

A CHANGING REGION, A CHANGING ROLE

How MTR & Hong Kong
Can Prosper in a New
Sociopolitical Context

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Executive Summary

The Mass Transit Railway (MTR) Corporation has helped shape Hong Kong into a vital piece of the Greater Bay Area (GBA) and a global financial capital that other cities look to as an example of international connectivity. Today, regional forces stemming from the growth and influence of GBA cities are changing the political and financial context of Hong Kong. MTR has a unique opportunity to assert a leadership role in driving this regional transformation and position itself as a global influencer on topics of regional integration and development.

To optimize regional integration for Hong Kong, MTR can activate its corporate power and civic responsibility to strengthen the position of Hong Kong within the GBA. MTR, as an internationally-recognized firm that develops and operates a central component in the lives of Hong Kong's residents, is uniquely positioned to be a leader in this conversation and a chief facilitator in the process of integration. No other entity can boast MTR's connection to the local and the global, the near- and long-term, the public and the private. MTR can use that platform to address the many facets of regional integration and persuade the necessary stakeholders to embrace integration as a mechanism for mutual benefit.

MTR's business model leverages multiple sectors, creating a world class transportation system in conjunction with residential and retail communities to house an ever-growing population. With this diverse experience, MTR is well positioned to take a leading role in the GBA implementation, offering expertise in transportation development and management, while setting best-in-class approaches to future housing development with sensitivity to equity and environmental concerns.

This report offers holistic recommendations that suggest avenues for leadership across a range of institutional levels and affect MTR, Hong Kong, and the GBA. The following four thematic areas embody the primary opportunities and challenges confronting both MTR and Hong Kong before the emergence of a more connected GBA.

Economic Sustainability

Facilitate high volume daily cross-border traffic, while expanding Hong Kong's multinational workforce and increasing opportunity for future rail development.

Land Scarcity

Alleviate the land scarcity crisis through a combination of land reclamation, rezoning, and the activation of under-utilized land, with sensitivity to equity and environmental concerns.

Housing

Assume a leadership role as a financier and coordinator of public housing in Hong Kong and the broader region in coordination with transit infrastructure development. Develop with specific consideration for demographic shifts and migrant flows.

Integration

Establish a permanent regional planning authority for transportation integration and cross-border connectivity. This is our key institutional recommendation which can be modeled after Municipal Planning Organizations.

MTR has much to gain if it takes responsibility as a key driver of regional collaboration. By establishing its leadership in these four areas, MTR has the opportunity to forge new areas of expertise beyond transportation, preparing it to consult on issues that major cities worldwide will increasingly face in the future. Acting now to broaden its diversity of offerings will ensure that MTR is regarded by metropolitan areas around the world as the gold standard not just of public transportation but of regional connectivity.

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Introduction

The Mass Transit Railway (MTR) Corporation has helped shape Hong Kong into a vital piece of the Greater Bay Area (GBA) and a global financial capital that other cities look to as an example of international connectivity. Today, this global city and MTR confront a challenge of more regional proportion: integration with mainland China. Hong Kong already benefits from a strong relationship with the mainland and economic collaboration has been taking place for many decades. MTR operates several rail lines in mainland China, Chinese-backed companies hold 66% market capitalization on the Hong Kong Stock Exchange (Hong Kong Exchange, 2017), and Chinese tourists accounted for 76% of all visits to Hong Kong in 2017 (Yeung, 2018). Integration with mainland China is primed to accelerate, and Hong Kong has the opportunity to define further integration on its own terms. As the eleven cities in the GBA strive for economic integration and eye market expansion under the Belt and Road (B&R) initiative, Hong Kong's role as the gateway to the world economy will become even more apparent.

A number of factors are already shaping the integration landscape. In Hong Kong, an aging population and high cost of living are putting pressure on the housing market. It is increasingly difficult for middle-class permanent residents to live in the city, and many recent college graduates have difficulty finding suitable employment. At the same time, Shenzhen has evolved into an aspiring Silicon Valley, doubling its GDP in just six years (Huifeng, 2018), and is emerging as a key partner for Hong Kong's human capital and financial markets. Foshan, Macau, and other members of the GBA are also planning for large-scale growth. Hong Kong should seize the opportunity to be a leader in this regional growth.

To achieve this, MTR and other key stakeholders in Hong Kong must activate its corporate power and civic responsibility to strengthen the position of Hong Kong within the GBA. MTR, as the developer and operator of a central component in the lives of Hong Kong's citizens and a firm with international recognition, is uniquely positioned to be a leader in this conversation and a chief facilitator in the process of integration. No other entity can boast its connection to the local and the global, the near and long-term, the public and the private. MTR can use that platform to address the many facets of integration (both in Hong Kong and in the region) and persuade the necessary stakeholders to not only accept integration but to move it forward as a means for mutual benefit.

The following report lays out recommendations, suggestions, and considerations for how MTR can facilitate integration. In developing the report, our team used several key questions to frame our research:

- How can Hong Kong and MTR thrive as part of this integrated plan for the GBA?
- What does this integration mean for MTR's business model?
- What is MTR's role in advocating for integration? What should its role be?
- How does Hong Kong integrate into the GBA, and how does this affect its people?
- How do we bring Hong Kong's residents into this process?

These key questions, considered against the existing landscape of Hong Kong and other external factors, led to the development of six main study areas.

Land Value Capture

MTR has effectively utilized land value capture to develop a world-class transit system built on income from residential and commercial centers. However, there are possible concerns about the political and social sustainability of this model in Hong Kong. An analysis of Hong Kong's housing stock and prices suggest the system has failed to create an adequate stock of affordable housing. We propose that MTR take a leading role in promoting and providing public housing throughout Hong Kong. During its corporate history, MTR has greatly profited from lucrative development contracts and high land costs in Hong Kong; it could generate significant public goodwill by filling the void in regional leadership on affordable housing. Additionally, MTR has a significant role to play in the integration of Hong Kong into the GBA and we propose that the corporation accelerates expansion of its business ventures into mainland China. Together, our recommendations constitute a sustainable long-term business strategy that will well serve MTR moving forward.

Housing

Currently, Hong Kong faces enormous housing pressures that will be perpetuated if unaddressed. Extremely high land values, a derivative of increasingly scarce developable land, make market-rate homes unaffordable for many Hong Kong residents. Accordingly, a long waitlist exists for limited public housing. To ensure the city remains livable and affordable, Hong Kong must implement new policies and alter existing programs to better serve residents. Our analysis examines several policies and develops proposals to alleviate the housing crisis. Specifically, we recommend restructuring the institutional goals of key stakeholders, utilizing new land for residential development and, collaborating with other GBA cities to develop regional solutions for local housing crises.

Environmental Justice/Land Scarcity

MTR and Hong Kong both bear responsibility for land acquisition and development to reduce land scarcity, a major constraint on the housing supply and a contributing factor in the high cost of Hong Kong housing. Notably, MTR and the Hong Kong government must continue efforts to develop high-density, transit-oriented developments and to increase the available land supply where possible. Yet, the most viable options to increase land supply, including active land reclamation proposals like the East Lantau Metropolis, often create great burdens that must be distributed among the population. To safeguard the health, safety, and prosperity of all Hong Kong residents, the distribution of these burdens should be evaluated through a lens of social, political, and economic equity. To achieve this goal, we analyzed three alternatives for decreasing land scarcity: land reclamation, selective rezoning of country park lands, and the continuation of status quo policies. We also performed an equity analyses of four planned projects by MTR and the Hong Kong government to establish patterns of inequity in stakeholder developments that should be addressed when considering the future implementation of the three possible alternatives.

Labor Integration

The Hong Kong government is under pressure to reform its labor market in order to better adapt to a more integrated GBA. With major demographic changes imminent, a rising consumer class, and an abundant labor supply across the border in Shenzhen, Hong Kong needs to develop policy initiatives that can help it thrive in this new reality. MTR plays an important role in the GBA, and therefore should utilize the GBA initiative as a driver of regional integration. Due to MTR's importance to the region, MTR has the opportunity to help define regional labor integration in a way that benefits Hong Kong and its people.

Transportation Integration

As Hong Kong prepares for increased regional connectivity through the GBA initiative, purposeful regional transportation integration is essential. The movement of people, goods, and services through a cohesive cross-border transport integration system is imperative for meeting the economic and housing needs of the future and addressing issues of equity and land scarcity. A seamless transportation network connecting the region will enhance the ability of Hong Kong, mainland China, and Macau to optimize the economic and geospatial benefits of the GBA initiative. To appropriately anticipate, develop, and integrate transportation systems to meet future needs and ensure an optimal economic outcome for MTR and the broader region we recommend the establishment of a permanent regional planning authority which involves all relevant stakeholders and a continuous funding mechanism.

Political Integration

The growing power of mainland China in Hong Kong has caused concern and speculation about the future of the “one country, two systems” principle. If international investors lose confidence in Hong Kong's ability to retain its unique position as a free market gateway to the Chinese economy, its role as a regional and national finance center may diminish significantly. However, Hong Kong can leverage its unique economic strengths within the GBA context to preserve its important role in the region. Ultimately, a GBA agreement framework can help institutionalize commitments and collaborative mechanisms between the governments of mainland China and Hong Kong that respect the institutions and political values of Hong Kong.

Four Connecting Themes

MTR has been a central player in Hong Kong's current success as a global financial center. Its business model cuts across multiple sectors, creating a world class transportation system in conjunction with residential and retail communities to house an ever-growing population. With this diverse experience, MTR is well positioned to take a leading role in the GBA integration, offering expertise in transportation development and management, while setting best-in-class approaches to future housing development and sensitivity to equity and environmental concerns.

Our recommendations in this report offer holistic recommendations that suggest avenues for leadership across a range of institutional levels and affect MTR, Hong Kong, and the GBA. Our recommendations for the six topic areas fall into four thematic areas: economic sustainability, land scarcity, housing, and integration policy. These four areas embody the primary threats and opportunities for both Hong Kong and MTR with the emergence of a more connected GBA.

Economic Sustainability

Facilitate high volume daily cross-border traffic while continuing to expand Hong Kong's multinational workforce and increasing opportunity for future rail development.

Land Scarcity

Alleviate the land scarcity crisis through a combination of land reclamation, rezoning, and activation of under-utilized land, with sensitivity to equity and environmental concerns.

Housing

Assume a leadership role as a financier and coordinator of public housing in Hong Kong and the broader region in coordination with transit infrastructure development. Develop these policies with specific consideration for demographic shifts and migrant flows.

Integration

Establish a permanent regional planning authority for transportation integration and cross-border connectivity. This is our key institutional recommendation which can be modeled after Municipal Planning Organizations.

MTR has much to gain if it takes responsibility as a key driver of regional collaboration. If MTR convenes the conversation around a regional planning authority or a joint venture with the Guangdong Province, it will reinforce its position as a global influencer. By establishing its leadership in these four areas, MTR has the opportunity to develop new areas of expertise beyond transportation and real estate, preparing itself to consult on a variety of issues that major cities will face in the future. Developing this reputation today will ensure that MTR is viewed by metropolitan areas around the world as the standard for leveraging regional connectivity in addition to public transportation. Regional integration provides an unprecedented opportunity to evolve MTR's brand within Hong Kong, affirm its identity in the GBA, and solidify its global influence.

Threats and Opportunities to MTR's Land Value Capture Model

MTR's Rail plus Property model (R+P) of land value capture, which uses captured land value increases from MTR-led development above MTR stations, has been incredibly successful in providing revenue towards the operation and maintenance of MTR's rail lines. Looking forward into the future however, there are several burgeoning trends that will affect the direction of MTR's R+P operations. These trends include the social and political sustainability of the R+P model in the context of Hong Kong's housing crisis and the integration of Hong Kong with the GBA and mainland China. This section of our report will address these trends and make policy recommendations that MTR can develop to address them.

Social Sustainability of R+P Developments

MTR's R+P model of land value capture has had great success in both creating revenue to fund MTR's operations and maintenance, and in providing additional housing stock for Hong Kong. However, this model relies upon and promotes high land values surrounding MTR stations. This increased land value has led to increased housing prices, decreased flat sizes, and overcrowding. At the same time, MTR has experienced substantial prosperity with the expansion of its R+P developments that rely on increased land value. While there has been steady public outcry regarding these issues, there has yet to be backlash against MTR regarding its role in the lack of housing affordability. The following sections will outline the current housing situation as it relates to MTR's developments, explain what pushback there has been to this situation, and issue policy recommendations.

Current Housing Situation

The current housing situation in Hong Kong is dire. First, overall housing density in Hong Kong is very high: there are 27,400 people per km² of developed land in Hong Kong, which is among the highest in the world. Hong Kong also has the lowest per capita living space in the world, at 16m², compared to 20m² Tokyo, and 28m² in Shenzhen (Our Hong Kong Foundation, 2018). An increased trend of overcrowding in apartments has also taken place the past few years. One symptom of this trend is an increase of subdivided flats in older buildings. A recent study by Hong Kong University found that there were 171,000 people living in subdivided flats, with just an average of 6m² of living space per person (Ng, 2013).

In addition to the high density of housing in Hong Kong, there is also an affordability problem. Housing prices in Hong Kong have skyrocketed in past years. As of December 2017, home prices in Hong Kong had increased for the 21st straight month (Li, 2018). Over the past 10 years, prices have increased by 160% (Cox, 2018). These price increases have also come at a time of stagnating wages across the region. A recent study found that to buy a 60m² apartment in central Hong Kong, an average skilled worker would need to

save their salary for 20 years (Cox, 2018). Rising housing prices coupled with stagnant wages have created an unaffordable housing market for a high percentage of Hong Kong's population.

Despite Hong Kong's housing market becoming increasingly expensive, MTR has had great success with their R+P developments. Profits from MTR's property development in Hong Kong have increased significantly from HK\$311 million in 2016 to HK\$1.1 billion in 2017 (MTR, 2017). Additionally, there are over 30,000 residential units and two malls in MTR's R+P pipeline (MTR, 2017). MTR has put itself in a strong position for increasing property revenues over the coming years. This makes sense given that the R+P land value capture model becomes more profitable as housing and land values increase. A study of MTR's property developments found that MTR's R+P benefited from increased land value prices and actually increased land values around the stations where they were built (Cervero and Murakami, 2009). However, MTR posting record profits amidst housing price increases and flat overcrowding may sour MTR's image in the public consciousness.

Current and Possible Pushback

As the current housing situation in Hong Kong has emerged, there has been some public outcry regarding housing prices and overcrowding. In April 2018, there was significant pressure on the Hong Kong government to seize a privately-owned golf club on Hong Kong Island and turn the plot into housing (Lok-kei, 2018). Additionally, some residents of subdivided flats have protested that the government should build more affordable and subsidized housing, and develop vacant and underutilized land to house more people (RTHK, 2017). As the housing crisis in Hong Kong worsens, there will likely be more pressure and protests urging the government to take measures to alleviate the crisis. Because MTR's property developments benefit from higher housing prices, the public may shift to perceiving MTR as contributing to or even taking advantage of the housing crisis. This may result in a negative public opinion against MTR and its R+P developments.

Recommendations

We propose two policy options that MTR take in order to prevent a possible shift in public opinion. The first would be to include public housing units in future R+P developments. This would be an exercise in good faith toward the Hong Kong people in recognition of the current housing crisis, and a way for MTR to show that they are contributing to solutions to alleviate it. However, this would likely decrease the profitability of R+P developments and may be unpopular with MTR's private shareholders. This policy recommendation will be discussed in further detail in the following section.

The second policy would be to lobby the Hong Kong government to take steps to increase the housing

supply and size of flats to prevent overcrowding and subdividing. The Hong Kong government could increase housing supply by redeveloping older areas and reclaiming land. However, increasing overall housing supply may decrease land value, which would likely reduce profitability of MTR's R+P developments.

While these policy recommendations may not be good for MTR's bottom line, they may strengthen its positive image in the public consciousness by showing that MTR is taking steps to alleviate the housing crisis.

Integration of Land Value Capture with Public Housing

Given Hong Kong's immense demand for housing and prohibitive rental and homeownership costs, it is important that the government consider better integrating public housing with the civic amenities residents rely on. This should be done while also examining alternative streams of revenue to fund additional public developments. Currently, public housing accounts for 2% of the total land area in Hong Kong, but accommodates nearly 44.8% of the total population (Transport and Housing Bureau, 2017). Hong Kong plans to build 280,000 additional public housing units over the next decade, but demand may rise further given potential increases in immigration from mainland China and Macau through the GBA Plan (Hong Kong Housing Authority, 2016).

Many public housing units in Hong Kong are located on the urban fringe where land is easier to acquire, leaving the majority of low-income residents disconnected from urban amenities and transportation options compared to private owners (He et al., 2018). The Kowloon Bay Station Skyline Tower was originally built to allow some housing space for Hong Kong's middle-class residents, including some government officials. These residents were quickly priced out as the area rapidly gentrified, and now only some of the very highest earners of Hong Kong can afford the apartments located there (Li, 2018).

Comparative Approaches to Integrating Housing and Services

Singapore and mainland China have both made efforts towards integrating public housing with access to amenities. Housing is scarce in Singapore: approximately 88% of the population lives in income-eligible public housing (Hui et al., 1999). Similar to Hong Kong, the government of Singapore utilizes land value capture mechanisms through strategic taxation during the development cycle of new construction. Each of the public towns built by Singapore's Housing and Development Board are near transit centers that provide the communities with train stations and bus interchanges (Housing and Development Board, 2016). This helps improve ridership while ensuring sustainable, prosperous communities for residents of public housing.

Meanwhile, mainland China has increasingly

focused on integrating low-income communities with public transportation options. It has recently noted the importance of promoting metropolitan growth that encourages affordable units near regional connections to employment opportunities. Four recent affordable housing developments are located in Shanghai, Xinkai, Xiangtai, and Boya; all are closely integrated with multiple local metro stations (Sun, 2011).

