

Building a Competitive Pearl River Delta Region:

Cooperation, Coordination, and Planning

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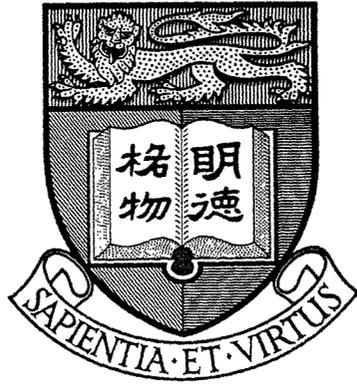
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Foreword

I have long aspired for more discussion on “Building a Competitive Pearl River Delta Region.” In 1980, some 20 years ago, when I came to Shenzhen from Beijing to participate in the city planning exercise of this new Special Economic Zone, I had already recognized that Hong Kong and Shenzhen were closely related to each other like “teeth and lips” (唇齒相依). I climbed to the top of Wutongshan, a hill near the border between Hong Kong and Shenzhen, and saw Luohu, Sheung Shui and Fanling lying side by side in front of me. What an extraordinary planning blueprint would emerge if there were comprehensive planning across the border! Overwhelmed, I can’t help myself versing the following lines although I am not a poet:

梧桐山上無梧桐

*Wutong trees no longer grow on the
Wutong Mountain,*

但見港深共圖宏

*Sprouting forth is the collaborative future of
Hong Kong and Shenzhen*

Cooperation between Hong Kong and Shenzhen has already taken place since the early 1980s with the flow of drinking water and food. Their “front shop - back factory” relationship began to take shape with China’s Open Door Policy and the economic restructuring of Hong Kong, and has greatly enhanced the economic growth of both cities. I could have developed a glimpse of the economic performance from the flow of container trucks along the Shenzhen highway. The inseparable linkage between Hong Kong and Shenzhen can be illustrated with a colloquial saying, “Shenzhen will definitely sneeze if Hong Kong gets a flu.”

When I came to Hong Kong on 8 November 1984 to attend the Annual Meeting of the Hong Kong Institute of Planners, I could see more clearly that the Pearl River Delta and Hong Kong would develop greater prosperity together. Reminding me of the “verses” I composed a few years ago, I added two more lines to my poem :

為我華夏永昌隆

Working towards perpetual prosperity in China,

南天理當砥柱中

Pillars arise in the southern sky

This means that the Pearl River Delta, together with Hong Kong and Shenzhen, will become the pillar of development for the whole country.

This was the past. Since then, Hong Kong and the Pearl River Delta have

developed very rapidly and so has the world economy. The world has become a global village. Hong Kong and the Pearl River Delta should be developed even more closely together in this increasingly integrated world. Although Shenzhen had reserved land for transport corridors and specific landuses in their early plans, they could no longer meet the present development requirements. Under the principle of “One Country, Two Systems”, I believe that integrated planning, coordination and collaboration are very important and we should pay particular attention to the following modes of interaction and collaboration :

1. Information hub: which includes public communication networks and the inter-industry “hotline” exchanges;
2. Transportation: which aims at providing more convenient routing and interchanges;
3. Economic development: which focuses on more specialized division of labour;
4. Quality of life and leisure: which aim at providing a better quality of life for increasing number of Hong Kong people who are residing in and travelling across the border to Shenzhen;
5. Technology and education: which encourages each region to develop its own specialized area to complement the other;
6. Health services: which emphasizes the Chinese tradition in attaining longevity;
7. Environmental protection: which aims at improving cooperation in mitigating pollution and protecting natural resources.

The Pearl River Delta is one of a few megalopolises in the world that are densely populated. The Region has also long been famous for her robust economy. The combined strength of the various socio-economic sectors within the Region will further accelerate economic growth. In social sciences, “1 + 1” is always greater than “2”.

