face of changing consumer behavior. Significant growth and change is imminent for Hong Kong and the GBA, and as such the successful implementation of the Belt and Road Initiative and further integration of the GBA will bring Hong Kong the opportunity and potential to continue to remain a top global city.

Based on the findings and discussions addressed in the preceding chapters of this section of the book, it is made clear that given the imminent growth and expansion of the GBA, the Central Government and regional governments in the GBA have a high-level spatial development plan in mind, as well as various cooperation agreements and initiatives to support and encourage the successful, smart and sustainable economic and social growth and expansion of the GBA region. The next and final chapter will present recommendations for the possible way forward for Hong Kong and its role within the GBA Regional Development.

2.4 Towards a Smart City Smart Region

2.4.1 Introduction

This chapter begins with a response to the existing development and future plans of the HK2030+ and further explores ideas for opportunities where Hong Kong, including the Government, businesses and citizens can improve their approach and mind-set towards smarter and more integrated growth and development within the Greater Bay Area (GBA). Views and opinions from the community, professional institutions, public and private sectors were obtained during a workshop that was organised to get multiple perspectives on developing a Smart City Smart Region. Key recommendations for Hong Kong's future development to reposition itself and integrate well within its regional context to make Hong Kong a more liveable, smart, sustainable city and improve the quality of life of Hong Kong people while capitalizing on the opportunities the GBA and BRI have to offer.

2.4.2 *HK2030+ Within the Scope of Regional Plans*

During the public consultation process for the “HK2030+ Towards a Planning Vision and Strategy Transcending 2030” (Hong Kong 2030+) Study and Public Engagement effort, the public were invited to comment and submit response papers to the study and plan. After reviewing the, we found the Study is shown to be a comprehensive study and guide for the public to gain awareness of the proposed planning, land and infrastructure development of Hong Kong towards and beyond 2030. After our review of the sections in Hong Kong 2030+ Public Engagement Digest, we at the Institute for Sustainable Urbanisation (ISU) and UDP International, as an Urban Design and Planning consultancy, have highlighted a few areas where we believe closer consideration should be taken to incorporate the inevitable integration with the region into the discussions on future visioning and planning for Hong Kong’s repositioning within its regional context and to regain its competitive advantage within GBA.

As mentioned in Hong Kong 2030+, smart regional integration with Hong Kong’s neighboring cities in the GBA (i.e. Shenzhen, Guangzhou, Zhuhai and Macau) will be increasingly important to the future positioning and competitiveness of Hong Kong as a global city, a leading financial centre and business hub, an attractive tourist destination, and a city with world-class infrastructure. It is critical to ensure that the future Development of Hong Kong will be Smart and Sustainable set within the regional context of the GBA and must encompass the Smart City Concept and characteristics of Smart Cities that will facilitate the effective and innovative integration and development of the major cities in the GBA. We have approached our response with regards to the Smart City Framework (Fig. 2.6), that was developed by ISU/UDP as part of a Smart Economy and Smart City publication where a preliminary assessment of Hong Kong as a Smart City was made while highlighting the recent smart city initiatives in Kowloon East. Our Smart City Framework emphasizes the core foundations of Smart Thinking, Design and Planning, with a key focus on Smart People, Place and Planet. It encompasses the six Smart City elements of Smart Economy, Smart Mobility, Smart Environment, Smart Living, Smart Infrastructure, and Smart Governance, in which technology is embedded to enable all aspects which makes a smart city, rather than the simply technology being a driver of smart cities as it is perceived to be.

Hong Kong 2030+ should include strategies for repositioning Hong Kong within the GBA, but also see how there could be more cooperation and better integration between Hong Kong and its regional context. This will mean not only building more physical infrastructure linkages such as the X-Rail and the Hong Kong Macau Zhuhai Bridge but there needs to be more interaction and understanding between the people from Hong Kong and the Mainland. As there are more people visiting Hong Kong from the Mainland compared to the number of Hong Kong people visiting the Mainland, perhaps more visits to the GBA could be encouraged. Also, there is an increasing number of students studying in Hong Kong universities such as the Chinese University of Hong Kong and the University of Hong Kong,

opportunities to encourage more interaction, dialogue and communication between students from Hong Kong with students from the Mainland to foster better understanding and appreciation of both cultures bridging the gap between the people of Hong Kong and the people within the GBA.

Within the context of the above Smart City framework, the following points below are suggested be taken into consideration.

2.4.2.1 Smart Planning

Conceptual Spatial Strategy

With regards to the conceptual spatial strategy proposed, the Three Primary Axis comprising the Western Economic Corridor, Eastern Knowledge and Technology Corridor, and Northern Economic Belt is perhaps due to the existing land uses and infrastructures in place along these corridors. However it is noted that the proposed development of Qianhai Bay in Shenzhen as an innovative Modern Service Industry Cooperation Zone would be of great advantage for the knowledge and technology industries in Hong Kong, especially those located along the Eastern Knowledge and Technology Corridor. As such, connections between East of Hong Kong and Shenzhen West should be further enhanced through the development of a potential East-West Corridor to facilitate these direct flows of knowledge, people and information, and to take advantage of the Shenzhen Bay Border Control Point. Our view is that Hong Kong must ensure it can cooperate with the emerging innovation and technology industry in Shenzhen West, and seamless transport connections between Hong Kong's knowledge and technology industries and those emerging in Shenzhen West will be crucial to the competitiveness and growth of these enterprises and industries in Hong Kong. Alternatively, Hong Kong 2030+ could consider the potential for developing the Western Economic Corridor also as a 'Knowledge and Innovation Corridor' to capitalize on its proximity to Shenzhen West, in addition to it being an 'Economic Corridor'. Flexibility in this sense, with regards to planning, employment and industry, will be important to Hong Kong's ability to adapt and respond to rapid economic change and development in the region.

2.4.2.2 Smart Economy

Lok Ma Chau Loop Development

As integration with Shenzhen and the GBA increases over time, the economies, industries and human capital will inevitably also become integrated. This will allow start-ups, businesses and professionals to capitalize on the industry specializations and knowledge on both sides of the border. One key area where this premise can be tested is the Lok Ma Chau Loop development, which is proposed to be developed

as an innovation and technology park. The Lok Ma Chau Loop has the opportunity to encompass characteristics of a Smart Economy—one that offers diverse employment opportunities, promotion of entrepreneurship and innovation, and encouraging productivity through local, regional and global interconnectedness—and its planning, policies and development should reflect these features.

We feel that within Hong Kong 2030+, more attention and consideration should be paid to the unique situation of the Lok Ma Chau Loop, with administrative power belonging to Hong Kong and land ownership belonging to Shenzhen, and how its positioning can be utilized to create a highly collaborative, mutually advantageous, green and sustainable community that fosters innovation and entrepreneurship in the hi-tech industries and technology sector. Our view is that there could be more discussion on the potential of the Lok Ma Chau Loop, the opportunities it presents for the knowledge and technology sector in Hong Kong, and how its proximity to Shenzhen will foster further integration while benefiting the industry as well as the people of Hong Kong.