Opportunities

The Hong Kong government should consider the balance between short-term profitability of developments along MTR lines and the long-term objectives of providing accessible transit options to underserved members of society (Xue and Fang, 2017). Pricing out lower-income residents goes against the best interests of MTR, as these residents are more likely to rely on public transportation and other amenities offered in the malls connected to the station. Incorporating more affordable housing units near MTR stations, in addition to high-return private developments, would ensure a more sustainable ridership model for the long-term.

Other opportunities exist for MTR to relieve local housing pressures. Using the existing R+P model, MTR could pull revenue from high-value land in order to fund low-income residents through a cross-subsidy for affordable housing. These value capture revenues, returned in part to the government of Hong Kong, could be allocated directly to support affordable housing efforts.

Under Article 7 of Hong Kong's Basic Law, the government is responsible for the use and management of land on behalf of the State (Hui et al., 1999). This encompasses every aspect of the development cycle, including leases, public auctions, tenders, and private treaty grants of government land. It also includes the acquisition of private land for public housing projects, including those under the purview of urban renewal. This is done through the Housing Authority, which acquires land for public use using streams of revenue from the government. Currently, an unknown portion of these revenue streams come from the 75% of share revenue given to the Hong Kong government through returns on its ownership of MTR stock (MTR, 2018). By making its finance streams more transparent, the Hong Kong government could allow residents to better trace the exact amount of funding that is going into public housing development.

Opportunities for MTR's Future with the GBA and the Belt and Road Initiative

MTR has bright prospects for future prosperity through cooperation for the greater good with the People's Republic of China's (PRC's) GBA initiative and the Belt and Road (B&R) initiative. By continuing its high-performing R+P business model, MTR will be able to grow its world-class businesses in mainland China and along

the B&R. The PRC government, Hong Kong government, Asian Development Bank, and other institutions have all pledged political and financial support for infrastructure development in B&R countries (Lam 2017; Shirai and Sugandi, 2018; Shih and Geng, 2017).

MTR's Existing Business Operations in the PRC and Macau

MTR's successful expansions of its R+P in the PRC started in the early 2000s. Today, MTR has been involved in the planning, design, construction, and operation of nine different rail lines in Beijing, Shenzhen, Hangzhou, and Macau. In Beijing, four lines are at least partly operated by MTR (北京交通发展研究院, 2016). MTR has subsidiaries in Shenzhen, Hangzhou, and Macau, all of which operate at least one line. This expansion into the mainland has benefited both MTR and the PRC (KPMG, 2018).

MTR's Opportunity to Expand in the PRC

MTR's R+P model is a successful method used in Hong Kong to capture land value increases due to transportation development. The R+P development generates a substantial portion of MTR's revenue. The GBA plan for integration will boost the economic opportunities between Hong Kong, Macau, and nine other cities in Guangdong Province. Specifically, the integration of Hong Kong into the GBA will increase the flow of people, goods, investment, and information. Experts expect that the population movement between Hong Kong and other areas of the GBA will grow (KPMG, 2018). The XRL, the HKZMB, and other planned transportation projects will significantly shorten travel times between Hong Kong and mainland cities. As a result, traveling within the GBA will be faster and more common than in the past.

MTR's Threats and Opportunities in the PRC

Despite MTR's successes in mainland China, its model faces three threats in the PRC: (1) a lack of institutional support, (2) the high cost of land in the PRC, and (3) competition from within the PRC for the R+P model. We detail these factors below and examine ways in which they may present opportunities for MTR.

In the PRC, the absence of a national land value capture policy may prevent MTR from scaling the R+P model across mainland China. Collaboration among governmental institutions is a key precondition for the feasibility of land value capture (Salon and Shewmake, 2010). Yet land and transportation policy are fragmented within the PRC (Xue and Fang, 2017). In the PRC, land policy and transportation policies are separated, which means that there is no comprehensive policy that supports transit-oriented development and land value capture (Diaz and Eichorst, 2014).

However, political support for GBA integration is strong in Hong Kong and the PRC (Chan, 2011). Both governments signed the Closer Economic Partnership Agreement in 2003, reducing barriers to the free movement of goods, services, and people across the border, with the goal of forging closer ties between the PRC and Hong Kong (Tang and Yuen, 2016; Puig and Chan, 2016). In 2017, Chief Executive Carrie Lam announced her strong support for Hong Kong's participation in the GBA, in particular committing to supporting infrastructure development (Lam, 2017; "Progress made," 2017). In 2015, the Guangdong Province and the national government created the Guangdong Province free trade zone—which allows for a fast-track approval process for infrastructure projects—to promote economic cooperation with Hong Kong and Macau (China question, 2015; Standing committee, 2014).

The biggest obstacle MTR faces in expanding its model within mainland China is the PRC's land policies. Land transactions between the PRC government and private developers have to go through a "land auction" process. The price for land in the PRC may be too high for the R+P model to be profitable for three reasons: (1) Zoning laws require that land above metro stations be auctioned at market price (Wu, 2016). (2) Local governments in the PRC are evaluated on GDP growth levels in local areas, so local governments incentivize GDP growth through the sale of land to businesses (Qian et al., 2016). (3) Local governments in the PRC raise revenues through land sales, and so have little incentive to sell land below market price to facilitate the R+P model (Liu et al., 2017).

These challenges can be illustrated through MTR's development of Line 4 in Shenzhen, one of its earliest projects in mainland China. The Shenzhen government had initially favored MTR because of its strong R+P model, even adopting a land policy similar to Hong Kong's. However, before the land transaction was completed, the National Development and Reform Commission issued a new national policy mandating that all land transactions go through an auction process. As a result of this new policy, MTR was only able to build one residential property along the line (薛 & 方, 2015). This hampered MTR's plans to implement R+P. (南方都市报, 2011).

MTR's expertise in using the R+P model to develop economically sustainable public transportation systems could be attractive for growing mainland cities. As mainland Chinese cities grow, many residents rely on public rail transportation as a core mode of transportation. (中国国务院, 2018) However, many local governments lack the resources and experience to build and operate a rail line. Due to MTR's position as one of the top rail operators in the world, many local governments look to MTR to collaborate with and duplicate its model. In Hong Kong, new town development is gradually saturated, so MTR recognizes the need to explore new markets outside Hong Kong. As the GBA plan accelerates the integration of Hong Kong and the Guangdong Province,

the potential demand for transportation between Hong Kong and the PRC will increase, creating new opportunities for MTR (中国国务院, 2018).

Indeed, despite the land auction requirement in mainland China, the R+P is still favorable for many local governments in mainland China. Many cities and local governments employ different methods to incorporate the land auction requirement with the R+P model. The most common method was created by the Shenzhen government for MTR. For the Line 6 development, Shenzhen government created an entry criteria for the land auction process. The entry criteria was designed in a way that MTR Shenzhen is the only bidder entity in the auction process. As the result, MTR Shenzhen bid and win the development right for the land on #6 line (薛 & 方, 2015). Other methods were explored by other cities as well. In Shanghai, land supply for transportation use and other uses have been separated. The local government goes into a contract with the development entity with the latter development. In Beijing, the land was divided into different layers. The varying layers go through different processes of land transaction. In Guangzhou, all station projects have been divided into three categories. (1) Direct government invest on those project that do not have potential for mixed-use development. (2) Direct investment from the rail company for those projects with partly potential for mixed-use development. (3) For the sites where mixed-use or R+P model is profitable, government will set concept to the development and request for bid on project itself (薛 & 方, 2015).

Many metro rail transit systems in the PRC are not economically self-sufficient, which is a barrier to expanding metro rail transit systems (Loo and Li, 2006). The R+P model offers a sustainable solution to the transportation financing problem in the PRC (Li et al., 2015). The strong demand for urban housing, public transportation, and high levels of urban density in the PRC provides a good opportunity for the R+P model in the PRC (Xue and Fang, 2017; Qian et al., 2016). Indeed, research show that the R+P model is sustainable in the PRC (Li et al., 2015).

However, MTR may face competition from mainland companies which are developing R+P models of their own. In 2008, public and private stakeholders in Nanchang used the R+P model to built mixed-use development along the local railway, which enabled the railway to reach a recovery ratio of 207% (Olajide, 2013). Nonetheless, in many aspects, MTR has advantages over its PRC counterparts. While many rail transportation systems in the PRC are seen as “livelihood projects” and receive subsidies from the government, all but one MTR operated line receives no public subsidy. In terms of schedule accuracy, safety, and expectation, MTR operated lines also have better on-time performance. Furthermore, MTR is well-known in mainland China for being a detail-oriented company focused on customer service. MTR can leverage these positive reputations as a competitive advantage when expanding into mainland

China.

The B&R initiative also offers Hong Kong the chance to become the leading international infrastructure financing and consulting center of the 60 countries in the B&R supply chain (Ng and Chow, 2017; Shih and Geng, 2017). This opportunity is well-suited for MTR’s extensive experience with international consulting (“Progress made,” 2017). Many cities along the B&R have under-developed rail transportation (Ng and Chow, 2017). We believe that these cities offer MTR an excellent market for transportation development (“From vision to action,” 2017).

Recommendations

The two recommendations to further MTR’s successes are: (1) to advocate for a fair land auction policy in the PRC and, (2) to use MTR’s expertise to become the leading infrastructure firm in the B&R.

First, MTR should lobby the Hong Kong government to negotiate an amendment to the Closer Economic Partnership Agreement for access to auctions for public use development of urban land. With privileged access to lower-priced land, the R+P model can become viable in the PRC. This legal change would help MTR achieve its goal of increasing its R+P business in the PRC (Connections for growth, 2016).

Second, MTR should develop its “build-own-operate” R+P model in countries included within the B&R initiative. With an estimated HK\$13.3 trillion in needed infrastructure investments per year from 2016 to 2030, the countries along the B&R have a huge demand for infrastructure and logistics expertise (From vision to action, 2017, p. 32; Hong Kong in the region, 2016, p. 32; Connections for growth, 2016, p. 91). This may be a strong opportunity which MTR can leverage to grow its international consulting reputation.

Pursuant to both of these goals, MTR should leverage its expertise in safety, accountability, passenger service, cost efficiency, and land value capture as an anchor point to compete with other transportation developers in the PRC. Specifically, it can use its consulting experience to help local mainland Chinese governments with its development goals. These goals may include integrating into the GBA, attracting international investment, and implementing smart and green city initiatives. If MTR can help local governments achieve these goals, it will have more political capital to leverage when working to expand its R+P model into mainland China.

Conclusion

MTR should be aware of several trends which may impact the success of its strong R+P model. These include integration into the GBA, expanding its business internationally, guaranteeing the social sustainability of the R+P model, and possibly incorporating public housing into the R+P model. This report has outlined these trends and made several policy recom-

mendations to address them. In mainland China and abroad, MTR should make every effort to capitalize on the R+P model. These efforts could manifest in attempts to establish itself as a key player in the GBA and B&R initiatives, where MTR has the opportunity to open up new markets and build local economies just as it has done in Hong Kong. It could also include significant strides to incorporate more affordable housing options within developing MTR stations to help alleviate the burgeoning housing crisis while improving the corporation's public image.

Problems & Solutions in Housing in Hong Kong

Overview and Background of Housing in Hong Kong

The lack of housing affordability in Hong Kong has been a persistently worsening problem since the mid-2000s after the market began to recover from the Asian financial crisis. Property prices have increased dramatically while the growth of median household income has not kept pace. Demographic trends portend increased demand for housing even as current production is not on track to resolve the existing deficiency of housing units. The lack of affordable housing has implications for Hong Kong's future economic competitiveness and has also led to decreased quality of living for some residents who are forced into subpar accommodations such as subdivided units and tiny "nano-flats." A lack of new supply has contributed to and is exacerbating the housing affordability issue and must be addressed as part of any proposed solution.

As Hong Kong's population approaches eight million, the amount of land available for development has remained stagnant (Our Hong Kong Foundation, 2018). Sixty-percent of Hong Kong's land supply is reserved as protected country land; of the total developed land only 7% is zoned as residential and, of that, 3.1% is preserved for rural indigenous property, 2.4% is zoned for private residential, and 1.5% for public residential (Chan, 2018).

Institutional Providers of Public Housing in Hong Kong

Hong Kong leads the world's developed economies in its proportion of residents living in government supported housing with approximately 47% of the population living in some form of public permanent housing, including public rental housing (PRH), subsidized flats and temporary shelters (Wong and Tsang, 2016). The public housing program began in the 1950s in order to house the large population of squatters migrating to Hong Kong from mainland China and later expanded to provide low-cost accommodations to lower to middle income families. As of late 2017, there are approximately 2.15 million residents accommodated by approximately 808,000 public rental housing units (Information Services Department, 2017).

Public housing in Hong Kong is primarily provided by the Hong Kong Housing Authority (HA), a statutory body headed by the Secretary for Transport and Housing (STH). In addition to building and maintaining subsidized PRH for households who cannot afford private rental accommodations, the HA also operates interim housing for households facing short-term difficulties. To foster home ownership, the HA provides subsidized sale flats (SSFs), which are primarily distributed through the Home Ownership Scheme (HOS). To cater to the daily needs of public housing tenants, the HA builds shopping facilities near the estates. The HA's public

housing programs are sustained through its commercial operations, rental housing operations, home ownership assistance operations, and investment returns. The HA ended its 2016-17 operations with a surplus of HK\$5.32 billion (Hong Kong Housing Authority [HA], 2017a).

The second largest provider of public housing in Hong Kong is the non-governmental and nonprofit Hong Kong Housing Society, which houses approximately 85,000 tenants in over 32,000 units in public rental estates (Hong Kong Housing Society, 2018). The society is tasked with serving niche public housing markets through the implementation of government initiatives and policies such as, the Home Starter Loan Scheme and the Senior Citizens Residences Scheme.

Metrics for Housing in Hong Kong

The housing shortage facing Hong Kong must be properly quantified to fully understand its scope and develop effective policies. The Hong Kong Housing Authority tracks various statistics regarding the overall housing shortage in Hong Kong, along with Key Performance Indicators (KPIs) regarding its own public housing services. Tracked and publicized housing statistics are vital for quantifying the housing market to better understand affordability, both are key in constructing any effective policies. It is important that Hong Kong policymakers are equipped with accurate and effective data while attempting to alleviate the housing shortage facing Hong Kong. Quality KPIs can determine the quality of service provided to constituents, as well as the quality of life experienced by residents of public housing. An effective set of KPIs for public housing institutions will include metrics tracking the quality of services provided to tenants, and place this at the forefront of operations. This ensures that these institutions are planning for their resident's needs, and allows for a proper and accurate analysis of their effectiveness.

Hong Kong Key Performance Indicators

The Hong Kong HA tracks and publicizes 19 KPIs to evaluate and monitor their performance. The HA determines performance targets on an annual basis, and the KPIs themselves are examined regularly to maximize effectiveness (Hong Kong Housing Authority). The KPIs focus on performance and benchmarks for the HA, with only three relating to the construction of new units, and only two that can be described as focusing on tenant quality of life or service quality. The HA has designated the number of flats constructed, cost per public housing unit constructed, and the average wait time for public housing applications as KPIs, which aid in quantifying the shortage of public housing facing Hong Kong residents. Six KPIs focus on aspects of HA operations however, they all fail to place a primary focus on tenant services. For example, there is no KPI tracking tenant

satisfaction, quality of life, nor building safety (Hong Kong Housing Authority).

Comparative Key Performance Indicators

The Urban Institute published a series of 17 indicators for affordable housing developers and programs to utilize (Urban Institute). These indicators range across a broad variety of topics including funding, housing stock, quality of tenant life, and tenant turnover. The first three indicators relate to the number of housing projects receiving public funding and their funding sources. The indicators also include areas such as the effectiveness of engaging targeted populations for public housing or assistance programs, such as the enrollment and outreach toward disadvantaged populations. These indicators focus on the funding and construction of affordable housing, along with government policies and tenant satisfaction with the quality of service. Tenant satisfaction and experience are tracked through 10 different performance metrics, including: rated tenant satisfaction and safety, the rate of building code violations by severity and, the number of services to which tenants have access near housing developments. We believe these indicators are effective in tracking a wide range of key aspects related to public housing, and place a key focus on tenant services and quality of life.

Singapore is an international city often compared to Hong Kong and both maintain a high proportion of residents in public or government-constructed housing. In Singapore, roughly 80% of residents live in government-constructed housing units, with a strong focus on neighborhoods and community life (World Bank). Singapore's Housing and Development Board is responsible for the construction and management of public housing, and is overseen by the Ministry of National Development which has developed 10 KPIs for public housing and infrastructure (Ministry of National Development). Singapore's KPIs take a more holistic approach and include multiple aspects relating to resident quality of life, safety and, focus on making public housing vibrant for residents. A strong emphasis is placed on community and neighborhood livability near public housing along with building and unit quality. Given the high proportion of government-constructed units within the city, these KPIs are highly ambitious in scope. They focus entirely on the user experience and quality of service, as opposed to institutional operations.

Housing Metrics

Hong Kong tracks and publicizes a variety of statistics relating to its housing supply and shortage. Tracked statistics for the city's housing situation focus on the supply of individual residences, as well as the cost of construction (Hong Kong Housing Authority: Housing in Figures, 2017). The Hong Kong Housing Authority tracks and publicizes metrics such as overall housing supply, the proportion of public-to-private housing,

as well as unit size and age. The HA also tracks and classifies each of these metrics by the following general locations: Hong Kong Island, Kowloon, and New Territories. This data does not analyze a more micro or neighborhood level, nor does it track this information regionally at the GBA level. There is no governing or collaborative authority to implement regional housing policies, nor a local government body tracking these metrics for the GBA.

Comparative institutions largely track the same metrics as Hong Kong for housing statistics. The Southern California Association of Governments (SCAG) tracks similar statistics for the Southern California region, and delineates data on a localized level similar to Hong Kong (SCAGa). SCAG is required to calculate and determine regional housing needs, at both regional and localized levels (SCAGb). It differs from Hong Kong however in that it approaches housing policy from a regional basis, and tracks housing production, costs, and projected needs from a more global lens versus one specific area or jurisdiction. It also delineates area statistics to a finer level than the HA, allowing for a more detailed analysis of housing policies and shortages.