There are two “dragons” in China: the “North Dragon” with Shanghai as the “dragon head” of the Changjiang Delta, and the “South Dragon” with Hong Kong as the “dragon head” of the Pearl River Delta. In the 21st century, these

two dragons will become more lively. In view of the forthcoming opportunities in the Pearl River Delta, I would like to further extend my previous poem, and the whole piece now reads as:

梧桐山上無梧桐	<i>Wutong trees no longer grow on the Wutong Mountain,</i>
但見港深共圖宏	<i>Sprouting forth is the collaborative future of Hong Kong and Shenzhen,</i>
為我華夏永昌隆	<i>Working towards perpetual prosperity of China,</i>
南天理當砥柱中	<i>Pillar arises in the southern sky,</i>
心盼有朝大一統	<i>Hoping they will be further integrated,</i>
世界揚我中華風	<i>Promoting China to the world.</i>

Zhou Ganzhi

*Former Deputy Minister, Ministry of Construction
Academician of the Chinese Academy of Sciences and
Chinese Academy of Engineering*

Preface

The Pearl River Delta region has developed very rapidly since 1978. One year of development in this region was equivalent to at least two to three years of growth in other parts of the world. The interactions between Hong Kong and its counterparts in the Pearl River Delta have also increased tremendously since then, especially in the past decade. The flows of goods, capital, people and traffic between Hong Kong and other jurisdictions in the Pearl River Delta have been enormous by any standard, regional or international. The process of development and the pattern of interactions in the region are expected to gain greater momentum, speed, scope and complexity with the advancement of information technology, the further globalization of the world economy, and China's accession into the WTO. Increasing competitiveness is a key factor for continued success for this region in the future global economy. Through better cooperation, coordination and planning between Hong Kong and its counterparts across the border, a synergistic approach can be developed in building a more competitive Pearl River Delta region to jointly explore opportunities and meet the economic, social and environmental challenges facing the region.

If Hong Kong and the Pearl River Delta are to realise their potential as a unique, vibrant, international, world-class region, many obstacles need to be overcome. The major challenge pertains to the question of how best to sustain economic prosperity while tackling some of the most pressing problems that have resulted from the economic boom of the past decades and the more recent hiatus of growth. The past 20 years have wreaked havoc with the environment, produced extensive duplication of infrastructure and exacerbated the problem of income discrepancies between different parts of the region. The constantly shifting global terrain has now created the need to re-assess Hong Kong's role *vis-a-vis* the Pearl River Delta, to help anticipate future economic development trends and to acquire the relevant skills and resources to cope with the fast changing scene.

Most of the papers in this book have originated from the *Seminar on Building a Competitive Pearl River Delta Region: Cooperation, Coordination and Planning* held on 8 July 2000 at the Hong Kong Convention and Exhibition Centre, which was co-organized by the Centre of Urban Planning and Environmental Management, The University of Hong Kong and the Hong Kong Institute of Planners and sponsored by *Project 2022: Hong Kong & the Pearl River Delta*. In this volume, government officials, businessmen, NGOs, and academics from Hong Kong, the Pearl River Delta, and other parts of the

world explore salient issues pertaining to major aspects of various modes of cooperation, coordination and planning in building a competitive Pearl River Delta Region as well as recommend broad directions for strengthening regional cooperation, coordination and planning to meet future economic, social and environmental challenges.

We would like to thank Alex Chan, Suzanne Ngan, Christina Lo and Mary Kwok for their assistance in preparing the publication of this book and Gerry Flood for editorial assistance. We also wish to thank *Project 2022* for funding this work.

The Editors

December 2001

Introduction

Chapter 1

The Pearl River Delta: An Evolving Region

Thomas J CAMPANELLA, Ming ZHANG,
Tunney LEE and Nien Dak SZE

BACKGROUND

Few regions of the world have been so richly blessed by geography as South China's Pearl River Delta. Formed by the confluence of three rivers as they run to the South China Sea, the Delta is fed by more than a thousand miles of waterways. The coastal plain occupies an area of some 9,000 square kilometres, making it second in China only to the Delta of the Yangtze River.¹

If not the largest of China's deltaic plains, it is among the richest. With its deep alluvial soils, the central core of the Pearl River Delta contains some of the most productive agricultural land in Asia. A subtropical climate, abundant rainfall, and ready access to irrigation made the region a leading producer of rice, sugar cane, cotton, fruit and other crops. With more than 5,000 km of navigable waters, the Delta's river networks provided a natural transport system for shipping and trade.²

In 1978 Deng Xiaoping launched China into a remarkable period of economic expansion, calling for a fusion of socialism with private enterprise and a free market economy. He first tested these bold measures in Guangdong, which was encouraged "to walk one step ahead" on the path of reform.³ The establishment in the early 1980s of several "Special Economic Zones" (SEZ) in southern China — three of which were located in Guangdong — further propelled the province to the forefront of national development.