Addressing Human Capital Needs

Furthermore, in preparing for our future economy and industry growth in finance and professional services, innovation and technology, and creative industries, Hong Kong must plan accordingly to willingly take a regional approach to the development of human capital. The Hong Kong 2030+ is now more important than ever before in addressing the needs for regional cooperation in entrepreneurial and technical education and training. It is clear that Hong Kong 2030+, under the section on “Sufficient and Suitable Human Capital” and “Innovation, Technology and Collaboration”, understands the importance of establishing “world-class facilities to build up a pool of talent and to attract overseas investors to Hong Kong”, “adequate supporting infrastructure, such as specialized incubation workspaces and suitable accommodation [...] to nurture and retain talents”, and “to adopt appropriate planning measures to promote and facilitate a tech-ecosystem, entrepreneurship and business start-ups and collaboration”. Yet again, there should be more emphasis placed on how Hong Kong can utilize the proximity to the knowledge and talent in the GBA region to facilitate these goals and visions for Hong Kong. Both programs and facilities, including universities, can facilitate an environment where education, knowledge and training flows more freely across the border, allowing students and professionals, start-ups and established businesses, to mutually benefit from the opportunities both Hong Kong and the GBA have to offer.

2.4.2.3 Smart Living

Housing Affordability

In stating ballpark estimates of long-term land requirements, Hong Kong is actively promoting the need for greater land provisions to increase the housing supply for both public and private housing in response to the rising concerns

regarding housing prices and affordability. While it is accepted that Hong Kong must plan for its future land provision towards land for more affordable housing development, it has been noted in recent years that housing prices aren't necessarily responsive to increases in supply or attempted suppressions of demand as normal market forces would expect. In this sense, the Hong Kong 2030+ should address the issue and importance of tackling the housing affordability issue through means other than simply providing more housing supply. One area that has been discussed as an alternative or additional approach is to tackle the housing affordability issue from a financial perspective, to make it easier for Hong Kong citizens to obtain sufficient funds for down-payments, mortgages etc. through reforms to the financial mechanisms that govern funding for property purchases, or even revisions to the existing mechanisms that govern the purchasing of land and development of new residential developments for private developers, such as land premiums etc. and the time it takes for development. Moreover, taking a regional approach to housing provisions and affordability in the future, combined with integrated and seamless transportation connections such as the Express Rail Link. Considering the availability of living options closer to Hong Kong along the border or within the GBA could be a viable solution to Hong Kong's housing affordability issue, and one that should be considered when planning and visioning beyond the year 2030 as the Hong Kong 2030+ is indicating. Providing choice and options alternative living accommodation within these areas are vital to the future development of Hong Kong and thus should be included in the Hong Kong 2030+ strategy to ensure these issues are addressed and considered in all future plans and visioning.

Besides the issue of housing affordability, the other key area that should be addressed is housing type and income mix in terms of both size of units and integration of public and private housing. In recent years, new housing from both the public and private sector has been focused on providing smaller and smaller units in response to rising housing prices. The view is that providing smaller units enables developers to offer lower prices and also a greater number of units to allow a greater number of the population to get on the housing ladder. The problem arises here where the choices of types of housing, regarding size, number of bedrooms etc. for Hong Kong citizens are diminishing as the focus is on housing supply and not quality. While a Key Action of Hong Kong 2030+ "An Inclusive and Supportive City" is "to encourage a variety of housing choices to be provided by the public and private sectors to enrich options available", but as an action, simply "encouraging" housing choice is not enough to ensure that this key action will be implemented in the near future. The Hong Kong 2030+ should state that it will "provide" or "ensure" a variety of housing choices, with decent accommodation and space standards rather than simply encourage, as this will ensure this is an accountable action and not one that can be forced on developers.

Provisions for Elderly Housing

It is well known that Hong Kong has an ageing population dilemma, as the proportion of elderly people is on the rise. While Hong Kong 2030+ promotes an

inclusive and supportive society, and addresses the elderly population by promoting “concepts of universal design, age-friendliness, active ageing and “ageing in place” in the planning and design of the built environment”, there needs to be greater considerations to the provision of quality living quarters for elderly people who may not be able to afford living in private housing or be eligible for public housing at a certain time. In this regard, opportunities across the border, outside of Hong Kong for elderly housing could be also considered to alleviate some of Hong Kong’s ageing population issues as integration with the GBA progresses over time.

2.4.2.4 Smart Environment

Pollution Controls

As pollution levels, both air and water pollution, continue to be raised as issues in Hong Kong, these are areas that should be addressed in the Hong Kong 2030+ strategy as discussions for the future of Hong Kong. While the Hong Kong 2030+ promulgates sustainability through “Creating, Enhancing and Regenerating Environmental Capacity”, by “planning for a low carbon city and better urban wind environment”, and to “reduce air pollutants through environmentally friendly transport and green infrastructure”, improvements to Hong Kong’s environment regarding air and water pollution cannot come from Hong Kong alone. Cooperation and collaboration with the Mainland, specifically with cities in the GBA will be essential to ensuring mitigation and improvements to Hong Kong’s air and water quality. The Hong Kong 2030+ should set out strategies and measurable actions in which cooperation can result in mechanisms such as integrated environmental pollution monitoring systems, common regional environmental goals and targets supported by regulations and standards, and a multi-disciplinary committee of sorts to guide, monitor, manage and ensure that environmental issues are being discussed and advanced on both sides of the border.

2.4.2.5 Smart Mobility

Integrated Transportation Data and ICT Systems

Although Hong Kong has adequate transport links to the border in terms of road, rail and ferry connections, and has smart transportation systems in place such as the Transport Department’s ICT and mobile applications that provide real time traffic and routing applications. In the future, there will be a need to discuss ways to enhance the mobility and ease for people travelling across the border, more specifically with regards to cross-border transportation ICT data services such as real-time traffic, arrival and public transportation information, route-choice services etc. While these services exist to a certain extent in Hong Kong and the GBA, the

data systems, applications and public access to information are segregated between the two cities. Moving forward, Hong Kong 2030+ will need to consider the development and implementation of an integrated transportation data-sharing platform and system will be mutually beneficial to regional integration of Hong Kong and the GBA. This will allow seamless visualization and awareness of traffic information and routing choices for those travelling cross-border for commuting, leisure or transportation logistics purposes.