Flow of Funds

The Hong Kong government has been addressing the issue of housing affordability by providing public housing units for low to moderate-income citizens and offering flats for sale at a subsidized rate in hopes of encouraging residents to one day enter the private housing market. Investment in public housing is conducted by the Housing Authority and consists of expenditures on the production of Public Rental Housing (PRH), related facilities, Subsidized Sale Flats (SSFs), improvement works, and maintenance (Figure 1). The total capital expenditure is expected to be HK\$239.23 billion in 2018-19 which represents an increase of HK\$15.7 billion as compared to the 2015/16 Revised Budget of HK\$223.53 billion. The HK\$15.7 billion dollar increase is mainly due to an increase in the amount of PRH under construction. The construction of PRH also represented a significant expenditure increase in 2015/16 over the previous year, increasing from HK\$134.9 billion in 2014-15 to HK\$178.35 billion in 2015/16 due to a 43.52% increase in production.

Based on the Hong Kong Housing Authority's Public Housing Construction Programme chart, it is easy to see that the HA plans to produce more housing than it has been previously, at least 18,000 units each year compared with about 13,700 units in 2017-18. Also, they expected to construct over 27,000 units in 2018-19 which is the highest production in the coming five years. In light of this production ramp up, which could involve a significant cost burden on the government, the HA needs to ensure the appropriate level of funding is in place.

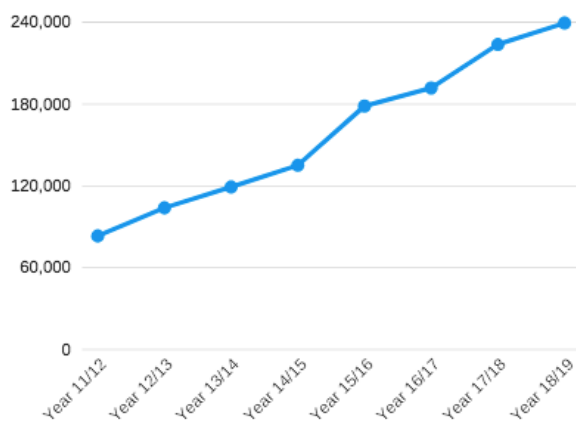


Figure 1: Expenditures on the production of Public Rental Housing (PRH), related facilities, Subsidized Sale Flats (SSFs), improvement works, and maintenance.

In addition to PRH, some citizens are eligible to purchase Subsidized Sale Flats (SSFs) at 70% of market value with the government subsidizing the remaining 30% (OHKF, 2017). In 2016, the average price of private housing is HK\$139,536/m² in Hong Kong Island, HK\$114,464/m² in the Kowloon area and, HK\$93,896/m² in New Territories respectively (HA, 2017). In 2016, the average cost of private housing in Hong Kong was HK\$115,965/m² (HA, 2017). The Hong Kong government subsidizes SSFs at an average cost of HK\$34,789.6/m², depending on the location (HA, 2017). The production of Subsidized Sale Flats in 2016/17 was 3,017 units, with the majority (69.7%) of flats ranging in size from 40m² to 60m². Around 20% of flats are smaller than 40m², and less than 10% over 60m² (HA, 2017). The government of Hong Kong spent more than HK\$4.6 billion on SSF production and subsidies in 2017. However, due to HA's construction plans over the next few years, the production of Subsidized Sale Flats represents a significant cost growth after 2017-18 as part of the government's effort to mitigate the housing shortage in Hong Kong. Thus, the total investment in SSFs is expected to be much more than HK\$4.6 billion in the coming years.

Although SSFs represent a significant expenditure for the HA, investment in PRH has been the agency's primary focus. As mentioned previously, 33% of public housing is comprised of SSFs and 67% is made up of PRH. A sharp increase in construction costs threatens the financial well-being of the Housing Authority in light of its plans for increased production. The average cost of PRH construction in 2017-18 is HK\$0.71 million per unit and is expected to reach HK\$1.01 million per unit by 2020-21 (OHKF, 2017). Moreover, the HA plans to construct 13,400 PRH units in 2018/19 at an estimated cost of HK\$9.55 billion, and plans to direct HK\$12 billion in 2020/21 toward PRH production (HA, 2018). In addition to the rising construction costs of PRH, there is also a widening gap between PRH's operating cost and rental income. The operating cost has increased

from HK\$58/m² in 2009 to HK\$93/m² in 2017, an increase of over 60%, while the rental income merely increased 10% in the past eight years (OHKF, 2017).

Although the agency's costs are expected to increase due to rising construction costs and increased production, the HA is currently operating with a budget surplus. According to HA's 2016-17 annual report, it has about 4.5% overall return with HK\$48,906 million investment. However, the vast housing demand is still a growing financial challenge for the government of Hong Kong.

Recommendations

The pressure for additional housing stock availability and affordability is heightened by Hong Kong's increasing need for labor and a large aging population. It is expected that by 2041, 31% of the residential population will be 65 years of age or older, with most seniors either out of or exiting the workforce (Census and Statistics Department, 2017). In search of a sustainable housing production and allocation process that will address the pressing need for housing stock and affordable living conditions in Hong Kong, we have identified a few areas through which Hong Kong can begin to address these needs. While public housing is a need met by Hong Kong's Housing Authority, there is overlap in the need for housing and in the need for mobility, through which Hong Kong's MTR can play a key role.

Policy recommendations are focused on increasing land available for development in the short, medium, and long term in a manner which respects private land ownership while setting the conditions for increased housing supply. Our recommendations also include a focus on the development of existing areas not currently being used for residential housing purposes in order to increase supply in the short to medium term. Also recommended is the integration of regional transportation with mainland China to provide easy access to more affordable housing.

We recommend that the Housing Authority begin coordinating with other cities and municipalities of the GBA on housing policies and tracking statistics. The statistics currently tracked by the city are effective in fully displaying the scope of the housing shortage and unaffordability for Hong Kong, however its scope focusing on Hong Kong alone fails to demonstrate regional implications. Improved transportation connections throughout the region will allow for shorter commutes between different areas within the GBA, and allow for commuters to live in lower cost housing markets. As Hong Kong begins further economic, infrastructural, and political integration with mainland China, the housing shortage will become an even more prominent regional issue. Our recommendation is for Hong Kong to begin coordinating with other cities in the region to examine the housing shortage as a regional issue, while utilizing the same specific statistics. This would entail expanding the scope of these metrics, which will facilitate higher

level intra-regional examination and policy considerations. When reporting and tracking these metrics within Hong Kong, the HA should consider location to a greater degree, and this approach could be continued when expanded to the GBA. Other cities within the GBA should examine these same statistics, and it is vital that any monitoring of the housing situation maintain a uniform standard for metrics across the area. This will enable a more extensive coordination within the GBA, and could allow Hong Kong to play an increased role in policy discussions. If Hong Kong serves as the primary coordinating and convening voice, it could provide the city with a position of leadership on this issue within the GBA, and help direct the conversation.

Key Performance Indicator Evaluation and Recommendations

The Hong Kong HA's KPIs are mixed in their usefulness. They are effective in tracking the total number of public housing units constructed, and track some key components related to tenant quality of life in public housing. However other KPIs fail to serve Hong Kong residents, particularly those living in or seeking public housing. For example, media enquiries, paper consumption by the HA, and overall water consumption at the HA are currently tracked as KPIs. While these may be worthwhile goals for the HA, we believe they fail to prioritize tenants and ultimately fail to plan for its needs, and therefore should not be designated as KPIs while aspects related to tenant quality of life are omitted. Meanwhile, metrics such as tenant satisfaction, neighborhood safety, and building quality are not classified as KPIs. There is also no KPI tracking the HA's effectiveness in outreach to disadvantaged populations within Hong Kong. We recommend that the Housing Authority restructure its KPIs to include aspects relating to tenant satisfaction, safety, and tenant quality of life by aligning them with recommended standards and matching the scope of comparative world cities.

Reclaim and Reuse Land for Public Housing

According to a Land Use and Housing Policy report, there are about 391.5 hectares of unused government-owned land, described as "idle government land" currently zoned as "residential and commercial/residential" with potential for the development of public housing. This would represent an increase of 5% in residential land supply utilization (Our Hong Kong Foundation, 2017; Planning Department, 2017). Hong Kong University research on adaptive reuse looked at Kwun Tong, previously a manufacturing hub in Hong Kong, as a model for large-scale adaptive reuse implementation evaluation. The research identified manufacturing as a large part of Hong Kong's GDP in the 1970's. However, soon after Hong Kong as a British colony began economic exchange with the PRC, a large portion of Hong

Kong's manufacturing moved into mainland China for access to a cheaper labor force. From 1981 to 2008, Hong Kong's manufacturing industries as a proportion of the local GDP dropped from 21.8% to 2.5% (Kee, 2014). The research identifies that in 2009, approximately 200 hectares were predesignated from "industrial" to "Other Use / Business" through a government revitalization scheme. Despite a number of government incentives, the inability to convert from industrial to residential prevented investment for housing development. MTR, as a master coordinator between developers and the Hong Kong government, can play a key role in raising the conversation about affordable housing production, in particular public rental housing, especially if adaptive reuse sites are near transit.

Planning for Immigration, Workforce, Integration, and Housing

As the region prepares for new transport connections between the eleven cities in the GBA, with Hong Kong MTR as one of the lead agencies in the regional integration process, housing must be at the forefront of the integration items in consideration. Hong Kong will reap an economic benefit from the establishment of connections with southern mainland cities, including easier accessibility to an expanded labor force. This new geographical and transport connection has the potential to relieve housing pressure in Hong Kong. The soon to be opened HKZMB will substantially decrease a previously 4-hour travel time to approximately 45 minutes, making the commute from Western Pearl River Delta (PRD) to Hong Kong Island accessible within 3 hours (HZMB website, 2018). These facilitated regional connections should play a critical role in alleviating the housing pressure in previously unreachable employment hubs such as Hong Kong Island, Kowloon, and the New Territories.

Hong Kong faces a number of challenges in addressing its housing shortage. Its stated performance metrics currently fail to serve its local population, and the city faces a potential funding shortfall risking ability to implement public housing plans. Hong Kong also faces a severe shortage of land available for residential development. The city has a variety of options for addressing this issue such as: utilizing regional connections, developing underutilized areas, land reclamation, and rezoning park space for residential use. Our recommendations consist of: reforming current KPIs to focus on tenant and resident needs; increased collaboration with regional governments on housing policies and data tracking; utilizing infrastructure investments to develop a regional approach to housing and; finding new areas to develop residential housing. The next section (Alleviating Land Scarcity in Hong Kong) explores a variety of scenarios to increase the amount of land available for housing development. All have potential benefits and concerns regarding implementation, and should be analyzed further to determine which options offer

the most equitable distribution of positive and negative externalities.

Alleviating Land Scarcity in Hong Kong

The integration of Hong Kong with mainland China promises to test the already strained and densely-occupied land market in Hong Kong. The Task Force on Land Supply (2018) estimates that at least 1,200 ha of new developable land over the next 30 years is needed to address the current housing crisis. This amount of developable land does not currently exist, meaning the government must make major, and politically challenging, land use decisions. The scarce availability of accessible land zoned for residential development presents a particular constraint on the ability to develop new housing at the same pace as the growing population. Currently, Hong Kong residents' lack of housing options creates a low standard of private life for the city's poorest and most vulnerable, posing a significant threat to social and political stability.

To prepare for Hong Kong's formal political integration in 2047, the government of Hong Kong and important stakeholders, ranging from MTR to business and political leaders and universities, must predict and plan mitigation for the approaching impacts of a borderless GBA with free movement of people and resources between Hong Kong and Mainland China. The acquisition and development of more land for housing, transportation, and supporting facilities will be instrumental to improving Hong Kong residents' living circumstances and opportunities.

To understand the major social, political, and environmental implications of delegating or adding significantly more habitable land in Hong Kong, we analyze three scenarios: (1) land reclamation to artificially increase the developable land area of Hong Kong, (2) selective rezoning of land from country parks to residential to repair an artificial constraint on developable land, or (3) an embrace of "status quo" policies that do not substantially increase the developable land area of Hong Kong. How these options achieve, or fail to achieve, additional habitable land will be weighed against the social and environmental impacts inherently produced. We also analyze selected future MTR projects through the lenses of environmental justice and social equity. In order to fully analyze political and societal consequences of development, we address both social inequities and environmental injustices throughout this chapter.

Injustice Concerns in Hong Kong's Modern Development

In Hong Kong's recent history, environmental justice and equity concerns have lacked full consideration within development projects, including land development and public transportation projects. Hong Kong government entities and land developers must address and include environmental injustice claims in order to increase Hong Kong residents' quality of life and housing conditions, preserve Hong Kong's natural beauty and wildlife, and ensure the equitable distribution of resources among Hong Kong people. Hong Kong's selectively limited land supply deepens inequalities, particularly along lines

of wealth and income, and alleviating Hong Kong's land scarcity through the addition of land and transportation opportunities may further discriminate against Hong Kong's poorest and marginalized residents. Therefore, social and environmental justice concerns in Hong Kong revolve around a central question: Who do planning processes benefit?

As no formal definition of environmental justice exists in Hong Kong government departments or with transit provider MTR, we employ the U.S. Environmental Protection Agency's definition of environmental justice: "Fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies" (U.S. EPA, 2018). In Hong Kong, development projects "likely to have significant environmental impact" (Mayer, 2018) must undergo the Environmental Impact Assessment process, but the Ordinance has been criticized for its outdated measures (Mayer, 2018). The Ordinance fails to address contributing climate change factors, including greenhouse gas emission levels, and does not guarantee a public input process to ensure equitable resource distribution.

Public transportation plays an integral role in connecting Hong Kong residents to jobs, opportunities, networks, and markets. MTR's "world-class railway service" ("Financial Performance," 2015) is financed through its operations as a joint land owner and developer, prompting careful consideration of the company's role in environmental justice through the connection, or isolation, of Hong Kong's most vulnerable residents. As discussed in this chapter, Hong Kong's low-income residents bear significant social and environmental costs of development projects and continued to be marginalized and isolated through MTR's rail lines.

Despite championing itself as the "most environmentally friendly mode of public transport in Hong Kong" (MTR, 2018), several recent environmental and social injustice claims have arisen in MTR projects, including evictions through land resumption processes and station accessibility concerns. Like other development companies, MTR and the Hong Kong government carried out processes of land resumption to clear village tenants for transportation projects. The highly publicized eviction of Tsoi Yuen Tsuen Village's 500 non-indigenous residents in 2008 to construct MTR's Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL) exhibited growing environmental justice concerns in Hong Kong and is currently under construction (Lam, 2015, 1-2). In MTR's network, physical accessibility remains a concern of disabled, elderly, and female rail users, who face the greatest limitations in managing mobility devices and prams on the train. The first MTR stations built in the 1970s and 1980s lacked barrier-free access to trains (*Legislative Council*, 2018). MTR is working to retrofit stations, more effectively including customers with mobility needs through the addition of "toilets, lifts, and seats...[and] elderly engagement"

(MTR Corporation, 2018). MTR's efforts to increase station accessibility benefits all of Hong Kong society, as MTR's age-friendly practices address and work directly with Hong Kong residents' concerns.

Many other inequities arise in Hong Kong society, ranging from waste management (Cho, 2015) to wildlife preservation (Knott, 2018) to noise pollution ("Noise," 2016). As one of Hong Kong's most contentious issues, land scarcity is self-imposed on Hong Kong with only 25% of Hong Kong's 1,106.34 km² of land developed for Hong Kong's 7.3 million residents and 40% of land reserved for "country parks and nature reserves" (GovHK, 2017). Land scarcity correlates with soaring property values and inhumane living conditions (as discussed later in this chapter), significantly threatening Hong Kong's social and political stability. As a land developer and public service provider, MTR has a significant interest in increasing the livability of Hong Kong and expanding its profit base through land scarcity solutions. Ultimately, honoring and working to resolve injustices and inequities aligns with Hong Kong's democratic values and prioritizes a key focus of planning and development: Hong Kong residents' health and safety.

Scenario 1: Land Reclamation Process

To provide additional land mass, Hong Kong's coastline has been manipulated through land reclamation since as early as the Han Dynasty in 206 BCE (Chan, 2001). Hong Kong primarily uses a process known as capital dredging to extend coastlines or build artificial islands in the sea. The process removes sediment and mud from the ocean floor (dredging) to create a solid clay/silt base on which to layer rocks and sand, while a perimeter seawall is constructed to contain the artificial land (Ning, 2010).

Land Reclamation in Hong Kong

As of 2016, approximately 7,000 ha of land in Hong Kong have been formed through reclamation, accounting for 6% of the city's total land area, but roughly a quarter of the total developed area (TFLS, 2018). The earliest reclamation projects by the Han Dynasty converted and extended beaches to develop area for salt plantations that remained in use until the 1950s. The Qing Dynasty expanded the coastline during the 18th century to create land for agricultural production. During early British colonization, several piecemeal reclamation projects added area irregularly throughout the 19th century, capped by the Praya Reclamation Scheme (1890-1904) and the Praya East Reclamation Scheme (1921-1929), which added 26 ha to Hong Kong's waterfront (Chan, 2001).

Technological and industrial advances in the 20th and 21st centuries enabled significant increases in the scale of reclamation projects, with large undertakings including: Chek Lap Kok (1250 ha) and Kai Tak

Airports (219 ha), Hong Kong Disneyland (200 ha), West Kowloon Cultural District (340 ha), and six of the nine New Town developments being at least partially built on reclaimed land (TFLS & Civil Engineering and Development Department, 2017).