The SEZs attracted a floodtide of foreign investment, and almost overnight became one of the sources of China's economic boom. Between 1980 and 1997, the national economy expanded at a rate of nine percent per year — the fastest-growing in the world. A study by the World Bank in 1997 noted that China's growth in the 1980s and early 1990s was among the most rapid in the global economic history. Per capita income doubled in the span of a decade, a benchmark that took half a century to attain in the United States during the nineteenth century.

The impacts of the Deng Xiaoping revolution on Hong Kong's economy

were immediate and profound. As the border opened again, Hong Kong's role as entrepot and middleman for China "returned with a vengeance."⁴ The domestic manufacturing base that evolved in Hong Kong after 1950 began migrating to the Mainland, where space was plentiful and labour costs low. While the factories moved inland, managerial and "front office" functions remained in Hong Kong. In the period between 1980 and 1997, Hong Kong underwent a second major reinvention, transforming from a manufacturing centre into a service-oriented, information-intensive economy.

THE GEOGRAPHICAL LANDSCAPE

The economic boom of the Deng Xiaoping era resulted in extensive new urban development, and nowhere have these changes been more pronounced than in the Pearl River Delta. Shenzhen was little more than a fishing village before 1978, and is now one of China's most prosperous cities. One of the original four SEZs, adjacency to Hong Kong gave the city an "advantage unsurpassed elsewhere in China."⁵ In its first decade alone, the city's industrial output rose from 29 million to almost 5 billion *yuan* (approximately US\$600 million). Its population, some 20,000 in 1979, shot up to more than three million by mid-1990s.

The economic revolution which began at Shenzhen (and to lesser extent at Zhuhai SEZ) soon swept northward through the Delta. Its towns and cities began growing rapidly as capital poured in from Hong Kong and abroad to set up local processing operations. In the process, the Delta's economy was transformed from a largely rural and agricultural one into "an industry-based export-oriented" economy characterized by labour-intensive manufacturing. The most spectacular growth took place in the Delta's small urban centres, particularly those close to Hong Kong — which itself emerged as a superhub, patching the Delta's emerging cities into the "world economic circuitry."⁶

By the late 1980s, the Pearl River Delta was experiencing a major construction boom, not only in its major cities but in Dongguan, Shunde, Nanhai and Zhongshan.⁷ Hundreds of miles of new motorways have been built throughout the region. Once a new highway is completed (or modernized by paving), sites all along become ripe for development. This "in-fill" urbanization clings along major road corridors and extends outward from existing nodes to absorb smaller communities along the way, which must now reorient themselves to the new artery or risk being left behind. This process of "town-village blending" has blurred traditional urban-rural boundaries into an almost

uninterrupted quasi-urban continuum.⁸

This situation has been exacerbated by structural changes to China's cities themselves. During the Mao era, land use in cities was heterogeneous and multifunctional, whereas the more recent trend has been toward greater differentiation. Residential, commercial, manufacturing, administrative and other functions are no longer adjacent to one another but occupy districts of their own. The kinds of spatial separation that occurred at the street or neighbourhood scale in the pre-Communist era has returned, now expanded on a metropolitan scale. As a result there has been growing separation of workplace and dwelling. The daily need to move tens of thousands of workers from these residential areas to their places of work has burdened city transit systems, and contributes to surging motor vehicle traffic.⁹

Development in the wake of unprecedented economic liberalization has also had a profound impact on the natural environments of the Pearl River Delta. A century's worth of industrialization has in effect transpired in twenty years, while the mechanisms aimed at ameliorating such impacts are still evolving. Both Hong Kong and Guangdong face a long list of environmental problems today. It is a situation that will worsen dramatically if effective action is not taken soon.