Seamless Border Crossing Facilities

To enhance the mobility of those crossing the border on a regular basis, which will inevitably increase up to and beyond 2030, Hong Kong 2030+ should consider how cross-border controls could be simplified with cross-regional data sharing and expedited with biotechnology, such as facial or iris recognition systems, especially for the skilled labor frequently crossing Hong Kong and Shenzhen, who may facilitate the high-tech development in Hong Kong. Also, there could be series of border towns built with visa free access at border crossing points.

2.4.2.6 Smart Infrastructure

Providing Supporting Infrastructure Capacity—Water Supply

The Hong Kong 2030+ has sufficiently addressed the existing and future transportation infrastructure connections both within Hong Kong and between Shenzhen. However, given Hong Kong's increasing population up to and beyond 2030, although this in itself is questionable, more consideration could be given to the supporting infrastructure that is essential to the functioning of the city. One key area of concern is with Hong Kong's water supply, and our city's current reliance on importing water from China, specifically from the DongJiang River. Overtime the cost of importing water from China has increased, in addition to the growing water demands of the GBA due to its own rapid economic development. To foster Hong Kong's Smart Infrastructure capabilities—one that enables smart resource management for water, energy and waste through smart grids, sensors, sustainable monitoring and usage, as well as resiliency and disaster management systems and procedures—it is vital for Hong Kong to continually ensure the certainty of its own water supply in the future through progressive efforts to develop desalination plants within its territory. It is positive to see progress with the Tseung Kwan O Desalination Plant, in its First Stage of consultancy, yet we believe more consideration should be given in the Hong Kong 2030+ to alternative and innovative water supply measures such as desalination plants to guarantee these are important areas to be discussed and developed in the future of Hong Kong.

Utilities—Monitoring and Management

In addition, the Hong Kong 2030+ states that Hong Kong should “pursue an integrated smart, green and resilient infrastructure system” including things such as “district cooling systems, electric vehicle charging infrastructure, waste-to-energy conversion, effluent reuse and while life-cycle carbon assessment”. These efforts for innovative and sustainable approach to developing Hong Kong’s infrastructure systems are commendable, however the importance of ensuring that Smart Infrastructure is planned, designed and implemented appropriately and effectively needs to be stressed so as to gain the holistic benefits of an integrated smart green and resilient infrastructure system. This means ensuring that high-tech monitoring and measurement systems are in place to accurately assess the usage of utilities (i.e. water, waste, electricity etc.) in real-time and to address any issues or malfunctions in the most efficient and effective manner.

Enhanced ICT Infrastructure and Services

Building on the Hong Kong 2030+ provisions for “Adequate and Timely Provision of Supporting Infrastructure” in which a key action is to “better utilize ICT and free Wi-Fi services including those for helping businesses and tourists”, and a “Smart, Green and Resilient City Strategy” that promotes a “common spatial data infrastructure and a robust network of ICT infrastructure”. In addition to enhancing our infrastructure capabilities locally, the Hong Kong 2030+ should also significantly consider and address how the ICT, Big Data and data sharing platforms can be integrated and combined to utilize the systems and data of the cities in the GBA. Having a combined common data sharing platform and ICT infrastructure that expands its reach outside of Hong Kong would bring mutual benefits to both parties with regards to knowledge sharing, technological innovation and complementary economic, social and cultural benefits. Further details on how these ICT and data platforms can be implemented through industry and government cooperation must be discussed to ensure a holistic and common approach to the development of these infrastructure networks.

2.4.2.7 Concluding Remarks

As 2047 is fast approaching, it is good that Hong Kong is undertaking the Hong Kong 2030+ Study as a strategic plan to “guide Hong Kong’s planning, land and infrastructure development, as well as shaping of built and natural environment, beyond 2030”. However, there should be a further emphasis on regional integration and to use this as an opportunity to reposition Hong Kong within the GBA. There should be greater consideration and discussion of how Hong Kong and the GBA can collaborate and work together and integrate its economies, services, knowledge and information flows, quality of life and environmental aspects, in order Hong Kong to capitalize on and benefit from the regional proximity to the talent and resources that the GBA has to offer. Moreover, it is a crucial opportunity to address

differences and gaps in things such as environmental regulations, data and information sharing, education and healthcare provisions etc., for the residents of both Hong Kong and cities in the GBA.

Regional integration issues that Hong Kong should prepare for now should be considered relevant to the Hong Kong 2030+, as these are issues that will affect Hong Kong's future development, planning and shaping of both its built and natural environment. Planning for Hong Kong's future without due consideration, cooperation and collaboration with the GBA, on not only the areas addressed above but on all areas of the Hong Kong 2030+, could result in a situation where Hong Kong is inadequately prepared or misguided on important planning and development issues. Although more visitors from Mainland China brings some strain to the existing infrastructure and resources of Hong Kong, but businesses are benefiting as a result. Creating more awareness among the local people that regional integration should be looked as an opportunity to reposition Hong Kong within GBA rather than viewed as a threat for Hong Kong and its people is needed. Our response to Hong Kong 2030+ is taken into account to assist in further refining the Hong Kong 2030+, for it to become a critical guide for the development and repositioning of Hong Kong not only within the global economy, but more importantly within the regional context of the GBA for the benefit to the citizens of Hong Kong.

2.4.3 Smart City Smart Region Workshop

2.4.3.1 Overview

The Smart City Smart Region Workshop was successfully held on October 25th 2017 by the Institute of Sustainable Urbanisation (ISU) in collaboration with the Research Institute for Sustainable Urban Development (RISUD) and UDP International. The aim was to promote and encourage the discussion of smarter regional integration of Hong Kong with Guangdong province within the GBA, and obtain a new perspective of views and opinions for the future direction of Hong Kong as a smarter more sustainable and liveable city.

Panel speakers included: Amy Cheung of the Hong Kong Planning Department, who spoke on the long term plan HK2030+ Towards a Planning Vision and Strategy Transcending 2030; Daniel Shih of Colliers International, who spoke on the GBA in a new development context by sharing new property investment opportunities from the surge of the Greater Bay Area; Donald Choi of Nan Fung Development, who spoke on the Urbanisation and Smart TOD approach of the GBA from a developers perspective; Professor Edwin Chan of RISUD and the Hong Kong Polytechnic University, who spoke on Green and Smart City regarding compact land use and smart living, and; Sujata Govada of ISU and UDP International, who spoke on Smart City Smart Region opportunities for Hong Kong, and how greater integration could take place.

Presentations were given by panel speakers on their unique perspective of Hong Kong's role in the Greater Bay Area (GBA), also known as the Pearl River Delta Region, and how the development of the GBA can be achieved in a smarter, more sustainable way. This was followed by breakout sessions of three groups focused on (1) Smart Living and Smart Environment, (2) Smart Mobility and Smart Infrastructure, and (3) Smart Economy and Smart Governance. The groups were then brought together for a group presentation and discussion session whereby a representative of each group shared the main points of their discussion with the rest of the workshop participants, and then the floor was opened up for an overall discussion on the ideas and topics raised.