There are currently proposals for six nearshore reclamation projects outside of Victoria Harbour totalling over 500 ha, with an additional 1,000+ ha in offshore islands planned for the Central Waters between Hong Kong Island and Lantau Island (Civil Engineering and Development Department (CEDD), 2018).

Advantages of Land Reclamation

No Displacement of Current Residents

The primary public benefit of land reclamation is that the government is able to create new land for development and infrastructure without the need for land resumption or resettlement.

Clean Slate Planning and Strategic Locating

Reclamation allows planners to have greater flexibility in land use planning as developments are designed, by using an area as a "blank slate" without the obstructions of an existing built environment. Additionally, reclamation sites can be strategically located so New Towns are constructed adjacent to existing services, utilities and transit, mitigating potential budget constraints for the provision of new infrastructure. Conversely, industrial and other uses with negative externalities, can be located on reclaimed land built in remote areas away from populated areas, minimizing the impact to existing communities.

Disadvantages

Very Expensive

Coastline manipulations and artificial islands are very expensive to build, requiring a substantial capital investment. Cost estimates for nearshore reclamation and supporting infrastructure are between HK\$15,000-\$25,000/m², while offshore islands exceed the high-end estimate. Using HK\$20,000/m², the proposed 500 ha nearshore development would cost HK\$100 billion, with the offshore islands larger than 1,000 ha potentially reaching HK\$450 billion (TFLS, 2018). The high costs of building artificial land are inevitably passed to future residents, making it likely that only wealthy residents and businesses will inhabit and benefit from large reclamation projects.

Harmful to Marine Ecosystems

Environmental impact assessments have found that land reclamation poses a threat to marine ecosystems and water quality. Land encroachment—along with climate

change and pollution—into the relatively small area off of the Hong Kong coast inhabited by the Chinese White Dolphin has resulted in a decrease in species numbers by 2.5% annually (World Wildlife Fund). Coastal manipulation obstructs natural water currents, potentially causing slower current speeds leading to increased siltation and decreased levels of water quality (Civil Engineering Office, 1995). Additionally, reclamation projects may negatively affect fisheries resources, marine traffic, port operations and existing waterfront communities.

Political Considerations & Feasibility

In response to threats from land reclamation, the Society for Protection of the Harbour proposed the *Protection of the Harbour Ordinance*, which was signed into law in 1997 (Housing, Planning and Lands Bureau, 2004). The legislation, while not a prohibition, aims to limit land reclamation in Victoria Harbour stating, “The harbour is to be protected and preserved as a special public asset and a natural heritage of the Hong Kong people and, for that purpose, there shall be a presumption against reclamation in the harbour” (HPLB, 2004). To override the presumption against reclamation, three questions must be considered by government officials:

1. Is there a compelling and present public need?
2. Is there any reasonable alternative to reclamation?
3. Is the proposed reclamation extent minimum?

Despite the presumption against reclamation in Victoria Harbour, in its public engagement exercises as part of the *Enhancing Land Supply Strategy* study, the Hong Kong government found broad public support for “a six-pronged strategy including land reclamation outside of Victoria Harbour” (CEDD, 2018). The study also found general public agreement on site selection for the six aforementioned nearshore reclamation projects and the larger offshore island project (CEDD, 2018).

Scenario 2: Selective Rezoning of Country Park Lands

Process

One of the assets of Hong Kong is the land in its vast protected country parks. They serve ecological, recreational, and economic benefits. One potential economic use is to rezone select parcels determined to be of “low ecological or recreational value” from their protected status to a residential development zone (Hong Kong Special Administrative Region Government (HK-SARG), 2017).

Country Parks in Hong Kong

Country parks account for 40% (443km²) of Hong Kong’s available land (AFCD, 2018). The Country Park

system was formalized in 1976 to protect the newly recovered green spaces after World War II and encourage active recreation and a shared common heritage (Jim, 1986). However, the success of the Country Parks systems also became its primary challenge; overuse of trails, litter, and encroaching development led to the passage of the Country Parks Ordinance (Jim, 1989). The Country Parks Ordinance established a legal framework for the designation and governance of the now 24 country parks and 22 special areas designated primarily for nature conservation. It also created the Country and Marine Parks Board to advise on the management of the system.

Of the land within the country park system, some areas have conservation zoning designations (such as Sites of Specific Scientific Interest (SSSI) and Conservation Areas (CA),) while others do not. A number of government reports and communications, including most recently the Chief Executive’s 2017 Policy Address and the Task Force on Land Supply’s (TFLS, 2018) “Land for Hong Kong” (2018) report explore the option of reclaiming some periphery parklands for residential development, in particular those in close proximity to existing development and those designated as of “low ecological or recreational value.” This designation is not clearly defined by any of these reports, but in the press briefing upon the release of TFLU’s report, the chairman Stanley Wong Yuen-fai, indicated that there would need to be a “very high” threshold to reclaim country park lands, that considers ecological impact (Ng & Zhao, 2018).

The topic of country park land rezoning has been contentious since the establishment of the system, and few instances of the practice exist. Only two attempts at country park land rezoning have been successful since the passage of the Country Parks Ordinance: 18 ha from Clear Water Bay Country Park for the expansion of the Southeast New Territories Landfill in 1992 and 3 ha from Tai Lam Country Park for a Route 3 approach road in 1995 (Cheung, 2016). The initial landfill expansion met little resistance, although an attempt to add 5 more ha in 2010 faced public outcry and a successful LegCo repeal; the Tai Lam excision passed only on the condition that two new, larger pieces of land were added to the country park. In May 2017, by initiative of the Chief Executive Leung Chung-ying, non-profit housing developer Housing First started a study of two proposed sites, Tai Lam, Yuen Long, and Shui Chuen O, Sha Tin (Housing Society, 2018). The proposed sites make available 40 total ha, or about 0.1% of all country park lands, for residential development (TFLS, 2017). The results of the analysis are expected in 2019.

Advantages of Selective Rezoning

Broad Impact

Compared to other options for expanding available land, the rezoning of country parklands holds the potential for

the largest impact. If the government converted only 1% of the inventory of country park lands into residential development, or about 430 ha, the new area would account for over one third of the conservatively estimated 1200 ha gap in need for all housing, and exceed the estimated 230 ha needed for projected new public housing by 2046. (TFLS, 2018)

No Displacement of Current Residents

The use of country parkland allows for expanded land stock without utilizing resumption and displacement of residents. Resumption is a major concern among residents, and as described above, the Chief Executive committed to removing it as an option to reduce public discontent and costs and delays associated with likely litigation (HKSARG, 2017).

Legislative Rather Than Action-Based Process

The designation of country parklands into area zoned for residential development benefits from the fact that it is an entirely legislative and administrative action, and does not require compensatory payments, land purchases, or other acts of engagement. Once identified and designated, the land would still go through all the same required statutory processes, such as an Environmental Impact Assessment, as any other piece of land.

“Low Ecological Value” Terrain Only

Because there is not yet a clear definition of what “low ecological and recreational value” means, it is a hard criterion to assess. However, if scientific consensus is able to agree upon specific area that meet a low-threshold of ecological impact, then these marginal parcels could minimize damage done to ecologically important habitats and offer a more environmentally sound option than others, such as Harbor land resumption.

Disadvantages of Selective Rezoning

Publicly Unpopular

Perhaps of all 17 options analyzed in the recent “Land for Hong Kong” (2018) report, this one may have the least public support. The public outcry to the 2010 expansion of the Southeast New Territories, a much smaller land reclamation, than even the proposed sites in the current Housing Society study, may be indicative of the current political climate. One undercurrent shared by politicians and advocates alike is the fear that ceding any land to development opens the door to continuing to rezone country parks in the future.

Logistical Feasibility Challenges

Action to remove land from country parks could face legal challenges as a violation of the Country Parks Or-

dinance requirement for a “compelling need” to develop while any other options for freeing land for development are on the table. In addition, the estimated timeline for the process would take 13-15 years, making it a long-range option, and this estimate does not account for any delay in implementation due to political backlash (TFLS, 2017). The total country park land that qualifies within the criteria for possible development is uncertain and requires more analysis.

Potentially Damaging Ecological Impact

Country parklands support an ecologically rich habitat for a wide number of plant and animal species unique to Hong Kong and the region (Environmental Bureau, 2016). Environmental groups raise concerns that development could directly impact not only the flora and fauna in the specific area of development, but also those in more biodiverse areas which rely upon “low-ecological value” areas as corridors (Ng & Zhao, 2017). Without clear scientific consensus, opponents see action toward removing country park lands as irresponsible and short-sighted (Nissim, 2017).
[parametric animation linking housing unit needs to growth scenarios into country parks and artificial land - not sure where this goes]

Scenario 3: Status Quo

Process

Given the political risk of implementing the most impactful strategies to increase land supply, it is important to assess the consequences of maintaining the status quo. The scenario assumes current housing supply trends continue without drastic changes made to the available land supply and analyses the political and social threats of the environmental costs imposed on Hong Kong’s poorest and most vulnerable.

Unjust Housing Conditions

At present, Hong Kong is the most expensive housing market in the world, with a typical flat renting for HK\$15,900 per month (Ka-sing & Zhen, 2017). Further, with only 16m² of living space per person, Hong Kong offers one of the most constrained living environments in the world, trailing other densely crowded cities such as Tokyo (19.5m²) (Our Hong Kong Foundation (OHKF), 2017). As prices continue to increase and land supply remains relatively static, the size of units continues to decline. For instance, Hong Kong witnessed the completion of 8 times more micro flats (<20m²) in 2017 versus 2015, while 38% of all privately supplied flats completed in 2017 were less than 40m² (Yau, 2018). For the established housing stock, flat subdivisions have proliferated: over 200,000 people now live in subdivided units (SDUs) (Census and Statistics Department (CSD), 2018). A recent survey of SDUs found the average space

per SDU resident was less than 5m², roughly the size of a Hong Kong prison cell (Ng, 2017).

These small flats are not only uncomfortable, but also detrimental to resident health. A lack of natural light has been linked to increased incidence of diabetes and depression, and worse cardiovascular outcomes (Wardle, 2011). For children, small living conditions lead to worse education outcomes, increased behavior problems, and compromised physical and mental health (Solari & Mare, 2011). Twenty-eight percent of SDU residents are under 25 years old (CSD, 2018), which suggests that many children call these flats home. For adults above 30, overcrowded living spaces are associated with increased substance abuse and domestic violence (Urist, 2013). The elderly are particularly vulnerable to the negative consequences of overcrowding since they are less mobile and spend more time in their homes as a result (Baltes et al., 1999). Although only 8% of Hong Kong's elderly live in SDUs (CSD, 2018), this number is expected to spike in the coming decades due to Hong Kong's aging population trends. By 2041, 31% of the residential population will be over 65 years old, up from 16% in 2016 (CSD(b), 2017).

Growing Inequality

In addition to public health, financial equity is a concern. Over the past two decades, Hong Kong has witnessed increasing income inequality: the Gini Coefficient in 2016 was 0.539 (CSD(a), 2017), up from 0.518 in 1996 and 0.430 in the 1970s (CSD, 2012). A Gini Coefficient of 0.5 means high levels of inequality, with 0 meaning a perfectly equal distribution of wealth across people and 1 perfectly unequal. Paralleling this growing income divide, overcrowded living conditions disproportionately affect Hong Kong's poorest and least protected residents. Median monthly income from main employment of those living in SDUs was just HK\$9,250 in 2016 (CSD, 2018), nearly 40% below Hong Kong median for all residents (CSD(b), 2017). Meanwhile, ethnic minorities comprise 12.9% of residents of SDUs, a 1.6 times overrepresentation compared to Hong Kong's overall population composition.

Consequences

The inequity of land supply threatens the stability of Hong Kong and its values. Hong Kong has long been a place for economic opportunity; yet this promise is threatened because of high housing costs, which consumed half of the wage increases from 2011 to 2016 (OHKF, 2018), and increased economic inequality, which is linked to lower economic growth (Cingano, 2014). It is notable that while the economic connections between mainland China and Hong Kong have grown, Hong Kong is increasingly home to fewer mainland Chinese, with absolute numbers declining 1.2% from 2006 to 2016 (CSD(c), 2017). As mainland China grows

wealthier and Hong Kong faces high cost of living, the value proposition of Hong Kong as a place to live declines.

Growing inequality also destabilizes social satisfaction. Even if the poor realize increased economic success and improved quality of life, if these gains are relatively less than others in society, unhappiness is likely to increase since relative wealth, rather than actual wealth, determines people's happiness (Boyce et al., 2010). Discontent has already manifested itself in the 2014 Umbrella Movement, a prolonged series of protests responding to a legitimacy crisis of the Hong Kong government amidst increased inequality, decreased social mobility, and rapidly increasing housing costs (Ortmann, 2015). Future unrest is likely unless Hong Kong begins to address these inequities, of which housing is central.

Rather than fight for more voice and opportunity, many of the most vulnerable might be forced to relocate from Hong Kong. This could mean large impacts for the communities of these residents. For instance, 42.2% of residents in SDUs working in that same district as their residence, moving from their flat would mean disruption to their economic livelihood (CSD(b), 2016), as well as important laborers to the economy. Further, social bonds are likely to be weakened with their departure (Marcuse, 1985). Perhaps the most affected would be the elderly left behind, since social support lessens the negative impacts of the immediate environment directly linked to mortality (Wiggins et al., 2004). The public health impact could be widespread given the rapidly aging character of Hong Kong's population. Moreover, the effects could be particularly acute for the Hong Kong elderly since the extended family has traditionally provided elder care (Cao, 2012), a responsibility more difficult as families split apart in search of better quality of life.

Future Implications

There are negative societal consequences to inaction on the housing and land scarcity issues. Unfortunately, without major changes in land policy, the housing situation will likely continue to deteriorate. Our Hong Kong Foundation (OHKF) predicts that Hong Kong will fail to miss its housing supply targets for the next 5 years (2017). This shortfall is predicted on the public housing side (-30%), with the private market hitting 16% above target. Given the reliance on the private market to make up this deficit and Hong Kong's Chief Executive Carrie Lam rejecting calls to institute a minimum flat size (Yau, 2018), we can expect the proliferation of small flats to continue. In sum, the disparity in living space per capita will likely continue to grow.

Reflection: Social and Political Equity of Pipeline Developments

Governing bodies with land development authority

in Hong Kong will exacerbate the political and social equity impacts for the three alternatives. An analysis of pipeline projects and proposals supported, sponsored, or owned by the government and MTR will reveal the present level of equity and inequity built into the fabric of the contemporary Hong Kong development model. This understanding, coupled with the objective analyses of the three alternatives, sheds light on the expected level of land equity implications of available land scarcity solutions for the stakeholders.

Multiple projects in development serve as examples for this process. Among the most notable are three new MTR lines and the East Lantau Metropolis land reclamation proposal. An analysis of all projects, through their expected beneficiaries and intended and unintended consequences, underscores the social and political equity costs impacting residents of various districts between now and 2047.

MTR's Planned New Lines

MTR White paper reports, as well as public relations campaigns, spokesperson accounts, and active transportation development, suggest the future of transportation for Hong Kong residents will rely increasingly on rail (Transport and Housing Bureau, 2014). The emphasis on rail over city bus, automobile, or active transportation creates an opportunity for the social and political equity of future MTR projects to be analyzed.

An analysis of demographic data and household statistics in 18 Hong Kong districts (Census and Statistics Department, 2018) reveals two trends: 1) a correlation between district wealth and district rail accessibility and 2) new stations and new rail lines in MTR's construction pipeline are concentrated in the wealthiest districts.

The expected North Island Line, South Island Line (West), and East Kowloon Line will together pass through districts 15, 18, 16, 4, and 17, by order the wealthiest districts in Hong Kong by household income (CSD, 2018). In contrast, via comparison of MTR's development pipeline against the same household figures, the least wealthy 12 districts will see limited investment in rail infrastructure and fall further behind in station accessibility relative to wealthier districts.

Thus, the increase of rail accessibility, that is the percentage of residents located in "rail catchment areas," to 75% of Hong Kong residents via these new lines creates the unintended consequence of disadvantaging residential areas that are currently not served by rail (Transport, 2014). As rail development concentrates in areas composed largely of traditionally white-collar families facilitating direct connections to central business districts (CBDs), blue-collar workers must continue to rely on slower speed transportation to reach similar business districts (Tse and Chan, 2001).

Hong Kong Government & Land Reclamation Proposal

The East Lantau Metropolis land reclamation project, a cooperative effort between the Hong Kong Development Bureau and the Hong Kong Planning Department, continues the same trajectory of the proposed MTR lines by offering housing and economic growth exclusively in the most wealthy districts. The new land will be positioned between the Hong Kong International Airport, the Islands District (Hong Kong's 6th wealthiest), and the 4 districts of HK island ranking in the top 5 wealthiest overall. Creation of the land between the wealthiest districts directly facilitates a densification of wealth in these districts. Furthermore, by funding a land reclamation development project that is inherently dependent on rail connectivity for the transportation of residents and commuters (ELM, 2016), the government plans will, by default, heighten the concentration of rail investment in many of the same districts that will be enhanced by the new MTR lines.

The location of this new CBD metropolis returns us to the question: who is the Hong Kong government planning for? The East Lantau Metropolis project is the pinnacle of land reclamation projects in the history of this region. The combined expense of the project is expected to exceed that of the HKZMB and the XRL (Yam, 2017). With land construction prices at upwards of HK\$20,000/m², business interests and community elites alone may maintain an economic viability to purchase and develop this space.

Public opposition to the project is well-documented. Public opinion polls in 2013 and 2016 showed opposition to the project exceeding approval by margins of 12.8% and 19.6%, respectively (Yam, 2017). Leading housing advocates question the veracity of the project's proposed goal of increasing affordable housing stock in Hong Kong, as suggested by think tanks tied to the business community (Vines, 2014), as meritless public relations (Yam, 2017). Additionally, dissent exists regarding the timeline of construction (30 years) and the need for the proposed 700,000 units in the long term.