Water Pollution

Along with declining air quality, water pollution is one of the two defining environmental issues that threaten the continued health and vitality of the Pearl River Delta. Water is a central resource, one that supports virtually all human activities and ecosystems in the Delta. The implications of degraded water quality are far-reaching for any deltaic system, with particularly strong impact on communities located downstream. Hong Kong, for example, relies predominantly on Guangdong for its water supply, drawing as much as 1 billion cubic metres per annum.¹⁰

The principal categories of water pollution in the Delta include point-source discharges from industrial operations, untreated domestic and municipal sewage, and non-point runoff from agricultural activities. These carry a wide range of pollutants, including organics, suspended sediments, volatile organic chemicals, mercury, phenol and ammoniacal and nitrate nitrogen. The result is often deoxygenation, eutrophication, "red tides", and offensive odours. Discharge and subsequent sediments of non-biodegradable waste also contribute to downstream flooding and fluctuations in the water supply.

Few waterways in the Delta have escaped pollution, and some are in a serious state of decline. Water bodies in the lower reaches of the Delta tend to be the worst affected. The contaminants of the entire drainage concentrate there, and because they are dominated by tidal action they are not regularly "flushed" by strong runoff currents. Landlocked water bodies are also being contaminated, including reservoirs and lakes used for drinking water supplies.¹¹

Municipal wastewater constitutes the fastest growing and most serious source of water pollution in the Pearl River Delta. The rapid increase in urbanization in recent years has caused a surge in the amount of domestic wastewater and sewage. While industrial sources have come under increasing control, municipal wastewater treatment facilities have struggled to keep pace with the rapidly growing urban population. In 1997 alone, some 2.65 billion tons of wastewater were discharged into the Delta's rivers, approximately 70 percent of which was traceable to domestic sources. Only about 9 percent of this effluent is being treated, as opposed to 85 percent of the industrial outflow.¹²

Although agriculture in the Pearl River Delta has not expanded as rapidly as manufacturing in recent years, it too has undergone modernization. Where night soil was once the dominant form of fertilizer, farmers in the region now rely heavily on a number of potent chemicals to increase crop yield. In the 1980s alone, use of chemical fertilizers in the Delta increased by 40 percent.¹³ Intensive, industrial-scale livestock production has become common. Pesticides, herbicides, fertilizers, and livestock feed additives (including growth hormones) are often deployed with little knowledge of proper management practices. Runoff from agricultural lands carries these chemicals into adjacent streams and rivers, while those penetrating the soil eventually enter and contaminate the groundwater system. Most pesticides are also volatile organic compounds (VOC), which can enter the atmosphere, and react readily with emissions (nitrogen oxide and carbon monoxide, NOX and CO, respectively) from power plants and vehicles, to form photochemical smog.

Degrading water quality is expected to increase the incidence of water- and food-borne diseases. These diseases can be contracted by drinking contaminated water, consuming fresh produce irrigated or processed with polluted water, and eating fish from contaminated rivers, lakes and coastal waters.

Air Pollution

Air pollution is the most visible and urgent environmental problems confronting the Pearl River Delta, and one that most clearly requires *regional* cooperation, coordination, and response. In addition to its impact on public health, air pollution may well be tarnishing the Delta's image as an attractive place to live and work. Recent press reports have claimed that worsening air pollution in Hong Kong may well be discouraging overseas talent from moving to the city.¹⁴

Among the principal sources of air pollution affecting the Pearl River Delta are vehicular emissions, industrial operations, power generation, construction activities, hill fires, and trash and agricultural burning. Sulfur dioxide emissions from the combustion of high sulphur-content coal by power plants have been a principal source of particulate matter and cause of acid rain, while the subtropical climate of the Delta accelerates the conversion of sulphur dioxide into sulphuric acid.¹⁵ During the economic boom of the 1990s, atmospheric emissions in the region increased by almost 120 percent. While there have been significant gains (80 percent of industrial emissions are now treated in some way), the fast pace of development in the Delta has made pollution mitigation a constant challenge.¹⁶

In dense urban areas, particulate matter, carbon monoxide and nitrogen oxide levels have soared with the exponential increase in automobile and truck traffic. Studies in Guangzhou show that that vehicle emissions account for as much as 87 percent of the carbon monoxide present at the critical street level.¹⁷ Electrical power generation and diesel vehicles, including taxis, mini-buses, container trucks, goods vans and buses, are among the main sources of respirable suspended particulate (RSP) in the city. Reports indicate that commercial vehicles and power stations may be responsible for 51 percent and 33 percent of RSP emissions, respectively.¹⁸

RSP levels in Hong Kong are now considerably higher than New York, London, Paris, Los Angeles or Singapore. The problem is made worse by an aging vehicle stock and poor engine maintenance, bad operator habits such as constant idling, and the practice of refueling cross-boundary goods vehicles with more polluting, lower-grade diesel fuel. Pollution in Hong Kong also exacerbated by local weather patterns, mountainous topography, and the "vortex effect" caused by dense concentrations of skyscrapers — features that greatly undermine the ventilating capacity of the city.