2.4.3.2 Group Discussions

The breakout sessions and resulting group discussions provided a platform for workshop participants to share their views and experience regarding how Hong Kong can become a smarter city and improve integration at economic, social, environmental, quality of life, political and infrastructure levels with the GBA region, in order to enhance and maintain its regional competitiveness and attractiveness to local, Mainland Chinese and other people and businesses.

Group 1—Smart Living Smart Environment

Overall, two major issues were identified: (1) the perception and attitude of the people does not lead to a progressive smart city that can effectively integrate with the GBA region, and (2) a better bottom-up perspective for future opportunities is needed for Hong Kong to become a Smart City in a Smart Region. Hong Kong needs to be a more liveable and affordable city to then will be able to focus on regional integration and opportunities within the GBA.

To achieve a smarter living within a city or a region, data analysis is typically used to make decisions, whether they be good or bad. The amount of Big Data available with the advent and wide use of smart sensors and smartphones on a daily basis allows both public and private decision makers to harness the information and capitalise on it to better understand and justify decisions they make. However, as a city it is also crucial that we make smarter use of resources available. Cities must play on their own strengths, and not solely focus on what other cities are doing and try to replicate it. A better allocation of its resources among the local society should have effective benefits for people and businesses, and achieve a more comfortable and liveable lifestyle for local citizens given the city's strengths and constraints. Another area that can improve the living environment for citizens in a smarter way is for the definition of 'smart' to be defined in a better and more concise way. Smart City and Smart Living has generally implied that implementing technology solutions into the city automatically makes a city and its people 'smart', whereas it is felt that as a society we need to go beyond thinking about just the technology to develop smart cities, and that more thought should also be put towards focusing on

people, place and planet that will both enable and facilitate smarter, sustainable and more liveable cities. Part of this could be achieved through education, by raising awareness of smarter, more sustainable city development through schooling and peer to peer educators. By teaching the younger generations at an early age, they would carry on these forward and innovative ways of thinking into their adult lives and also share their thoughts and ideas with their peers and elders to convey their needs to a higher level.

Essential to this approach is for governments and key decision makers in the public and private sector not to underestimate the power of ‘regular’ people in their views of what is needed and best for the future of their communities and cities. The power of normal citizens can lead to effective bottom-up approaches in search of smart city opportunities. Hong Kong, including cities within GBA and many other cities around the world are bound to bureaucratic procedures that can hamper the progress and development of new and innovative solutions and ideas that may have positive effects and benefits for people and society. A transparent and flexible process should be adopted by the government to allow for certain things to get done faster or more efficiently with available resources, while maintaining standards and regulations. Further, certain policies and regulations enacted in previous generations should be reviewed and revised, as many older regulations can be limiting in the current state of the market and economy. Also with bottom-up approaches, criticism of government procedure and decision making is inevitable, and being able to better absorb public criticism and turn it into positives and change should be the hallmark of an effective and ‘smart’ government and leadership, and would lead to addressing the precise needs and desires of smarter living and environment for all. In this regard, one of the most important aspects of cities that are able to adopt innovation and develop smartly are those with bold leadership who do not shy away from a different way of doing things. They take risks for the greater good of society, and take criticism as positive feedback when given.

Group 2—Smart Mobility Smart Infrastructure

Overall, for Hong Kong and its citizens to truly embrace itself as a smart city with a closer connection to the GBA, a change in mindset and mentality is needed for people to feel more open to embrace an integrated GBA that includes Hong Kong. One way to do this is address some of the needs of Hong Kong people with affordable housing with more open and inclusive public spaces for the public to integrate as well as enjoy the natural beauty of Hong Kong. Another suggestion to integration between the people in the GBA, including Hong Kong, is to organising sporting competitions between cities in the GBA. Although it may create a competitive atmosphere, it will also encourage the feeling of inclusion and integration between the various cities, and more specifically enable Hong Kong people to feel more a part of the GBA region. Engaging more young people as stakeholders is also critical, as they are the next generation and their forward thinking and innovative ideas will help contribute to the smart city development of Hong Kong and the GBA region as a whole.

To encourage greater smart mobility within Hong Kong and between the GBA, greater incentives should be provided by the government, and ideas to think outside of the box are also needed. For example, in addition to focusing on rail transport as the backbone of the transportation system, greater emphasis on the last mile journey should be considered. These could include park and ride facilities for those living on the outskirts of urban areas who do not have convenient access to public transportation. By enabling people to drive from home, and park their cars at public transport interchanges, it may reduce the desire for some to use their cars for the whole journey into downtown urban areas, and instead use public transportation to save time in traffic congestion and money on parking costs.

Regarding smart infrastructure in Hong Kong, in order to allow Hong Kong to truly benefit from technologies such as Open Data and Internet of Things (IoT), the Smart City platform needs to somehow be open to the public and to encourage more people to contribute their data and information for the greater good of society. However, this is where a change of mentality is needed. A greater level of trust needs to be built between the people and government of Hong Kong, one that shows that the government will do more for the people. One of the reasons cities in China develop so fast with regards to technological innovation and development is that mode of governance is different and there seems to be a greater level of trust from the people, and less of a worry about privacy of data. It is accepted to a greater extent that the government has access to data and will use it in ways they see fit, in particular to improving the lives of the citizens. In Hong Kong, more education is needed to enable people to understand more about what Open Data in the public and private sector can do for them and the advantages that Big Data and Analytics can bring. At the moment there is much opposition to the idea of handing over our data to the government, and as a result the government and people need to do more, in terms of sharing experiences and 'smart' ideas, and for citizens to give productive solutions to government and not simply criticise the actions that government takes.

Group 3—Smart Economy Smart Governance

To enhance itself as a smart city within the context of the GBA, Hong Kong should look to diversify its economy and industries beyond its traditional competitive advantages in financial and professional services, trade and logistics, and real estate. It cannot be argued that within the GBA, Hong Kong still plays a clear and essential role as the gateway to the rest of the world, in financial services, rule of law, intellectual property registering etc. However, a greater role needs to be played in promoting and supporting upcoming industries in technology and innovation so as to not fall behind cities in the GBA such as Shenzhen and Qianhai. Hong Kong has the talent and resources to facilitate development of innovative products and services, yet more support and recognition is needed for Hong Kong to capitalise on this strength to take the risks to venture into new innovative industries. Moreover, rather than competing with cities in the GBA on technology and innovation, Hong Kong should focus on the complementary qualities that can

play up Hong Kong's strengths vis a vis other parts of the GBA, as well as build on its advantage as a gateway city, in particular to the rest of South East Asia and not only China.