Equity Overview

Planned MTR lines and the proposed ELM reclamation project indicate a preference for providing the most valuable social, political and economic benefits to the wealthiest and best connected of Hong Kong residents. Subsequently, it is rational to assume that other benefits of construction, specifically supporting facilities like health and wellness clinics, will densify in these districts and their populations will disproportionately receive advantages. Together, these major pipeline projects fail to prove that the leading institutions in Hong Kong fully account for the social and political equity impacts of large-scale development projects and will continue to advocate for and construct these projects with long-last-

ing negative equity impacts on vulnerable populations.

Recommendations

Alternatives for decreasing land scarcity in Hong Kong must consider the natural and political environment of the state in cooperation with the track record of leading development organizations in Hong Kong. Land reclamation and limited rezoning of country park lands are included in this report due to their ability to produce large amounts of developable land and their frequent discussion in public discourse. These two alternatives, along with our third alternative of continuing status quo policies, each present unique characteristics that support and detract from their acceptability as viable public policy.

Land reclamation in Hong Kong has grown from, historically, a venture producing small additions over long periods of time to, today, an opportunity to create large-scale, high-value metropoli. Often these projects claim large public benefit that fail to materialize, while the primary benefactors, real estate developers and business elites, reap large profits. The analysis of the East Lantau Metropolis supports this latter conclusion as its public support, housing affordability, and land equity are all called into question.

Limited rezoning of country park lands faces enormous pushback publicly and politically. Feasibility studies, currently underway, may present findings suggesting that carefully chosen parcels can be developed in manners that are minimally damaging ecologically. In the event that public sentiment toward limited rezoning eases, or heightened land pressures create a necessity for the exploration of this idea, this option may become more politically feasible. But if country park lands do become available for development, the inequitable distribution of MTR lines analyzed previously suggests that MTR and the Hong Kong government may favor protecting country park land in wealthy districts at the expense of country park land in poorer districts.

The status quo option, reliant on dwindling land supply and additionally suffering from the recent - and we say just - government shift away from the practice of land resumption due to its association with prolonged legal battles (Chung, 2018), cannot foreseeably keep pace with the growing need for housing and the predicted need after integration. These options are failing to protect the quality of life of Hong Kong citizens and many residents may feel compelled to search for cheaper options in Mainland China post-integration. Still, traditional development options, including transit-oriented new town development, coupled with nascent strategies like the recovery and infill of under-utilized industrial and agricultural lands can make contributions to the ultimate supply need.

Therefore, to decrease land scarcity and diminish its threat to Hong Kong's future viability, we recommend influential stakeholders to consider a piecemeal strategy of land acquisition and development that relies

on all three alternatives, but none too heavily, and none at the expense of vulnerable, less wealthy citizens. The practice of land reclamation should return to its roots of moderation, and large-scale projects like the East Lantau Metropolis should be abandoned. Selective rezoning of country parks, while politically unpopular today, is a necessary option for future development, but one that MTR and the Hong Kong government must ensure will not disproportionately damage the green space of the 12 least wealthy districts. Finally, traditional transit-oriented new town development and exploratory infill developments must continue to address the overall housing crisis and contribute to the efforts to increase affordability and protect Hong Kong's living standard.

Facilitating Labor Market Access in the Greater Bay Area

The Hong Kong SAR has many strengths. It has been blessed by geography, and its history has placed it into a unique position as a multilingual metropolis that eventually developed into a global hub for manufacturing, distribution, and financial services. Manufacturing has decamped to lower-cost areas, including mainland China, and Hong Kong's economy has come to be dominated by value-added industries in the service sector. Of course, the current and future success of the Hong Kong depends on its people – its labor force.

We will discuss recommendations based on the idea that Hong Kong will be dependent on a continuous influx of workers from outside of the SAR. Since the 1997 handover of Hong Kong to the People's Republic of China (PRC), both the gradual integration of Hong Kong's labor market with that of mainland China as well as the crucial role played by migrants from outside either side of the border will remain an important focus. As noted in the previous section on environmental justice, development should consider the equity of residents, both permanent and temporary, in its plans.

These considerations with respect to changes in Hong Kong's labor market ultimately reflect all the other issues presented in this larger report. The movement of people places enormous pressure on systems of governance, regional transportation networks, the environment, and housing. Our recommendations speak to this reality, specifically focus on how Hong Kong might address the concerns introduced by large numbers of workers from outside Hong Kong in its current political, economic, and demographic situation.

This section begins by providing an overview of Hong Kong's labor needs. It then describes the demographic issues confronting the SAR before providing specific recommendations for addressing regional needs. It concludes by providing an overview of higher-level risks and uncertainties that may require reconsideration of these recommendations.

Labor Market Overview

Hong Kong has the sixth most competitive economy in the world (Global Competitiveness Report, 2016) but its labor market faces several structural issues. The service sector accounts for 90% of Hong Kong's GDP, making it the world's most service-oriented economy (Hong Kong Trade Development Council, 2018). This leaves it particularly susceptible to macroeconomic headwinds affecting this sector. The labor market sees constrained wage growth, particularly relative to Singapore, Taiwan, and the PRC, with a significant impact on recent college graduates (ECA International, 2017).

While the labor market favors the service sector, construction and technology currently experience major demand for labor. Because of the ambitious development plans in Hong Kong, the SAR needs at least 15,000 additional skilled construction workers through 2021 (Construction Industry Council, 2016). Further-

more, the Innovation and Technology Bureau recently launched a new scheme that will bring up to 1,000 technology workers to Hong Kong in its first year, but this is just to keep pace with current demand – not to grow the industry locally. Furthermore, this plan does not even come close to matching mainland's efforts to attract top tech talent, manifest in a HK\$5.3 billion (¥4.4 billion) allocation to hire foreign experts, including scientists and academics, to facilitate innovation and entrepreneurship (China Daily, 2016).

In light of the ageing population and a declining birth rate, the labor force in Hong Kong is expected to continue to decline after peaking in 2019 (HKSAR, 2017). That will compound the demand for labor in technology and construction as well as in healthcare and elder care services. The integration of the Hong Kong Special Administrative Region (HKSAR) into the GBA can help alleviate the labor market pressure currently weighing down the local economy. The labor market must attract new employees in technology and construction to meet current needs and rise to meet the opportunities and challenges presented by an integrated GBA.

Demographic Issues

Increasing needs for labor, geographic and development constraints, and a rapidly ageing population create a large gap between labor supply and demand. Hong Kong cannot fully control these demographic issues, but it can adapt, and the solutions Hong Kong chooses to implement will have major implications for the SAR's future economic development. Chief Secretary for Administration Cheung Kin-chung projects Hong Kong's labor force to decline in the coming decades (3.67 million in 2019, 3.51 million in 2031, and 3.13 million in 2066), absent major intervention (Xinhua, 2017). Therefore, we recommend Hong Kong to embrace migrant workers as a major source of labor in the near future, in order to secure the viability of those segments of Hong Kong's economy that are reliant on migration inflows.

Owing to Hong Kong's perennially strong financial services sector, the concentration of highly-skilled workers in this area outnumbers the lower-skilled laborers that the construction and infrastructure industry needs. Although these laborers facilitate Hong Kong's infrastructure development, the chronic labor shortage has hindered the industry's growth (Johnston, 2017). According the Construction Industry Council, construction projects in Hong Kong need 10,000 to 15,000 additional construction workers over the next four years to keep up with the anticipated demands (CIC, 2016). To fill unskilled labor demands, Hong Kong depends on its 350,000 foreign domestic workers, who already make up 10% of its entire workforce (Bell, 2017). Seeking employment opportunities, unskilled migrant workers typically take on labor in the construction and service industries.

Additionally, Hong Kong has an ageing workforce due to the impending and ongoing retirement of

existing workers, combined with a low fertility rate. This creates a structural labor shortage that requires intervention. Government projections suggest that by 2064, more than one-third of Hong Kong's population will be age 65 or above, a 15% increase since 2014. The local construction industry, in particular, hosts more than 40% of workers over the age of 50 (Johnston, 2017). This elevates Hong Kong's role in creating alternative pipelines to expand its labor pool and ultimately sustain and grow future development.

Recommendations

Promote Growth-Oriented Immigration Policies

Given the demographic future of Hong Kong's labor market, MTR should consider taking a more active role in advocating the SAR's immigration policies. Allowing more migrant workers into Hong Kong will help increase labor pools to fill positions as the rail network expands. Furthermore, lobbying the SAR on this issue aligns with the worldly orientation of MTR's corporate culture (MTR, 2017). Hong Kong possesses the advantage of having a polyglot, multicultural environment to absorb higher levels of immigration from both the mainland and the rest of the world. Just as MTR's future growth will require more labor from abroad, Hong Kong will not be able to thrive in the future without growth-oriented changes to the SAR's immigration policy. As the economies of Hong Kong and mainland China become more intertwined, MTR can play a leading role in maintaining Hong Kong's advantages as a diverse world city.

In comparison to mainland China, Hong Kong has more flexible laws that allow for the migration of labor. The SAR permits workers from outside Hong Kong to be admitted through the Imported Worker policy under certain conditions (Immigration Department, 2017). Imported Workers can stay in Hong Kong for a maximum of 24 months. In contrast, mainland China strictly controls mobility of labor. Far from encouraging immigration from abroad, the PRC government administers the *hukou* registration system for its own citizens, which entitles holders to social benefits only in their registered area. This produces unequal and unjust outcomes for rural migrants working in China's more prosperous cities (Wu and Wang, 2012).

The comparatively more open immigration policy gives Hong Kong an advantage in the face of an ageing workforce. With five major network expansions projects planned, MTR will most likely need to rely on labor sourced from outside Hong Kong. Therefore, we recommend that MTR work with the SAR Government to lengthen contracts for imported workers to 36 months with options for an extension. Pursuing this policy will allow MTR to reduce turnover associated with the 24-month cutoff. Extended permits will also permit migrants to find future employment in Hong Kong should

they wish to stay and should the labor market need them.

Hong Kong's immigration system also has room to allow more migrants to fill open positions in MTR. The current one-way permit system allows 150 migrants from the mainland per day to settle in Hong Kong (Liu et al., 2016). While this means that just under 55,000 people can move from the mainland to Hong Kong per year, the number of One-Way Permit-seekers has declined to just under 47,000 in 2017 (Home Affairs Department, 2018). In addition, these permit holders are increasingly better educated. Recent arrivals from the mainland have comparable educational backgrounds to the rest of Hong Kong (over 90% with secondary education or higher) (Home Affairs Department). This may mean that these migrant workers will not fill the unskilled or semi-skilled positions with the most acute labor shortages. Since the One-Way Permit system routinely falls below the quota, Hong Kong has the capacity to accept more in-migration of labor from other countries. We recommend that MTR advocate for more imported workers from outside of China to fill these below-quota numbers. This would respect the existing quotas, but allow flexibility for MTR to hire much-needed workers.

If MTR pursues our recommendations, the company will likely have to grapple with the question of social integration of these newcomers. Hong Kong has already welcomed temporary and permanent residents since 1997--over 40% of the city's population was born outside of Hong Kong as of the 2011. (Census and Statistics Department, 2011). Moreover, recent data show a positive trend in Hong Kong people's perceptions of migrants, especially from mainland China. A survey conducted by the Chinese University of Hong Kong in 2016 found that although 70% of Hong Kong residents see mainlanders as a threat to employment opportunity, 67% of respondents answered positively or neutrally towards these migrants (Chinese University of Hong Kong, 2016). Not only are more Hong Kong residents accepting of migrants, but migrants seem to be integrating into the social fabric of the SAR. A survey of the values of mainlanders and native Hong Kong people found few statistically significant differences, with no difference between the two groups on attitudes towards education, the SAR government, and participation in democracy (Liu et al. 2016). These results seem promising due to the similarity in values between migrants from the mainland and local Hong Kong residents. Should MTR press the government for a policy that allows more mainlanders to work in the SAR, public perception could potentially be more positive.

Judging from this evidence as well as MTR's globally oriented ethos, strong social capital, and goodwill throughout Hong Kong, the company has the opportunity to lead the rest of Hong Kong towards a better immigration policy. Doing so improves the prospects of MTR's labor supply and therefore its labor costs. Expanding this culture of international acceptance to all of

Hong Kong will help the city maintain key advantages as it integrates further with the GBA, while maintaining a unique position among the region's cities.

Housing Policy Focused Both on Needs of Aging Population and Migrants

A growing body of research demonstrates that ageing populations are not well-served in their existing environments, but rather are better suited in living situations that can better accommodate the physical and mental health challenges (including memory and cognitive impairment) that come with age. (Mynatt, 2000; Oswald, 2011). These concerns are particularly acute in the context of increased life expectancy, that would have been considered miraculous in Hong Kong or anywhere else only a generation ago. Between 2006 and 2016, Hong Kong's median age increased by nearly four years, to 43.4. (Kao, 2017) Hong Kong's low rate of natural increase means that, absent a flow of migrants, the SAR's will face a similar demographic crisis similar to those currently playing out in places like Japan and Europe (*Ibid.*).

This report has proposed that such a flow of migrants is essential to the SAR's continued economic viability and vitality. Although the care of ageing residents and the acute need to house new immigrants to Hong Kong present two separate problems, there is a solution to address both issues simultaneously. We suggest that MTR, in its capacity as a major developer, taking a leading role on encouraging investment in purpose-designed housing models better suited towards seniors' increased need for social and medical services, designed to attract them to relocate away from the dwellings they have inhabited for decades. This will not only improve the living condition of seniors, but also free up apartments in established neighborhoods with access to employment, so that new householders can occupy them, including immigrants.

MTR has a proven record of successfully supporting property development in the SAR in a manner supports regional growth and optimal land use ; this history engenders a significant amount of trust within the business community, government, and the public (Leong, 2016). MTR is likely the only agency in Hong Kong, and one of the few in the world, capable of proposing such an audacious plan.

Forcing longtime residents, particularly elderly ones, out of their homes is a political non-starter. In the Chinese culture, which venerates elders, it would be impossible to create a strong legal mandate that would compel these residents to vacate their homes. Instead, there must be "pull factors," which create the desire to relocate. This can come in the form of subsidized rent; accessible features designed for ageing residents; proximity to social and shopping opportunities; medical facilities situated nearby; green space, parks, and environmental features; and, perhaps most importantly, multigenerational housing.

Many young adult Hong Kong residents are still forced to live at home due to a lack of affordable housing (Forrest, 2015). This prevents them from marrying and starting families of their own. To prevent the stigma of new housing facilities being considered "senior housing," with no amenities for a younger population, decision-makers can consider a paired, "two-for-one" approach: one legacy apartment being traded for two smaller apartments in newly-developed areas – one for aging parents, another for children starting their own families.

The need to relocate aging residents also has significant transportation implications. These ageing residents still frequently reside in areas closer to Hong Kong's employment centers even after they retire. Newer members of the workforce, face long commutes on a crowded transit system from outlying areas, even as Hong Kong experiences increasing centralization of employment (Monkkonen 2014, 9). While the working children of multigenerational households may accept the trade-off of a longer commute, immigrants without parents in Hong Kong will benefit from living closer to work.

As this recommendation is implemented, we predict that most families will inevitably remain in their existing housing, with only a small percentage choosing to vacate at any time. This will prevent massive turnover of housing units. Moreover, this plan will affect both privately-owned and public housing. Privately-owned housing will experience an increase in supply in the market, but as residents vacate public housing units, policies will need to be implemented to ensure that new migrants have the opportunity to apply for these units.

Implementing this recommendation will prevent an all-too-common situation in other jurisdictions, including Singapore, in which new arrivals are forced to live in a geographically-constrained area (whether by force of legal or economic reasons) (Kirk, 2015). This unfortunately creates a perception of an area being as low-class, or associated with undesirable elements. The distribution of immigrants throughout Hong Kong should help to combat such perceptions. The SAR's small size and strong transport links, however, should ensure that migrants can maintain social ties with migrants from the same region.

Streamlining Cross-Border Transportation

As Hong Kong looks to increase labor sharing practices with mainland China, the government will be tasked with enabling the daily flow of workers across the border. The number of daily crossings has consistently increased, with 220,000 daily passenger crossings at the Lo Wu Control Station and nearly 173,250 daily passenger crossings at the Lok Ma Chau Spur Line Control Point (Immigration Department of Hong Kong, 2016). Even though 99.9% of passengers cleared customs within 30 minutes in 2016, it remains unclear how each side of the border will ensure sufficient throughput when the

numbers increase (ibid). Moreover, even small delays in crossing pose a significant collective burden for a growing number of border crossers.

Rather than seeing it as a burdensome challenge, labor market integration presents a tremendous opportunity for both Hong Kong and mainland China to invest in the daily cross-border movement--making the system more efficiency. As Shenzhen continues its rapid growth, the Hong Kong 2030+ plan lays out a bold vision for business development closer to the mainland. Stanley Ng Chau-pei, a deputy to the National People's Congress notes, "Hong Kong has missed a lot of opportunities to work with Shenzhen since the handover. With Shenzhen becoming a regional metropolis, we should not delay to look into more economic cooperation so that we can remain relevant in the development of the Greater Bay Area" (Leng, 2018). In order to cluster with Shenzhen and fortify the GBA's gateway to the world, Hong Kong must address border bottlenecks to streamline the daily flow of labor across the border. The government of Hong Kong can do this with two main initiatives. First, it can facilitate expedited crossing for technology workers. Second, MTR can increase connectivity in the Northern New Territories.

One specific policy proposal can be simplified clearance for companies straddling the border. Technology companies in the United States regularly utilize private shuttles to transport their talent from city centers to suburban office parks. Hong Kong and Shenzhen can adapt that model as a way to expedite employee border crossing instead of one-by-one daily commuting. For example, a technology firm that sources many of its engineers from Shenzhen can organize daily company shuttles to move large portions of its workforce across the border at one time. The company will work with both the government of Hong Kong and mainland China to register, pre-screen its employees for expedited transport as well as on-board clearance. The governments can hold companies accountable for registering their employees, and if they fail to uphold the standards of the program or abuse this system, they can lose the opportunity to participate.

This procedure already exists for schoolchildren. Information technology platforms and a portable device interface facilitate an on-board clearance for students, whose numbers increased nearly five-fold between 2007 and 2016 (HKSAR, 2016). While students utilize on-board check-in with this technology, their buses navigate separate travel lanes to allow for quick travel at peak times. The police have already made special transportation arrangements for school coaches at the Lok Ma Chau Spur Line Control Point (HKSAR, 2016). This can happen for tech company coaches as it will facilitate movement to office parks or northern MTR hubs.

Second, with planned technology development in the eastern and northern districts, MTR should consider a rail spur or extension to serve the soon-to-be developed areas. The extension of XRL opens tremendous

opportunity for the Central Business District, but it will not directly transport labor from Shenzhen to the Eastern Knowledge and Technology Corridor outlined in the Hong Kong 2030+ plan. When a Shenzhen resident arrives in West Kowloon via the XRL, it will still take that person over one hour to reach Science Park by MTR and bus. The commute will be even longer from the Luohu or Futian checkpoints. If Hong Kong desires to improve its standing as a technology center and tightening its bond with Shenzhen, it must close the transportation gap in the Eastern part of the SAR.

One possible route can connect Fanling Highway to the Heung Yuen Wai Border Control Station. The Hong Kong 2030+ plan proposes a road connecting these two areas. However, a shared right-of-way with road and rail can maximize the potential for transportation of people and goods (HKDB, 52). There will be demand for transportation in this area since Ta Kwun Ling and Fanling North have each been identified as potential development areas, together with the Liantang and Huangbei Residential Districts just across the border (Hong Kong Development Bureau, 57). The demand will only grow when the Shenzhen Metro Line 8 opens to the public, connecting Liantang with Luohu to Xiaomeisha (Guo, 2014). If MTR connects Huen Yueng Wai with the East Rail Line, it can provide a vital link to the proposed development areas in northeast Hong Kong, while opening access for workers in the residential areas of eastern Shenzhen.

The demand for integration exists on each side of the border, with human and financial capital awaiting measures that loosen border flow. The fundamental building blocks already exist, with expedited student boarding in place and insight into Shenzhen's Metro plans (MTR, 2018). High-speed rail initiates a leap forward for integration, but Hong Kong must take smaller steps in border efficiency and eastern connectivity to successfully connect the two labor markets.

Cross-Border Labor Sharing

Extending MTR's rail system beyond the Shenzhen-Hong Kong border requires navigating a complex sociopolitical landscape. Through a collaborative entity, a formal agreement should be instituted to detail a provision of labor regulations, protections, and conditions that shall guide rail development into mainland China. Key stakeholders such as investors from Hong Kong and political partners (as identified in the stakeholder analysis), in addition to the PRC's central government, should facilitate the development of this formal agreement to ensure an inclusive participatory process and mutual benefits. This will ultimately serve as the basis for integrating mainland China's labor market into MTR's new rail extensions in the GBA.

Given MTR's comparative strengths as one of the world's preeminent transit corporations, mainland China would find it a strategic imperative to contract MTR to design, construction, financing, and operations

of its regional transit network. Current cities in mainland China including Shenzhen, Beijing, and Hangzhou as well as several European cities already employ MTR as a consultant-operator in developing robust transit infrastructure (MTR Corporation, 2017). Thus, as a form of public-private partnership (PPP), MTR should initiate a broader Design-Build-Finance-Operate-Maintain (DBFOM) agreement that allow it to develop railway extensions into mainland China.

A DBFOM procurement model would be linked to an operation and maintenance (O&M) contract. Essentially, this agreement represent a form of leasing, where the government allows a private entity to design, finance, build, and operate an infrastructure project (Prieto, 2012). MTR, as the service provider, would be responsible for financing the project during construction as well as collecting tolls or fares during its operation. The responsibility for operation and maintenance for newly-developed transit extensions would remain with MTR for a set period (usually 20 to 30 years) to provide an exit plan. However, the agreement would be open for renewal. Government, specifically the PRC (China's landowner), would provide a land write-down in exchange for expediting the development process of land planned for transit development (Kang-chung, 2018). This type of partnership alleviates some of the political and regulatory hurdles MTR would need to cross in order to build out their system across the GBA, while creating mechanisms for economic development and regional integration into mainland China.

Building out an expansive transit system across the GBA places considerable demand for construction laborers. Thus, the DBFOM agreement should be augmented by measures that define the scope of labor. To delineate the extent to which labor conditions should be applied through MTR's GBA plans, we propose establishing a project labor agreement (PLA), also known as a community workforce agreement, as part of MTR's overall development agreement with the central government. Traditionally, a PLA equates to a preemptive collective bargaining agreement with one or more labor organizations that establishes the terms and conditions of employment for specific construction projects (Belman et. al., 2007). The Los Angeles Unified School District provides an effective model for PLAs as they spent more than \$8.7 billion in construction and renovation projects between 2004 to 2011 (Le, 2011). MTR can use this case as an example to improve economic opportunities for local communities as well as create standards for safety, quality, and costs for construction projects. The PRC's Central Government would serve as mainland China's primary negotiator with Hong Kong officials and MTR. Through this process, mutual agreements would be established to not only protect MTR's interests as they scale their business model into mainland China, but to also prepare the migrant workforce that would construct MTR's rail projects.

Mirroring best practices for PLAs, MTR should consider certain subject areas in their agreement (Bel-

man et. al., 2007). First, MTR should recognize the scope of work that will utilize laborers from mainland China and other migrants. While the central government will depend on MTR's technical expertise to develop new railway extensions, most of the construction will heavily rely on labor from mainland China. In addition, MTR infrastructure that extends into mainland China should prioritize mainland-based businesses for their commercial components. This will ensure that economic value generated through MTR's rail developments is captured in mainland China's economy through increased investment and capital secured through this process. Additionally, the PLA should include requirements regarding workplace safety and training. Similar to the working conditions for undocumented workers in the U.S., Chinese migrant workers face disproportionate rates of workplace dangers, especially in construction projects as well as increased exposure to sanitation and other health risks (Fitzgerald et. al., 2013). As the last major component, the PLA should also address language used for on-the-job training and apprenticeships. Many factors expose migrant workers to exploitative practices that undermine their labor and also pipeline them into roles they can not adequately fill (Bell, 2017). Therefore, MTR should provide extensive job training and apprenticeship opportunities for migrant workers during the procurement process to elevate the quality of work and sustain optimal output for MTR's construction projects. Overall, MTR and the central government would find a PLA an effective tool in ameliorating workplace-related risks.

Conclusion

The beginning of integration with the GBA presents major opportunities and challenges to MTR Corp. Ltd. as the company continues to grow at a major inflection point in Hong Kong's history, especially in regard to its workforce. The ageing workforce has already put enormous pressure on the construction and technology industries as they cannot find enough appropriate candidates within the SAR's borders. MTR will inevitably source construction and tech workers from outside of Hong Kong, but how it brings labor into Hong Kong presents an opportunity for the company to be a model for the rest of the region--how will MTR integrate migrant workers? The recommendations we spotlight represent the first steps to thinking how MTR engages with regional politics on immigration policy, housing its workforce, and promoting cross-border links to integrate Hong Kong into the GBA without losing its advantages.

These recommendations could bring some issues with the public perception of MTR. The company already has to run its operations to the high standards of its shareholders and everyday patrons of the rail network. Therefore, adopting any of the measures included in this section should be broached cautiously with the public. Potential threats to successful implementation of these recommendations include resentment towards

hiring migrant workers for network expansions and integrating them into housing. Dealing with the unease regarding immigration and integration requires transparency. Therefore, MTR must lead the conversation before the discourse becomes combative. The voices of Hong Kong residents should be included to maintain trust between the company and its customers. Through this dialogue, there can be understanding between MTR and the public on how these policies extend benefits to all who make the GBA home.

Regional Transportation Collaboration

Our analysis will discuss the advantages of creating a regional planning authority for the GBA. Integrated transportation planning is a challenging issue worldwide; we review how metropolitan areas in the United States have formed regional entities to help streamline planning. We believe that MTR could benefit by advocating and helping to form such a framework, which will secure MTR a seat at the table for regional planning purposes and improve prospects for collaboration between Hong Kong and mainland China. Specifically, we offer a framework to help the GBA plan effectively as the region grows. We discuss several options for organizing and funding such an authority, weighing Hong Kong's unique considerations. We then conduct a stakeholder analysis to provide how all relevant stakeholders can be engaged in this process.

Opportunities and Challenges for Regional Transportation Collaboration

Since 1997, a growing number of transportation infrastructure projects and policies between Hong Kong and mainland China demonstrate that regional integration is well underway. The economic plan for GBA, XRL, and the Hong Kong-Zhuhai-Macau Bridge (HKZMB) serve as a few examples of projects that aim to better integrate the region. The GBA initiative aims to position the integrated region as a center of advanced manufacturing, innovation, shipping, finance, and trade for Southern China (Hong Kong General Chamber of Commerce (HKGCC), 2017). In addition, with Hong Kong's status as an international financial center and the world's largest offshore renminbi hub, the financial sector in the GBA has significant growth capacity (HKGCC, 2017). While the PRC government's vision of the GBA as integrated business and entertainment hub offers southern China great economic opportunities, achieving such a goal will require a joint effort among the mainland cities, Hong Kong, and Macau. This brings challenges to the table for both Hong Kong and mainland Chinese cities because of the "one country, two systems" basic law. Among the most daunting challenges facing the GBA includes establishing cross-border systems that can settle differences in border controls, currency, and legislation (HKGCC, 2017).

The express rail link and bridge projects demonstrate the dual challenges and opportunities present in integrating the GBA. At the forefront, the XRL makes traveling from Hong Kong to mainland cities faster, more efficient, and environmentally sustainable. Furthermore, the XRL facilitates an easier flow of talent within the area, connecting people to more employment and housing opportunities (HKGCC, 2017). However, the "one location, two checkpoints" West Kowloon terminus immigration plan highlights the struggles of jurisdiction and authority that come with establishing new regional integration policies. The HKZMB represents another example of border-crossing complication. Although the bridge has beneficial aspects such as enhanc-

ing the flow of commercial goods and people from the SARs to mainland China and vice versa, the movement of motorized vehicles entering Hong Kong—a relatively small island city with land scarcity—remains a limitation to the bridge plan. The management of traffic leaving and entering Hong Kong will put forward another challenge for collaborative governance for Hong Kong and mainland cities.

Challenges to cross-border operation are not unique to the GBA. Many U.S. cities experience similar challenges when attempting regional planning and integration policies. Los Angeles County, for instance, frequently encounters difficulties when implementing new transportation initiatives and regional policies across city limits. For example, the incompatibility between Breeze Bike Share and Los Angeles Metro Bike Share programs in the City of Santa Monica make the bike share system less user-friendly. Not only do the two bike share systems require separate membership registration, Metro Bike share operates on a dock-based system, through which bikes can only be rented and returned to the Metro Bike Share stations, whereas Breeze Bike Share operates a dock-less system through which bikes can be rented at stations, or anywhere a bike is located. Furthermore, the systems have different fee configurations. Breeze Bike Share allows members to pay for the minutes they use at a rate of HK\$0.94/minute. Metro Bike Share charges in HK\$27.5/30-minute increments (Santa Monica 2017). Because of all the differences and disjointed implementation between the two bike share programs, the bike share systems in the City of Santa Monica not only confuse users, but also reflect an unsuccessful collaboration between City of Santa Monica and Los Angeles County Metropolitan Transportation Authority. The California High Speed Rail proposal depicts another instance of challenges that many transit agencies encounter. The rail project has generated controversy due to its high and underestimated cost, funding proposals, delayed timeline, location, as well as its effects on farmland (Vartabedian, 2018).

Currently, the Steering Committee and the forthcoming Guangdong-Hong Kong-Macau Bay Area Development Office will facilitate discussions among the relevant central authorities, the Guangdong Provincial Government, the Macau Government, and the relevant bureau and departments of Hong Kong's government (HKSAR, 2017a). However, these committees will still face challenges regarding Hong Kong's political and cultural positions in relation to those of mainland China (the question of how the "one country, two systems" basic law should be interpreted remain relevant in Hong Kong), which create a barrier for regional planning and integration. Hence, to combat the jurisdiction drawback of the practice, mainland cities and the SARs may want to consider developing and strengthening the application of collaborative governance through a regional planning authority.

Developing a Regional Planning Authority Fundamentals of a Regional Authority

Like many large metropolitan regions across the world, the numerous cities of the GBA face the challenge of developing various projects that will work in favor of all each city's goals and plans. Many regions that are comprised of multiple governing bodies, transportation agencies, housing authorities, and other stakeholders seek an agency capable of bringing them all together and aligning their views and goals with the overall larger goals of the region. Such agencies can take the form of a Metropolitan Planning Organization (MPO), a Council of Governments (COG), or a Joint Powers Authority (JPA).

Acknowledging the multiple stakeholders that will need to be involved in the steps towards regional integration of the GBA, we recommend the creation of one authority that will oversee the multiple stakeholder agencies and representatives, and help facilitate cross-cutting regional planning and projects. This representative agency would be comprised of its own staff who would oversee the research and consultation necessary to plan, report, and offer technical assistance to member agencies. This "third party" set-up will ensure that unbiased staff promote policies that serve the region and its larger goals and do not favor any one particular area. The committees and subcommittees of the agency will consist of representative stakeholders who will have a specific focus that will feed into the bigger plan for the region. The committees will have representatives from the agency on them as well, who will ensure once meetings have been adjourned and decisions have been made, that the implementation process is seen through to completion.

MPO Model Example

MPOs, COGs, and JPAs have experienced many successes in the United States. The largest MPO in the United States, the Southern California Association of Governments (SCAG), is an agency that encompasses six counties, including 191 cities, and covering more than 98,000 km² representing a population of nearly 19 million people ("Welcome to SCAG," n.d.). In the agency's fifty years, it has overseen many successes while simultaneously discovering ways to improve its workflow. We have taken the successes and lessons from SCAG and formatted them to fit the framework that would be needed for the GBA's regional planning authority.

Incentives

Every ten years, SCAG develops a Regional Comprehensive Plan (RCP) which includes goals and recommendations working towards sustainable communities strategies, growth forecasting components, regional transportation improvement programs, and regional housing needs allocations ("Welcome to SCAG," n.d.).

This plan is used as one of SCAG's tactics to incentivize member cities to align their goals with the greater goals of the region. When cities propose planning projects that work towards the achievement of a goal in the RCP, SCAG will grant the project additional funding and partner with the city or agency to ensure the completion of the project. Incentives such as funding and additional support not only guarantee the goals of the RCP are met, but also ensure that projects in one city align with projects moving forward in other parts of the region. Every city and agency has their own goals and projects that need to be completed, but it is crucial to make sure those projects all work towards bettering the livelihood and essence of the region. This process of third-party oversight, incentives, and collaboration paves the road towards healthy regional integration. Unfortunately, this road comes with some bumps and challenges along the way.

Challenges

Although there are many successes that derive from the structure of a MPO, there are challenges that hinder the scope of work they are actually capable of doing. Many MPOs lack the authority to implement the plans they develop, and therefore are regulated to a consulting rather than an implementation role. The inability of some MPOs to raise their own funding stream or regulate land use planning prevents them from making as large an impact as they could. It is a challenge for an agency that has the authority to oversee projects and influence regional planning to not be able directly develop and construct the real-world project.

The committees and stakeholders who should be involved in this regional planning organization will be discussed in further detail in the following sections. It is important to note that in addition to engaging agencies who oversee the regional integration agenda for the cities in the GBA, the public must also be engaged throughout the process. The end goal for all of the involved agencies is to promote and develop a system that not only connects cities throughout the region, but a system that makes living and traveling easier for its users.

Funding Models for Regional Planning Authorities

Effective regional planning requires dedicated, ongoing funding to build staff and technical capacity and ensure a consistent, long-term vision. In particular, planning for future growth uses modeling and data collection, both of which can be expensive. Agencies which lack the funding and capacity to handle these tasks tend to over-rely on the staff and expertise of outside organizations (Mallet, 2010). In a complex political environment like the GBA, it is important that all stakeholders can trust that the planning authority is objective, independent, and will not disproportionately favor any particular group. An overreliance on outside expertise could therefore

risk the authority's credibility among stakeholders. The following sections explore U.S. funding for planning organizations, and suggest some funding schemes for a regional planning authority in the GBA.

Fuel Taxes

Metropolitan planning organizations in the United States generally receive most of their funding from the federal government (Mallet, 2010). SCAG's funding is 74% federal, 6% state, and 20% local (SCAG Financial Report, 2017). Most transportation funding in the nation comes from fuel taxes (Puentes and Tomer, 2009). However, the U.S. government has found that this funding stream is unsustainable due to increasing fuel-efficiency of cars and is seeking alternate funding schemes (GAO, n.d). The following sections explore some alternatives to fuel taxes.

Membership Dues and Local Matching

Metropolitan planning organizations in the United States tend to charge member cities dues equivalent to HK\$1 per capita (SCAG, 2014). This generally accounts for a small portion of overall funding. SCAG has developed a formula that charges cities based on population both as a raw number and as a percentage of total regional population, updating dues slightly each year based on forecasted need (SCAG, 2014). It collects a total of approximately HK\$15 million in dues annually out of its HK\$716 million budget (SCAGc). The federal government also requires that local cities and towns "match" a percentage of federal funding with cash or in-kind contributions, and state laws require southern California cities dedicate a certain percentage of their transportation budgets to the MPO (SCAG, 2017).