In regards to Governance, Hong Kong and the GBA could improve on two main elements to further itself as a smart city and smart region: effective decision-making and input from stakeholders, in particular, citizens. The GBA clearly has the potential to become an economic powerhouse in the region and Asia, but a clearer delineation of who is in charge of strategic decision in the GBA is needed. While different municipalities and city regions in the GBA have their own spatial-functional plans, but to what extent the plans are overlapping or have been developed in coordination with each other and tie into one another is an important consideration. If there is an overarching commission looking over the overall development of the GBA, the amount of effective power and decision-making abilities it has will be a factor in the successful smart development of the GBA, as it will be necessary to carefully consider the complementary strengths and weaknesses of the different cities and nuclei in the polycentric GBA region. Within Hong Kong, there are numerous government departments that handle different functions and decision-making. Yet a layer of effective decision making is missing between the Chief Executive as Head of State, and these various departments. As in any large organisation, departments will dispute and disagree as a result of human nature; so therefore, the solution is not to try to avoid inter-departmental fighting, but to make sure they are adequately steered and controlled by a clear and effective leader above all departments who will minimise any inefficient bureaucracy. Hong Kong could benefit from a Mayor who could deal with city matters more effectively and support the Chief Executive who focuses on the next level towards regional integration and the Mainland.

Hong Kong does relatively well in terms of bottom-up input in decision-making, although not perfect. How this approach could be transferred or extended to the GBA region is another consideration to make. 'Smart' is not only use of technology but being clever and also having the ability to learn from oneself and progress in a productive and effective manner.

2.4.3.3 Summary of the Workshop Outcomes

In general, there is a consensus that much of the potential and opportunities for greater smart city integration with the GBA region will come from an approach that capitalises on Hong Kong's inherent strengths and unique resources, such as its strategic international positioning, established economy, industries and talent pool to further its dominant role as a hub in the region. Given its strengths, Hong Kong must not become complacent and to continue to strive to diversify its economy by embracing and supporting the creative, innovation and technology industries given its abundant resources in academia, talent, and research and development. At a social level, it is believed that a mind-set change is needed for the younger generations to accept and embrace the opportunities integration and cooperation with

the GBA and the Mainland will bring. More exposure and better education including knowledge sharing among peers is seen as the best way to achieve this. Most importantly a common vision and strong leadership for effective guidance and direction of Hong Kong's key decision-makers and the community. At a political level, a bolder and less risk-averse Government is considered necessary to effectively make the transition to a truly smart, sustainable and more liveable city that will efficiently be able to integrate with the GBA region. Moreover, greater communication and understanding of what the younger generation need and want for the future of Hong Kong is critical in uniting its society for enhanced local and regional integration.

2.4.4 Recommendations for Hong Kong's Future Development Within the Context of GBA

In addition to the territorial development plans of HK2030+ and Hong Kong's stated initiatives to promote innovation, technology and smart city initiatives outlined in the 2017 Policy Address, further the recommendations to consider for Hong Kong's future development within the context of GBA are presented here to suggest how Hong Kong can better integrate not only spatially and economically, but also socially at a human level to improve quality of life for people of Hong Kong, and visitors as well.

- i. The HK2030+ is the development strategy for Hong Kong going forward, and mainly addresses the issues of Hong Kong and focuses on improving the quality of life of the people of Hong Kong. However, in addition the future development of Hong Kong should be considered within the context of the Greater Bay Area offering a huge potential for Hong Kong and its people;
- ii. Consider the greater harbor area as the CBD of Hong Kong with several nodes such as Central, Island East, Island West, Kowloon, Kowloon East, Kowloon West etc. Set up in 2012, the Energising Kowloon East Office (EKEO) was instrumental in not only developing the Kowloon East master plan but also engaged the various stakeholders throughout the process and successfully implementing improvements in street junctions, and the harbourfront as some of the preliminary place making solutions. Similar to the EKEO, there could be the Energising Kowloon Office (EKO) and the Energising Kowloon West Office (EKWO) on the Kowloon side. On the Hong Kong Island side there could be Energising Central Office (ECO), Energising Island East Office (EIEO) and Energising Island West Office (EIWO); These initiatives together could help develop Hong Kong into a livable, smart and sustainable city within the regional context of the GBA;
- iii. Open space, public space enhancements with weekend retreats in country parks to create a means of leisure and recreation for the people of Hong Kong. Areas within Lantau can be further developed sensitively for leisure

- and recreation. The East Lantau Metropolis currently proposed as CBD3 can be developed as a leisure, recreation and resort island sometime in the future;
- iv. Continue the development of more public housing for rental as well as ownership by the Housing Authority and Hong Kong Housing Society (HKHS) but also ensure that more affordable housing developed by Urban Renewal Authority (URA), MTR, and the private sector as well. Encourage better quality housing with higher space standards with mixed income developments catering to the needs of the younger and elderly population promoting ageing in place;
 - v. Ensure that there is more exchange between Hong Kong universities and those in the Mainland with more exchange visits for faculty and students to encourage more teaching, research and learning opportunities between the people from either side. Ensure more exposure for Hong Kong students, graduates and faculty to experience living and working in the Mainland;
 - vi. Develop more internship and work opportunities for students and graduates between Hong Kong and the Mainland, so that Hong Kong students and graduates also get to experience life in China similar to the numerous students from the Mainland that go to universities in Hong Kong;
 - vii. Develop a platform by professional and other institutes to create more opportunities for exchange of ideas and experiences between the people of Hong Kong and Mainland China so there is better understanding and tolerance between people from either side;
 - viii. Create Visa free development zones where possible around border crossings such as Lo Wu, Lok Ma Chau, Lian Tang where a lot of activities, business transactions, social interactions can happen;
 - ix. Continue to promote and encourage innovation through education and creative industries, providing support for startups, incubation with proper infrastructure and technology and data sharing, and;
 - x. Explore and encourage disruption on different scales in various sectors, housing, retail, office, commercial real estate, transport, education, healthcare etc.

In summary, the spatial and economic strategies of the GBA aim to enable the complementary strengths of the different areas and cities within the GBA to thrive and achieve further growth and urban development, and is facilitated by investments in infrastructure and transportation. Given the existing spatial and economic development plans, policy initiatives and cooperation agreements, enhanced and more seamless social integration could be achieved given consideration of these recommendations. In general, much seems to be done at a physical, economic (hard) level that is visible to the public to further integrate Hong Kong with the GBA, however at a mental, social (soft) level, developments and progress are not as clear and noticeable to the general public. Hence, greater promotion and education of the benefits of increased regional integration is needed to further convince and encourage people and business to look beyond Hong Kong and to embrace the opportunities that the spatial and economic potential of the GBA has to offer.

References

1. Invest Hong Kong HKSAR (2014) The Greater Pearl River Delta, 7th edn. http://www.investhk.gov.hk/zh-hk/files/2014/05/InvestHK_GPRD-Book_Eng_Apr2014.pdf. Accessed 16 Mar 2017
2. Central Compilation & Translation Press (2016) The 13th Five-Year Plan For Economic and Social Development of the People's Republic of China (2016–2020). http://210.6.198.17/cache/en.ndrc.gov.cn/newsrelease/201612/P020161207645765233498.pdf?ich_args=0fcfc6c4af81270b7e3d674322521be9_1_0_0_12_b24c0892fe3aa3bbe6a64005ecb9d4d4f826777b874890c5748e9b207d343df0_db65f733b2e4e5ab3ba4a3dc5370e80_1_0&ich_ip=. Accessed 16 Mar 2017
3. Yeung P (2017) Greater Bay Area initiative a boost to Hong Kong's competitiveness. https://www.chinadailyasia.com/opinion/2017-04/18/content_15601299.html. Accessed 21 Mar 2017
4. HKSAR (2017) Framework agreement on deepening Guangdong-Hong Kong-Macao cooperation in the development of the Bay Area signed. <http://www.info.gov.hk/gia/general/201707/01/P2017070100409.htm>. Accessed 19 Mar 2017
5. Li JT, Wong D (2014) ECA continues its series of attraction market profiles with an overview and insights on the Greater Pearl River Delta (PRD) region in Southern China and theme park attraction development. ECA is currently working on multiple theme park destination developments in China including the PRD region. <https://blooloop.com/features/eca-attraction-market-profile-overview-of-pearl-river-delta-prd-extended-theme-park-hub-cluster/>. Accessed 19 July 2017
6. Daxue Consulting (2016) Pearl River Delta China. <https://i.pinimg.com/originals/bf/f5/6f/bff56f428054e38892e0f12fca7faff9.jpg>
7. HKTDC Research (2016) PRD economic profile. <http://china-trade-research.hktdc.com/business-news/article/Facts-and-Figures/PRD-Economic-Profile/ff/en/1/1X000000/1X06BW84.htm>. Accessed 28 July 2017
8. Census and Statistics Department HKSAR (2017) Hong Kong Annual Digest of Statistics 2016. <http://www.statistics.gov.hk/pub/B10100032016AN16B0100.pdf>. Accessed 28 July 2017
9. Statistics and Census Service Government of Macao Special Administrative Region (2017) Yearbook of statistics. <http://www.dsec.gov.mo/Statistic.aspx?lang=en-US&NodeGuid=d45bf8ce-2b35-45d9-ab3a-ed645e8af4bb>. Accessed 28 July 2017
10. UN-HABITAT (2006) Urbanization: Mega & Meta Cities, New City States? State of the World's Cities 2006/7. http://mirror.unhabitat.org/documents/media_centre/sowcr2006/SOWCR%202.pdf. Accessed 28 July 2017
11. The World Bank (2017) World Bank report provides new data to help ensure urban growth benefits the poor. <http://www.worldbank.org/en/news/press-release/2015/01/26/world-bank-report-provides-new-data-to-help-ensure-urban-growth-benefits-the-poor>. Accessed 28 July 2017
12. World Bank Group (2015) East Asia's changing urban landscape measuring a decade of spatial growth. http://www.worldbank.org/content/dam/Worldbank/Publications/Urban%20Development/EAP_Urban_Expansion_full_report_web.pdf. Accessed 4 Sept 2017
13. Fung Business Intelligence (2007) Fast facts of the Guangdong-Hong Kong-Macao Bay Area. https://www.fbcigroup.com/sites/default/files/IG_12_GDP.pdf. Accessed 4 Sept 2017
14. China Development Bank (2015) China's special economic zones. Available via World Bank. <http://www.worldbank.org/content/dam/Worldbank/Event/Africa/Investing%20in%20Africa%20Forum/2015/investing-in-africa-forum-chinas-special-economic-zone.pdf>. Accessed 4 Sept 2017
15. Du SQ, Shi PJ, Anton VR (2013) The relationship between urban sprawl and farmland displacement in the Pearl River Delta. <http://www.mdpi.com/2073-445X/3/1/34/htm>. Accessed 28 Sept 2017

16. Zhijia L, Heqing H, Saskia EW, Yan D (2016) Construction area expansion in relation to economic-demographic development and land resource in the Pearl River Delta of China. *J Geogr Sci* 26(2):188–20. Accessed 28 Sept 2017
17. Constitutional and Mainland Affairs Bureau HKSAR (2007) Joint declaration of the government of the United Kingdom of Great Britain and Northern Ireland and the government of the People's Republic of China on the question of Hong Kong. <http://www.cmab.gov.hk/en/issues/jd2.htm>. Accessed 2 Oct 2017
18. Development Bureau, Planning Department HKSAR (2016) Hong Kong 2030+ towards a planning vision and strategy transcending 2030 public engagement. http://www.hk2030plus.hk/document/2030+Booklet_Eng.pdf. Accessed 17 Oct 2017
19. Giffinger R, Fertner C, Kramar H, Kalasek R, Pichler-Milanovic N, Meijers E (2007) Smart cities—ranking of European medium-sized cities. Final Report, Vienna. http://www.smart-cities.eu/download/smart_cities_final_report.pdf. Accessed 26 Oct 2017
20. Cohen B (2012) What exactly is a smart city? Fast CoExist. Available via <http://www.fastcoexist.com/1680538/what-exactly-is-a-smart-city>. Accessed 13 Sept 2015
21. Govada S, Spruijt W, Rodgers T (2017) Chapter 7: smart city concept and framework. Smart economy in smart cities: international collaborative research: Ottawa, St. Louis, Stuttgart, Bologna, Cape Town, Nairobi, Dakar, Lagos, New Delhi, Varanasi, Vijayawada, Kozhikode, Hong Kong. In: Vinod Kumar TM (ed) Singapore: Springer Singapore, 2017, pp 189–197. Print. Advances in 21st century human settlements. Accessed 12 Oct 2017
22. Invest HongKong HKSAR (2014) The Greater Pearl River Delta, 7th edn. http://www.investhk.gov.hk/zh-hk/files/2014/05/InvestHK_GPRD-Book_Eng_Apr2014.pdf. Accessed 29 Oct 2017
23. Immigration Department HKSAR (2011) Control branch. http://www.immd.gov.hk/publications/a_report_2011/en/ch2/index.html. Accessed 29 Oct 2017
24. Leung J (2010) Hong Kong Shenzhen planning cooperation. Planning department, HKSARG. <http://slideplayer.com/slide/4424848/>. Accessed 14 June 2017
25. Census and Statistics Department HKSAR (2017) Hong Kong monthly digest of statistics cross-boundary travel survey 2015. <http://www.statistics.gov.hk/pub/B71706FB2017XXXXB0100.pdf>. Accessed 2 Nov 2017
26. Census and Statistics Department HKSAR (2017) Hong Kong monthly digest of statistics cross-boundary travel survey 2015. <http://www.statistics.gov.hk/pub/B71706FB2017XXXXB0100.pdf>. Accessed 7 Nov 2017
27. Hong Kong Airport (1999) Finalized Civil International Air Traffic Statistics at HKIA Year 1999. <http://www.hongkongairport.com/eng/pdf/business/statistics/1999e.pdf>. Accessed 9 Nov 2017
28. Hong Kong Airport (2016) Finalized Civil International Air Traffic Statistics at HKIA Year 2016. <http://www.hongkongairport.com/eng/pdf/business/statistics/2016e.pdf>. Accessed 11 Nov 2017
29. MTR Corporation Limited (2013) Key information Express Rail Link (XRL). <http://www.expressrailink.hk/en/project-details/key-information.html>. Accessed 1 Dec 2017
30. Hong Kong-Zhuhai-Macao Bridge Authority (2009) Introduction to Hong Kong-Zhuhai-Macao bridge. <http://www.hzmb.org/en/bencandy.asp?id=2>. Accessed 3 Dec 2017
31. Hong Kong-Zhuhai-Macao Bridge Authority (2009) Benefits of transportation. http://www.hzmb.hk/eng/benefits_transportation.html. Accessed 3 Dec 2017
32. Bloomberg (2017) China expected to extend electric vehicle tax rebate. Available via SCMP. <http://www.scmp.com/tech/enterprises/article/2122887/china-expected-extend-electric-vehicle-tax-rebate>. Accessed 15 Dec 2017
33. Transport Department (2017) Guidelines for importation and registration of motor vehicles. http://www.td.gov.hk/en/public_services/licences_and_permits/vehicle_first_registration/guidelines_for_importation_and_registration_of_mot/. Accessed 23 May 2017
34. Cheng R (2017) Decision to cut Hong Kong's electric vehicle tax waiver is “backwards” and sends wrong message, critics say. Available via <http://www.scmp.com/news/hong-kong/>