A benefit of requiring dues and local matching is that it allows each member to decide how to fund regional transportation planning. Furthermore, some stakeholders may be able to offer in-kind contributions like software, labor, or other resources instead of cash. It also establishes two distinct classes of stakeholders: "members" and "non-members," which may help organize decision-making. A major challenge of this system is that member cities may choose to "opt out" of membership, foregoing dues under the assumption that they will still benefit from regional planning if others are funding it. Others may threaten to withdraw their dues if the planning authority makes decisions they dislike, creating a volatile funding future. Policymakers will need to develop policy to avoid both of these cases. For example, members could receive benefits such as access to data for planning purposes. Finally, charging membership fees based solely on population may marginalize Hong Kong in the region. Membership fees could be further based on gross domestic product (GDP) or political status, with special administrative regions paying a larger proportion relative to mainland cities in order to maintain a greater stake in the regional planning

authority.

Mileage-Based Fares

A number of regions and think tanks are considering mileage-based fares which charge road users based on impact to the roadway. These systems rely on either odometer inspections, on-board units with GIS or cellphone network capacity, or smartphone applications to track mileage (Sorensen et. al, 2012). At minimum, these systems must be able to calculate mileage, communicate that mileage, invoice and collect payment, communicate to users, retain auditable records, and guarantee privacy (I-95 Corridor Coalition, 2010). In addition, they may also adjust rates based on vehicle type, congestion levels, and other factors. More complex systems are able to track mileage by specific geographic area (Balducci, 2011).

We explore this idea in connection with the GBA initiative because a similar initiative is occurring in the United States along Interstate 95 (I-95). This road is a 3,000 km highway which is heavily urbanized and congested, running through 17 states along the eastern coast. It accounts for 35% of the country's vehicle miles travelled (I-95 Corridor Coalition, 2010). Stakeholders representing this corridor are developing an interstate system of mileage-based fees to replace fuel taxes. The U.S. Federal Highway Administration has compiled extensive resources about how to develop a mileage-based fee system, which is a well-studied issue (FHWA, 2017). The I-95 states conducted a legal analysis to assess the legal feasibility in their particular contexts; this would be the first step for the GBA, as well. GBA policymakers would also have to decide how to administer, adjudicate, and enforce the program. In the I-95 corridor, each state where a car is registered will be responsible for overseeing its drivers.

A major benefit of such a system is that it reduces congestion, emissions, and road wear by encouraging travellers to drive less (Sorensen et. al, 2012). This may help manage the high demand for driving in the the GBA. Furthermore, this system allows authorities to charge commercial truck drivers a rate that reflects the heavy wear their vehicles inflict on the roads (Puentes and Tomer, 2009). Drawbacks include that these systems can raise privacy concerns among the public, and it is necessary to develop privacy safeguards and encourage public support for these programs. Several options are outlined in the Federal Highway Administration reports linked in the footnotes. There can be further equity implications as less-wealthy individuals may have to drive longer distances to reach work. This may be addressed by charging varied rates based on the make of the car, with more expensive cars facing higher fees. A final challenge is that Hong Kong residents use public transportation at greater rates than mainland residents (Transport and Housing Bureau, 2017a). This will likely mean that any funding scheme which relies upon tolling or taxing drivers will disproportionately impact main-

land cities.

Recommendations for Funding

The GBA should prioritize secure ongoing funding for a regional planning authority. We recommend that the new entity require each city and SAR contribute membership fees adjusted for overall population and GDP or political status. It should further explore the possibility of implementing a mileage-based fare structure in the region as a means to generate revenue for regional initiatives. Hong Kong should explore political willingness to make additional contributions, in order to maintain a comparable stake in the planning authority relative to mainland cities.

Framework to Collaborative Governance

Collaboration is needed in every organization; it helps make informed decisions, builds consensus, and solves problems. However, collaboration is a skill that needs to be taught (Straus, 2002). In Hong Kong, the challenge is cooperatively working together in a structure where two systems, under one country exists while also collaborating with other municipal governments across borders and other non-state actors. Both competing systems impose external obstacles to community-based collaborations. Effective community collaboration is required to overcome external obstacles like agency capacity, differences in culture, obstructive regulations, resistance, and large-scale political economic factors, (Dukes, Firehock, & Birkhoff, 2011). Using a collaborative governance framework will increase group decision-making capabilities, foster ideas and solutions, improve working relations across different regional entities, and propose alternatives to traditional practices and policies (Dukes, et al., 2011; Straus, 2002). By harnessing the power of collaborative governance, Hong Kong along with the ten cities, can strategically work towards a common long-term economic sustainable future.

Our recommendations will focus on a collaborative framework that promotes equal partnership and cooperation among the different stakeholders through a regional authority perspective and will offer financing models to sustain a regional collaboration.

Collaborative governance is a type of governance whereby public and private stakeholders work collectively using a process to enact rules or laws for the public benefit (Ansell & Gash, 2008). This new form of governance has emerged to respond to failed policy implementation and decentralized specialization of institutions (Ansell & Gash, 2008). No one individual or organization can solve societal problems therefore, knowing how to collaborate and how to teach the principles is critical to the GBA. Below is Figure 2 the model of Collaborative Governance that will aid the GBA and MTR; it outlines the starting conditions for overcoming resource imbalances, offers an institutional design for establishing procedural legitimacy, and emphasizes the

importance of facilitative leadership (Ansell & Gash, 2008).

Best Practices in Collaborative Governance

Building on Ansell and Gash's (2008) model we can begin exploring alternative recommendations for making collaboration work across international borders to build consensus.

1. *Identifying Stakeholders*- The first step for developing a framework for collaborative governance among the eleven cities is identifying relevant stakeholders who have formal power, power to block decisions, stakeholders who are affected by the decisions and stakeholders who have expertise (Straus, 2002). We explore key stakeholders in greater detail in our stakeholder analysis which is included in this report.
2. *Building Consensus*- The second step is building consensus phase by phase (Straus, 2002). This includes defining the problem(s) and working out a process for a regional economic development between the eleven cities (KPMG, 2017). The intent is to achieve support for the implementation despite disagreements in the group's decision (Straus, 20002). It entails understanding perception, defining the problem, analyzing for solutions, evaluating the feasibility and agreeing to a decision making process (Straus, 2002).
3. *Process Map*- Like a meeting agenda helps to organize the meeting activities similarly, a process map gives stakeholders an idea of how the activities fit into a larger regional context. Doing so will educate stakeholders of the issue, collect information about the current needs and create a vision (Straus, 2002). Through this process key stakeholders are informed about consensus buildings, garner support through attentive planning and offer a visual representation of the flow of how the project will start and finish and when and how stakeholders will be involved and organized (Straus, 2002).
4. *Designate a Process Facilitator*- The next step is designating a process facilitator who serves as a neutral guide that serves the group (Straus, 2002). In a network with several decision-making forums, structures, different organizational cultures, having a leader who can facilitate a consensus is extremely critical to move the mission and goals of the GBA forward collaboratively (O'Leary, 2013). It is important to note that in many instances, some stakeholders will exert its influence and power through their political capital or financial stake; however, it is up to the facilitative leader to hold stakeholders accountable of GBA's goals and establish strong institutional design to gain legitimacy (Ansell

& Gash, 2008). For the GBA it is recommended the Executive Director of the Regional Transportation Authority be responsible for leading the discussion and acting as the third party neutral. If this individual is not mindful of the power imbalances a lack of commitment and mistrust will slowly rise which will undermine the strength of the collaborative process (Gary 1989, Warner 2006).

5. *Harness Group Memory*- Harnessing the power of group memory helps document and visualize the topics discussed. Group memory records the ideas raised and decisions made on a large paper and posted so that every group member can see it. Displaying action items allows group members avoid repetition of the same topic, helps incorporate ideas from individuals worried of not being heard and associates ideas with people (Strauss, 2002).

to to learn, discuss, question, and agree on how to best integration the transportation systems. Simple divisions of these groups would be: the Executive Board, the Planning committee, and Outreach.

Within each group stakeholders may have similar or competing interests which add another layer of complexity for building consensus and completing projects. Ideally, the GBA initiative will allow the stakeholders to preserve their uniqueness in each subregion and expand complementary industries facilitated by transportation infrastructure for win-win scenarios; however, tension may inevitably arise due to differences in government systems, ideologies, and personal agendas (Carmelengo, 2018). These committees should be convened by “third party” professional staff employed by the regional planning authority whose role is to facilitate discussion, circulate unbiased educational resources, and manage projects during the entire process from policy formulation to project completion.

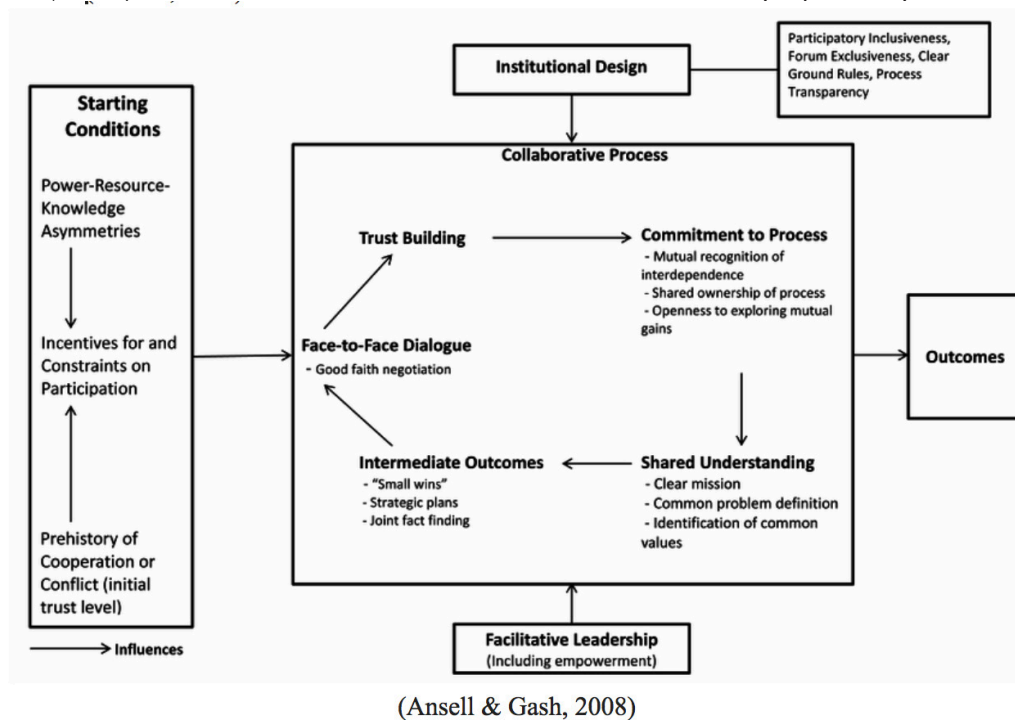


Figure 2: Model of Collaborative Governance (Ansell & Gnash, 2008).

Organizational and Stakeholder Considerations

When considering a collaborative governance framework and the emergence of a new regional transportation authority for the GBA, stakeholder involvement and participation is critical to the collaboration’s success and effectiveness. The identified stakeholders will join the conversation and planning process in different areas of transportation integration and some stakeholders may be involved multiple areas. To engage a large region, such as the GBA, we recommend that the Regional Planning authority have several committees based off of U.S. models of MPOs which can allow space for stakeholders

Executive Board

The Executive Board is where the overall vision, agenda, larger goals, and regional projects are authorized for transportation integration by higher-level actors with the resources, formal authority, and reputation. This board requires delegates from each participating municipal government in the GBA and the central Chinese government. These delegates can be the Mayor, Chief Executive (in the case of Hong Kong and Macau), or another official/appointee meant to represent the broader interests of their sub-region before the policy decision-making body.

The Board should also include the head (or representative) of the National Development and Reform Commission since it oversees macro-level planning and project development for the entire country of China (National Development and Reform Commission, 2018).

Additionally, members from the Steering Committee on Taking Forward Bay Area Development and mainland Co-operation and a representative from the Hong Kong Constitutional and mainland Affairs Bureau that were not previously included, but have already been involved in broader GBA integration efforts, should also be in the conversations of the Executive Board (HKSAR, 2017a).

These stakeholders need to be included and should employ collaborative governance principles to create meaningful and cohesive transportation integration regionally. It is here where perhaps the sub-regional interests are most prevalent, particularly interests in specialized economies. Within these agendas, transportation integration will play a key role therefore requiring consensus among these high-level stakeholders.

Planning Committee

The Planning committee consists of convening the various city planning ministries, city transportation engineers, and quasi private-public entities like MTR which all contain the technical expertise to plan, coordinate, build, connect and operate the transportation systems. These stakeholders must work collaboratively to ensure seamless continuity, connectivity, and mobility for passengers, pedestrians, and cyclists using rail, automobiles, air, and sidewalks. Tension among these specialized stakeholders may arise from broader pressure from their municipal leaders to adopt transportation modes that most benefit their individual regions. Similarly, communication across the vast GBA region may also present challenges for coordination for this reason a committee which convenes regularly to which address this possible problem.

Outreach

Outreach to other stakeholders would involve receiving input from residents, nonprofits, researchers and private sector entities which can highlight why, how, and where the new transportation projects should be placed. Consulting and engaging these stakeholders properly ensures that GBA transportation integration projects will be optimally utilized for their intended users. This outreach can be done formally by allowing for public comment after committee meetings or done so on a contracting basis, similar to the Hong Kong Task Force on Land Supply (Task Force on Land Supply, 2018). The goal would be to involve these stakeholders, especially as certain groups are activated, such as Migrant Workers, by the GBA initiative.

Bottom-Up Approach

Projects for transportation integration can be initiated by any group, each group can also inform the decisions made in other groups, indicating that the process can deviate from the traditional top-down approach in order to ensure that the projects developed are actually ful-

filled. For example businesses (Outreach) may express dissatisfaction or a need for transportation infrastructure to link people, goods, and services regionally. These concerns could then catch the attention of a regional planning department (Planning) and submitted as a policy proposal to the Executive Committee (Executive Board). Conversely, the two Chief Executives of Hong Kong and Macau (Executive Board) may agree to collaborate on a transportation project between the two areas and then delegate the project management to their local transportation bureaus (Planning) whom then consult the local residents of the proposed project site (Outreach). Finally, as previously mentioned there must be a “third party” facilitator to engage and manage the various stakeholders. It is recommended that the regional transportation authority’s executive director be the third party neutral facilitator.



Figure 3: Organizational and Stakeholder Structure of Regional Planning Authority.

Looking Forward

The GBA will inevitably face difficulty collaborating due to differing political systems and competing agendas. These challenges can be mitigated by developing a framework for trust and collaboration, both in the realm of transportation and in the wider realm of political integration. If MTA plays a lead role in advocating and forming such a framework, it can stand to help Hong Kong and itself leverage their unique skill-sets regardless of what the future holds for political integration with mainland China.

Political Integration Between Hong Kong and China

Introduction

The PRC government hopes to further strengthen economic opportunities through a more comprehensive regional strategy, the GBA initiative. Although the initiative is yet to be released, transportation integration is already happening between mainland and Hong Kong. The XRL, which runs 26 km and costs HK\$84 billion, will greatly increase the flow of people between Hong Kong and the PRC and scheduled to open September 2018. The rail line itself is not controversial, but the plan to place an immigration checkpoint inside Hong Kong's West Kowloon district has caused anxiety among Hong Kong residents. The PRC government has planned to enforce its immigration laws at the train station and on the trains themselves. This policy raises a red flag to Hong Kong residents who already believe that Beijing's political authority is increasing despite the "one country, two systems" mandate. The immigration checkpoint issue can be used as a political gesture of trust-building and collaborative governance between the PRC and Hong Kong. Specifically, the land lease can affirm the PRC government's commitment to the "one country, two systems" policy between the PRC and the Hong Kong Government. In so doing, the immigration checkpoint can serve as an example of a new paradigm of cooperation and respect between the PRC and Hong Kong, which is greatly needed to facilitate the goal of regional economic integration in the GBA.

The proposed shared checkpoint location at the West Kowloon station is a highly controversial issue due to how the Basic Law may be interpreted to accommodate this policy. The PRC's enforcement of its laws in Hong Kong sets a precedent for creating the PRC's sovereignty within Hong Kong's jurisdiction. The Basic Law, adopted April 4, 1990 is the constitutional document of the Hong Kong Special Administrative Region which outlines the "one country, two systems" agreement. This agreement grants Hong Kong high levels of autonomy but also gives significant control to the PRC government. The Basic Law authorizes executive, legislative, and judicial powers to Hong Kong but the Standing Committee of the National People's Congress (NPCSC) retains full authority to interpret the document, as long as it is done with consultation from the Hong Kong government (Basic Law, 1990).

The growing power of the PRC in Hong Kong has caused much concern and speculation about the future of the "one country, two systems" agreement. If confidence is lost in Hong Kong's ability to retain its unique position as a free market gateway to the Chinese economy, its role as a regional and national finance center may significantly diminish. The shared checkpoint agreement has led to further unrest to the already contentious relationship between pro-democracy and pro-establishment wings of the Hong Kong Legislature (Li, 2018, p. 1).

However, given that the NPCSC can interpret Basic Law, it is a better strategy for Hong Kong to use

its unique economic strengths in the GBA initiatives as a leverage against the PRC government. Because Hong Kong has much more convenient access to the global market and advanced industries, which are needed and irreplaceable in the GBA initiative, Hong Kong could keep its independence by assuming a leading role in the GBA initiative.

The Context of the GBA

Under "one country, two systems" and the 2003 Closer Economic Partnership Arrangement (CEPA), Hong Kong and GBA economies and mainland economies have become more integrated and have economically benefited from each other. This can be seen as the economies of Hong Kong and the mainland sharing similar trends of GDP growth (Blend, 2016).

The PRC government is currently promoting economic integration at an even higher level through the GBA by connecting nine mainland cities and the Hong Kong and the Macau Special Administrative Regions. The initiative will build an innovation-driven economy and promote a competitive global market with leading industries in high-tech, manufacturing, finance and modern services, and research and development. To facilitate the integration of the GBA, the PRC government is attempting to make the flow of labors, capitals, goods and services more convenient across the region (National Development and Reform Committee, 2017).