- economy/article/2074016/decision-cut-hong-kongs-electric-vehicle-tax-waiver-backwards. Accessed 5 Mar 2017
35. Environmental Protection Department (2017) Promotion of electric vehicles in Hong Kong. http://www.epd.gov.hk/epd/english/environmentinhk/air/prob_solutions/promotion_ev.html. Accessed 15 Dec 2017
 36. Cheung R (2017) Shenzhen set to have world's first all-electric public bus fleet. Available via Post Magazine. <http://www.scmp.com/magazines/post-magazine/long-reads/article/2119175/why-shenzhen-set-have-first-all-electric-public>. Accessed 17 Nov 2017
 37. Trade and Industry Department HKSAR (2017) Mainland and Hong Kong Closer Economic Partnership Arrangement (CEPA). https://www.tid.gov.hk/english/cepa/cepa_overview.html. Accessed 29 June 2017
 38. Trade and Industry Department HKSAR (2017) Mainland and Hong Kong closer economic partnership arrangement—investment agreement. https://www.tid.gov.hk/english/cepa/legaltext/files/cepa14_main.pdf. Accessed 29 June 2017
 39. Trade and Industry Department HKSAR (2017) Mainland and Hong Kong Closer economic partnership arrangement—agreement on economic and technical cooperation. https://www.tid.gov.hk/english/cepa/legaltext/files/cepa15_main.pdf. Accessed 29 June 2017
 40. HKSAR (2007) Agreement on Shenzhen/Hong Kong innovation circle signed. <http://www.info.gov.hk/gia/general/200705/21/P200705210224.htm>. Accessed Aug 2017
 41. Hong Kong Science and Technology Park (2016) The corporation milestones. <https://www.hkstp.org/en/about-hkstp/the-corporation/milestone/>. Accessed 25 June 2017
 42. Hong Kong Science and Technology Park (2016) About HKSTP. <https://www.hkstp.org/en/about-hkstp/the-corporation/about-hkstp/>. Accessed 25 June 2017
 43. HKSAR (2017) Hong Kong and Shenzhen sign memorandum of understanding on jointly developing the Lok Ma Chau Loop. <http://www.info.gov.hk/gia/general/201701/03/P2017010300609.htm>. Accessed 25 June 2017
 44. Siu P, Zhao S, Cheung G (2017) Hong Kong and Shenzhen settle border dispute as they join hands to develop technology park. Available via SCMP. <http://www.scmp.com/news/hong-kong/economy/article/2058878/hong-kong-and-shenzhen-set-partner-innovation-and-technology>. Accessed 27 June 2017
 45. Nansha Information Technology Park (2006) Nansha IT Park partnership. <http://www.nsitp.com/partnership.php>. Accessed 8 July 2017. Accessed 27 June 2017
 46. Nansha Information Technology Park (2006) An Oasis in the PRD. <http://www.nsitp.com/eindex.php>. Accessed 27 June 2017
 47. Shih D, Geng K (2017) Greater Bay Area in new development context—targeting new property investment opportunities from the surge of South China's Greater Bay Area. *Colliers Radar*, Colliers International. Hong Kong. Retrieved from: <http://www.colliers.com/en-gb/hongkong/insights/colliers-radar/greater-bay-area>. Accessed 14 July 2017
 48. Hong Kong and Shenzhen Bi-City Biennale of Urbanism\Architecture (2008) About the Biennale. <http://hkszbiennale.asia/>. Accessed 16 Sept 2017
 49. Council on Foreign Relations (2014) Hong Kong Innovation Project Report No. 5 Hong Kong and the Pearl River Delta: Science and Technology Cooperation. http://demo.savantas.org/wp-content/uploads/2014/06/6_Segal.pdf. Accessed 14 July 2017
 50. Hong Kong University of Science and Technology (2013) HKUST Fok Ying Tung Graduate School (FYTGS). http://www.vprg.ust.hk/rgs/eng/mainland_platforms/fytps.html. Accessed 14 July 2017
 51. Communications and Public Relations Office (2013) CUHK signs final agreements with Shenzhen University and Shenzhen Government inaugurating the development of the Chinese University of Hong Kong, Shenzhen. https://www.cpr.cuhk.edu.hk/en/press_detail.php?id=1509. Accessed 15 July 2017
 52. Invest HongKong HKSAR (2014) The Greater Pearl River Delta, 7th edn. Available via http://www.investhk.gov.hk/zh-hk/files/2014/05/InvestHK_GPRD-Book_Eng_Apr2014.pdf. Accessed 18 July 2017