A SWOT Analysis of Hong Kong's Role in the GBA

Hong Kong has the opportunity to benefit from the economic integration of the GBA initiative, however, different perspectives from stakeholders have competing interests. The initiative will likely have significant impacts on Hong Kong's economic, social and political landscape. Therefore, it is important that Hong Kong understands its role within the integration and how potential outcomes may impact residents and future generations. A SWOT (strengths, weaknesses, opportunities, threats) analysis is a study of the internal strengths and weaknesses, as well as the external opportunities and risks of one organization in a given context. We believe a SWOT analysis of Hong Kong in the GBA initiative is an appropriate way to identify the role of Hong Kong through the implementation and after the integration.

Hong Kong has the most advanced industries in finance, modern service, trade and shipping to be found in the GBA. Hong Kong also possess more transparent and democratic political institutions compared to the mainland. The Hong Kong executive branch, legislative council, and judiciary run independently from the mainland and are often more trusted by local citizens and foreign investors. Meanwhile, the technology industry in Shenzhen and manufacturing industry in Guangdong Province are seeking more opportunities in the global market. This may increase the demands of Hong

Strengths	Weaknesses
<ul style="list-style-type: none"> • Solid finance, modern service, trade and shipping industries • Easy access to global market • More appealing economic policies to foreign investors • More democratic and transparent political institutions • Top universities and research institutions • Bilingual (English and Chinese) 	<ul style="list-style-type: none"> • Difficulty in collaboration with mainland due to different political system • Limited land capacity • Social issues, such as high housing price and aged society
Opportunities	Threats
<ul style="list-style-type: none"> • Greater development in finance, modern service, trade and shipping industries due to the growing need in GBA • Other business opportunities in mainland due to higher integration • Greater development in innovation and research • More options to solve social issues 	<ul style="list-style-type: none"> • Risk in the independence of political system • Local protectionism in the local government on mainland

Figure 4: Hong Kong's Role in the Greater Bay Area Initiative.

Kong's globally trusted legal system and services in finance, accounting, audit and more. The more accountable Hong Kong political institutions also appeal to foreign investors who may use Hong Kong as a base to seek business opportunities in Guangdong Province.

Apart from seeking opportunities to help PRC companies reach the global market, many advanced industries and companies in Hong Kong may expand their businesses in the GBA. However, there are two potential barriers. First, there may be considerable costs because of the different political systems, such as long waiting time of approval procedure. Second, although many Hong Kong companies are very competitive, the local protectionism may keep them out of the market. Of 614 business executives surveyed in the GBA, 60% of respondents are worried about the local protectionism will hinder the economic integration (KPMG; 2017). Local protectionism often occurs by the local government of the mainland creating policies and other barriers of practice to protect local firms from competition with non-local firms (Barwick et al, 2017).

Hong Kong is home to the region's top universities and research institutions which have the potential to collaborate with the innovation and technology industry in Shenzhen. This may occur through applied research which aims to combine the academic resources of Hong Kong's research institutions with the manufacturing industry in Guangdong Province (Tsui et al, 2015). In addition, given its bilingual environment, Hong Kong can attract more international talents in STEM to

facilitate the innovation and technology industry in GBA.

There is also the potential to solve social issues present in Hong Kong through higher integration. For example, more housing options to Hong Kong citizens may become available in the GBA given that the transportation infrastructure reduces the time traveling from other areas to Hong Kong. Additionally, a larger supply of high quality labors from outside may also alleviate challenges in serving the aging Hong Kong population.

However, there are increasing concerns that with higher level of economic integration with mainland, the Chinese Central Government may gain a tighter control of Hong Kong. This would create a higher risk of Hong Kong losing its independence of its political system and high autonomy, which are considered the cradle of Hong Kong's economic success. Thus, Hong Kong should always be aware of its political independence and try to protect it by using its unique economic strengths as a negotiation power to mainland.

Recommendations

We recommend that Hong Kong and its firms develop a deeper level of communication with the PRC and Guangdong government to help promote a more open and free market. Based off the SWOT analysis, local protectionism was a potential risk for Hong Kong's role in the GBA initiative. If local governments are primarily focused on protecting their local firms from the compet-

itive market in Hong Kong, the goal of future regional integration will be undermined. The PRC's top-down governance model may work in favor of pressuring local governments to coordinate align their policies to facilitate the GBA, which will help Hong Kong.

MTR must find a way to align its interests with the GBA governments' interests to minimize local protectionism. One possible solution is by creating a joint venture company with the Guangdong government. In this respect, MTR will gain more support from Guangdong to overcome local protectionism as they compete in the global market. MTR will benefit from this collaboration with Guangdong by avoiding the need to negotiate with each city individually. However, a potential risk may be that MTR could lose its consulting power as it shares more operation practice information with local governments. However, the access to the GBA market may be worth the potential cost of technology transfers.

Stakeholder Analysis

Stakeholders in regional and local municipalities are key to making the integration of the 11 GBA cities possible. In July 2017, the Government of Guangdong Province, the HKSAR government, and the relevant PRC authorities of the GBA signed a framework agreement to deepen cooperation in the development of the bay area (Chan, 2017). The local municipalities agreed to improve coordination mechanisms and convene annual consultation meetings to resolve conflicts arising from development in the GBA. This agreement, however, will face challenges in legal interpretation and disputes over lines of authority.

The PRC has a unitary system that grants more power to the central government than to local municipalities (Chung, 2016). The central government holds the highest control over the legislative and policy agenda and utilizes top-down approaches in policy making (Chung, 2016). As the central government embarks on implementing the GBA initiative, their authority in the decision-making process and outcomes holds the highest level of influence. Their role in macroeconomic management, market regulation, public service delivery, and supervision of society also gives the central government the advantage in exercising influence over GBA local and provincial governments (Kroeber, 2013). While the GBA initiative draws concerns from other stakeholders and has grabbed media attention for its controversial plans (such as the PRC's checkpoint in Hong Kong), the central government has the highest authority to pass this initiative and promote it across all regional and local municipalities.

The central government has full authority to pass policies and plans, but is limited in their level of enforcement (Chung, 2015). The lack of central government capacity to enforce regulations provides provincial and local leaders the advantage to protect their interests when necessary (Chung, 2015). As a Special Administrative Region, Hong Kong has local autonomy and

its own interests in participating in the GBA initiative. Some residents have concerns about what the integration could mean to the autonomy assumed in the Basic Law of Hong Kong (Wong, 2017). Therefore, a great deal of emphasis has been placed on Hong Kong's participation in the GBA initiative to successfully complete an integrated world-class bay (ACCA, 2018). Hong Kong is a global leader in the financial industry, and its resources are needed to promote economic development across the 11 GBA cities (ACCA, 2018).

A major study identified main concerns related to the logistics and trade facilitation issues on the GBA initiative. A diverse set of stakeholders holding leadership roles in public and private sectors were interviewed. Stakeholders in central government believe that cooperation for integration should happen and through a bottom up approach (Leung *et. al.*, 2017). General comments from central government members also expressed a respect of the governance structures and traditions of the HKSAR Government and to uphold the "one country, two systems" policy in the GBA plan (Leung, L., *et. al.*, 2017). The Hong Kong and Macau Affairs Office in the PRC's State Council believe that the nine GBA cities should integrate first and the two SARs should join later, given the difficulties of integration. The PRC's State Council believe that the GBA's main objective is to achieve free movement of materials, capitals, and services (Leung *et. al.*, 2017).

Private industries have a high levels of support for integration in the GBA initiative. A major report surveyed 614 business executives operating in the GBA on their views about the opportunities and challenges of the initiative (KPMG, 2017). A majority of the survey respondents indicated their strong support for the initiative, especially the advantage of enhanced market access, improved corporate synergies, and a freer flow of talent (KPMG, 2017). Industries in financial services, technology industries, and infrastructure companies are most likely to benefit from the GBA initiative, and these Hong Kong has a high concentration of all of these types of businesses. Nearly two-thirds of business executives surveyed identified that support from local governments is most important indicator for a successful initiative (KPMG, 2017). In another report, industrial stakeholders have also expressed a lack of clarity regarding the approach of integration, especially within the context of one country, two system framework (Leung, *et. al.*, 2017). Their main concerns revolved around the approach of integration, infrastructure integration, and the integration barriers.

Public stakeholders include the general public, transit users, and the younger generation who will live to see the outcomes of the initiative. Research and media has revealed mixed responses from residents living in the mainland and in Hong Kong about their support of the initiative. A poll in Hong Kong found that 55% of 833 young people aged between 15 and 34 had never heard of the GBA initiative (Wong, 2017). 60% of the 321 Hong Kong youths surveyed who were studying

or working on the mainland had also never heard of the plan (Wong, 2017). The survey also showed young people did not approve of Hong Kong's political and social situations. The respondents who did not have experience of studying or working on the mainland generally had a more negative attitude or less understanding of the GBA (Wong, 2017). This indicates that the Hong Kong government needs to build political support at home for the GBA.

Recommendations

We recommend that the GBA agreement framework institutionalize a pledge and collaborative mechanism among the PRC government, GBA governments, Hong Kong, and Macau to respect the institutions and political values of Hong Kong and Macau and be fully aware of different processes to facilitate integration that is socially and politically sensitive. The decision-making process of the collaborative governance should be more transparent and also open to other sectors, such as NGOs, associations of industries, and the public. Stakeholders must work together to ensure that the process can help foster a trusting relationship amongst stakeholders in Hong Kong and the PRC. If Hong Kong is to make full use of continued integration with the GBA, confidence must develop amongst all stakeholders through a transparent process and a civil legislative process. All stakeholders must be included in debate and discussion, effectively communicating potential risks and outcomes.

A successful political and economic integration process for Hong Kong includes a process in which the West Kowloon Station checkpoint controversy is addressed. In regards to the legality of the station agreement, the specific delineation of power is beyond the scope of this recommendation. There is, however, the potential for political cooperation within the text of the Basic Law. The interpretation and ability to amend the Basic Law is officially given to the NPCSC (Basic Law Article, 1990, para. 158-159) but only when respecting the basic policies already established. The NPCSC must also consult with the Hong Kong government before making these changes. A lease agreement for the PRC immigration checkpoint in Hong Kong may also satisfy Hong Kong's interpretation of Article 7 of the Basic Law, as claimed by state officials. However having the support of Hong Kong's legislature, its people, and the international community is necessary to fully reap the benefits of the GBA integration plan.

We recommend a land lease for the immigration checkpoint that affirms the fundamental tenets of the Basic Law, with sufficient transparency and time for public comment. The contract must be specific enough to not create a wide precedent and remain in the spirit of the Basic Law. It should be highlighted that it is not likely that Hong Kong's autonomy is under threat with the GBA plan, as its unique free market and international reputation are valuable assets to the success of the GBA. PRC officials and HKSAR officials have largely failed

to pacify the fears of many Hong Kong residents and pro-democracy legislators. Key political figures must better communicate the political process and potential of cooperative government and potential benefits of integration. Shared check points are necessary for a more efficient transit integration. More broadly, the shared checkpoint and an agreement to affirm the PRC's commitment to the Basic Law and the "one country, two systems" policy can serve as a political symbol to build trust and confidence. In so doing, the PRC government and the HKSAR government can increase the political feasibility of the GBA. To achieve its socioeconomic goals, the PRC and the HKSAR first need to create the political framework for cooperation and trust.

Appendix: Regional Transportation Integration Stakeholder Analysis

Stakeholder	Roles and Interests	Suggested Committees	Means of Influence
<i>Central Government</i>			
National Development and Reform Commission (NDRC) (National Development and Reform Commission, 2018)	Arm of the PRC Central Government, responds to the agenda and policy priorities set by the President and Chinese legislature. Prosperity and economic well being for the entire country	Executive Board	<ul style="list-style-type: none"> Macro-level planning, financing, strategizing, and mobilization for the entire country Done through various departments including Office of Key Project Inspectors and Department of Development planning
Steering Committee on Taking Forward Bay Area Development and Mainland Co-operation (HKSAR, 2017a)	New Committee, originally named Steering Committee on Cooperation with mainland China, with the goal of promoting GBA initiative	Executive Board	<ul style="list-style-type: none"> Bring stakeholders for for implementation of GBA Provide research, publicity, and marketing of GBA
Ministry of Transport (MOT) of the People's Republic of China (The State Council The People's Republic of China, 2014)	Executive agency, under the overall direction of the President	Planning	<ul style="list-style-type: none"> Oversee road, water and air transportation as it related to planning, coordinating, connecting and optimizing transportation within the country Power vested in technical expertise and national oversight
<i>Municipal Government</i>			
Guangdong Province (KPMG, 2017; Policy Research Institute of Global Supply Chain, 2017)	Expand manufacturing industry, increase movement of goods (particularly exports)	Executive Board/ Planning	<ul style="list-style-type: none"> Technical expertise from Planning Ministries/Department, City engineers Generally directed the by the Mayors and specialized industry of each city
Macao SAR (KPMG, 2017; Policy Research Institute of Global Supply Chain, 2017; Carmelengo, 2018)	Expand resort industry and tourism, Circulate tourists and workers in the region to promote economic growth with focus on Portuguese businesses and diversifying into a broader entertainment hub	Executive Board/ Planning	<ul style="list-style-type: none"> Special Administrative Region- Separation of Powers: Chief Executive, Legislative Assembly, Judicial Courts Technical expertise from Planning Ministries/Department, City engineers Generally directed the by the Chief Executive and specialized industry
Shenzhen (KPMG, 2017; Policy Research Institute of Global Supply Chain, 2017)	Expand technology and “start-up” innovation industry, expand container port and movement of goods, financial administration, Shenzhen airport	Executive Board/ Planning	<ul style="list-style-type: none"> Special Economic Zone privileges Technical expertise from Planning Ministries/Department, City engineers, as directed the by the Mayor
<i>Hong Kong</i>			

HKSAR (HKSAR, 2017a; KPMG, 2017; Policy Research Institute of Global Supply Chain, 2017)	Maintain and expand influence as a financial center and shopping destination, maintain unique political system and established connections to the globalized world, Protect and promote expansive service industry, increase movement of goods in the harbor and ports, Smart City approach to relieve vehicle congestion, Hong Kong international airport as the gateway to southern China	Executive Board	<ul style="list-style-type: none"> • Special Administrative Region-Separation of Powers: Chief Executive, Legislative Assembly, Judicial Courts • Technical expertise from transportation and Housing Bureau, engineers, and Relevant HKSAR Departments • Chief Executive as primary leader
Chief Executive (HKSAR, 2017a; HKSAR, 2017b)	Leader of HKSAR, provides overall vision for transportation, promote economic development and has made it a key goal to facilitate collaboration with Mainland and GBA which includes supporting the XRL bridge and other transportation integration efforts	Executive Board	<ul style="list-style-type: none"> • Policymaking (as advised by the Executive Council) • Sign contracts/agreements (e.g., Hong Kong and Macau Closer Economic Partnership Arrangement & Co-operation framework agreement) • Agenda setting
Chief Secretary (HKSAR, 2018)	Second to Chief Executive, garners support for policy vision of Chief Executive	Executive Board/ Planning	<ul style="list-style-type: none"> • Oversight of Transportation and Housing Bureau
Constitutional and Mainland Affairs Bureau- <i>Forthcoming</i> (HKSAR, 2017a)	Liaison between HKSAR and PRC government, encourage smooth communication between the two systems, role is still being determined	Executive Board	<ul style="list-style-type: none"> • Will set up Guangdong-Hong Kong-Macao Bay Area Development Office
Secretary for Transport and Housing (HKSAR, 2018; Transport and Housing Bureau, 2017b)	Oversees Transportation Departments and public housing	Planning	<ul style="list-style-type: none"> • Guide departments and provide multi-module interconnectivity • Comprehensive planning and administration with housing and transportation • Bureau employees with technical expertise for planning
Relevant HKSAR Departments (HKSAR, 2018)	Conducts studies, feasibility analyses, plans new transportation projects, oversees current networks and interconnectivity, suggests customer service enhancements to MTR	Planning	<ul style="list-style-type: none"> • Transport Department, Highways Department, Civil Aviation Department, Marine Department, Housing Department
<i>Private Sector</i>			
MTR (Kam, 2018)	Primary rail transit builders and administrators in HK with rail lines in mainland China and global operations, vested interest in economic sustainable transit models, reputation for efficient operations and high level customer services	Planning/Outreach	<ul style="list-style-type: none"> • Generates revenue for the HKSAR • Technical expertise and reputation of successful and efficient business model

Trade Associations (Zhou, 2018)	Expanding business and consumer market and protecting their industry from other transportation competition	Outreach	<ul style="list-style-type: none"> • HKAA, Taxi associations, PLB associations, Driving Instructor Associations, can lobby government when formulating policies
<i>Public</i>			
District Councils (Home Affairs Department, 2018)	18 HK local councils, represent interests of the community, under the Home Affairs HKSAR Department	Outreach	<ul style="list-style-type: none"> • Exert influence through the HK Housing Bureau, can demand/provide input in transportation planning, site location, mobility concerns, and broader interests
Researchers	Universities (HKU), think tanks and consultant firms (Our Hong Kong Foundation, KPMG, Civic Exchange)	Outreach	<ul style="list-style-type: none"> • Can help inform and educate the policymakers through research and policy briefs
Migrant Workers (Reference Labor Market Integration Chapter)	Will be activated due to integration and increasing commuters and labor shortage in HK	Outreach	<ul style="list-style-type: none"> • Collective bargaining, connected to businesses in need of labor, if marginalized workers could stall or demand transportation integration projects
Nonprofits (Task Force on Land Supply, 2018)	Community organizations or contractors that serve as community liaisons on behalf of the government	Outreach	<ul style="list-style-type: none"> • e.g., Task Force on Land Supply • Conduct community engagement and opinion surveys

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