53. Harbour Times (2016) Cross-border students up 118% in five years. <http://harbourtimes.com/2016/06/23/cross-border-students-up-118-in-five-years/>. Accessed 18 July 2017
54. Boyd C (2012) The top 10 smart cities on the planet. Available via Co, Design. <https://www.fastcodesign.com/1679127/the-top-10-smart-cities-on-the-planet>. Accessed 22 Aug 2017
55. EasyPark (2017) 2017 Smart Cities Index. <https://easyparkgroup.com/smart-cities-index/>. Accessed 22 Aug 2017
56. Environmental Protection Department (2017) Data & statistics Hong Kong air pollutant emission inventory. http://www.epd.gov.hk/epd/english/environmentinhk/air/data/emission_inve.html. Accessed 14 June 2017
57. Ng KW (2016) Controlling ship emissions in the Pear River Delta. http://civic-exchange.org/cex_reports/201612AIR_PRDemission_brief_en.pdf. Accessed 14 June 2017
58. Huang H (2015) New regulation on ship emission control areas of the Pearl River Delta, the Yangtze River Delta and Bohai sea waters. <https://www.ukpandi.com/knowledge-publications/article/new-regulation-on-ship-emission-control-areas-of-the-pearl-river-delta-the-yangtze-river-delta-and-bohai-sea-waters-134120/>. Accessed 16 June 2017
59. Urban Land Institute (2017) Hong Kong East Community Green Station—2016 Global Awards for Excellence Winner. Awards & Competitions. <https://americas.uli.org/awards/hong-kong-east-community-garden-2016-global-awards-excellence-finalist/>. Accessed 14 Jun 2017
60. Environmental Protection Department (2017) Waste. An overview on challenges for waste reduction and management in Hong Kong. http://www.epd.gov.hk/epd/english/environmentinhk/waste/waste_maincontent.html. Accessed 14 June 2017
61. Environmental Protection Department (2017) Waste recycling statistics https://www.wastereduction.gov.hk/en/quickaccess/stat_recycle.htm
62. Tsang E (2017) Tear off the glossy covers or your magazines won't get recycled, Hongkongers told. Health & Environment. South China Morning Post. <http://www.scmp.com/news/hong-kong/health-environment/article/2124680/tear-glossy-covers-or-your-magazines-wont-get>
63. CLP Group (2014) Our history. <https://www.clpgroup.com/en/about-clp/company-profile/our-history#tab3>. Accessed 15 June 2017
64. CLP Group (2016) Towards a greener Pearl River Delta a roadmap for clean energy generation for Hong Kong. https://www.clp.com.hk/en/about-clp-site/media-site/resources-site/publications-site/Documents/CLPEnergyVisionPrimer_Eng.pdf. Accessed 17 June 2017
65. Loh C (2008) Hong Kong's energy future a cleaner energy future is Hong Kong's responsibility. Available via http://civic-exchange.org/cex_reports/200810EC_HKEnergyFuture1_en.pdf. Accessed 16 June 2017
66. HKSAR (2008) Memorandum of understanding on energy co-operation. <http://www.info.gov.hk/gia/general/200808/28/P200808280188.htm>. Accessed 18 June 2017
67. Planning Department HKSAR (2009) Planning study on the coordinated development of the Greater Pearl River Delta townships. http://www.pland.gov.hk/pland_en/misc/great_prd/news/pdf_en/summary.pdf. Accessed 18 June 2017
68. Invest HongKong HKSAR (2014) The Greater Pearl River Delta, 7th edn. Available via http://www.investhk.gov.hk/zh-hk/files/2014/05/InvestHK_GPRD-Book_Eng_Apr2014.pdf. Accessed 17 June 2017
69. HKSAR (2017) Framework agreement on deepening Guangdong-Hong Kong-Macao cooperation in the development of the Bay Area signed. Available via <http://www.info.gov.hk/gia/general/201707/01/P2017070100409.htm>. Accessed 27 Oct 2017
70. Development Bureau, Planning Department HKSAR (2016) Hong Kong 2030+ towards a planning vision and strategy transcending 2030 public engagement. Available via http://www.hk2030plus.hk/document/2030+Booklet_Eng.pdf. Accessed 3 July 2017
71. Fung Global Retail & Technology (2017) Deep Dive: Shenzhen—An International Hub of Hardware Innovation. <https://www.funglobalretailtech.com/research/deep-dive-shenzhen-international-hub-hardware-innovation/>. Accessed 2 July 2017

72. Government of Macao Special Administrative Region (2016) The Five-Year Development Plan of the Macao Special Administrative Region (2016–2020). http://www.cccmtl.gov.mo/files/plano_quinquenal_en.pdf. Accessed 2 Nov 2017
73. Xinhua (2017). Macao, Hong Kong sign CEPA for closer cooperation, regional integration. http://news.xinhuanet.com/english/2017-10/27/c_136710636.htm. Accessed 2 Nov 2017
74. HKSAR (2017) A dedicated chapter on Hong Kong and Macao in the National 13th Five-Year Plan. <http://www.info.gov.hk/gia/general/201603/17/P201603170899.htm>. Accessed 7 Nov 2017
75. China (Guandong) Pilot Free Trade Zone (2016) News and laws. <http://www.china-gdftz.gov.cn/en/>. Accessed 7 Nov 2017
76. Central Compilation & Translation Press (2016) The 13th Five-Year Plan For Economic and Social Development of the People's Republic of China (2016–2020). http://210.6.198.17/cache/en.ndrc.gov.cn/newsrelease/201612/P020161207645765233498.pdf?ich_args=0fcfc6c4af81270b7e3d674322521be9_1_0_0_12_b24c0892fe3aa3bbe6a64005ecb9d4d4f826777b874890c5748e9b207d343df0_dbe65f733b2e4e5ab3ba4a3dc5370e80_1_0&ich_ip=. Accessed 9 Nov 2017
77. China (GuangDong) Pilot Free Trade Zone (2015) Introduction—China (Guangdong) Pilot Free Trade Zone. http://www.china-gdftz.gov.cn/en/ABOUT_GDFTZ/Introduction/201502/t20150214_587.html. Accessed 27 Oct 2017
78. HKTDC Research (2017) China (Guangdong) Pilot Free Trade Zone. <http://china-trade-research.hktdc.com/business-news/article/Facts-and-Figures/China-Guangdong-Pilot-Free-Trade-Zone/ff/en/1/1X000000/1X0A2V1E.htm>. Accessed 27 Oct 2017
79. HKSAR (2017) The chief executive's 2017 policy address—we connect for hope and happiness. <https://www.policyaddress.gov.hk/2017/eng/pdf/PA2017.pdf>. Accessed 29 Oct 2017
80. HKTDC (2017) Belt and road basics. <https://beltandroad.hktdc.com/en/belt-and-road-basics>. Accessed 24 Oct 2017
81. Kam KS (2017) Greater Bay Area economy to reach US\$3.6 trillion by 2030, Colliers research says. <http://www.scmp.com/property/hong-kong-china/article/2108083/greater-bay-area-economy-reach-us36-trillion-2030-colliers>. Accessed 26 Oct 2017