No other region in the world has so many industrial and agricultural activities intermingling as they do in the Pearl River Delta. Each of these activities contributes a different 'suite' of pollutants that readily feed on each other and form petrochemical smog. The meteorological integration of Hong Kong and the Pearl River Delta also primes the region for a much more pervasive and persistent form of "secondary pollution", one that is manufactured in the atmosphere and which can be transported over hundreds of kilometres. In the presence of strong sunlight and water vapour, pollutant precursors such as nitrogen oxide, carbon monoxide, hydrocarbons and volatile organic chemicals (VOC) react with one another to create new and more virulent pollutants such as ozone. Some of these precursors originate from Hong Kong, others from the Delta. The fact that their sources and origins are so diverse makes cost-effective ozone control a particularly challenging issue.

Rainfall is a natural cleansing agent for many soluble pollutants. Save for the winter months, the Delta is fortunate to have an abundance of rainfall. But insoluble pollutants, such as ozone and CO, can only be removed by the atmosphere's own immune system, which relies on "cleansing agents" such as hydroxyl radicals (OH) to convert harmful chemicals into more benign ones. However, an excessive load of pollutants such as CO can overwhelm the atmosphere's natural self-cleansing capacity.¹⁹ A weakened atmospheric immune system is much more susceptible to a rapid accumulation and formation of petrochemical smog, which, once formed, will take much longer to disperse.

THE SOCIAL LANDSCAPE

The settlement patterns within the Pearl River Delta can be characterized as a three-level hierarchy of urban systems. At the top are two primary cities: Guangzhou (3.3 million urban population and 6.7 million in the municipality) and Hong Kong (3.5 million, or 52.3 percent, urban population and 6.7 million total in 1998).

At the second level are nine medium or large cities with special status, i.e. SAR, SEZ or cities with prefecture-status.²⁰ These include Shenzhen (848,000), Macao (431,000) and Zhuhai (356,000), Foshan (336,000), Jiangmen (327,000), Zhongshan (380,000), Dongguan (370,000), Huizhou (274,000), and Zhaoqing (307,000). Below these are the urban centres of the 22 county-status cities or counties and the nearly 300 urbanized towns scattered across the region.

More than half the region's population is concentrated in three city clusters that form an approximate isosceles triangle. At the apex of the triangle is the Guangzhou/Foshan cluster, and in a distance of about 120 kilometres from the apex are the Hong Kong/Shenzhen cluster to the southeast, and the Macao/Zhuhai cluster to the southwest. A pattern of urban development is presently emerging along both the Guangzhou-Shenzhen-Hong Kong corridor, and the Guangzhou-Zhuhai-Macao corridor.

The population density of the entire Hong Kong-Pearl River Delta region is 590 persons per square kilometre (1998). However, this figure does not adequately account for intense fluctuations in settlement density throughout the region: for instance, with an average density of 6,330 persons per square kilometre (1998), Hong Kong is one of the most densely populated cities in the world.²¹

The Floating Population

The surge in industrial and manufacturing jobs in the Delta attracted a great influx of migrant labour from other regions of China. Currently, this "floating population" — comprised largely of "peasants no longer domiciled where they were initially registered to live" — is estimated to be 70 million persons nationwide.²² In some Delta cities, the migrant worker population exceeds the local labour force, while in Shenzhen, non-local workers make up more than two thirds of the city's population.²³

Unlike Shanghai and Beijing, where the majority of migrants are young males employed in the construction industry, the migrant industrial labourers in the Pearl River Delta are for the most part young women. Aged between 17 and 24 years, these women come mainly from the poorer, mountainous regions of Guangdong, and from Hunan, Guangxi, Sichuan and other provinces in China.²⁴ Most find employment in the manufacturing sectors, working and living in self-sufficient factory complexes.

Attracting Talent

The gravitational pull of the south has also attracted highly educated workers from elsewhere in China. Delta cities such as Guangzhou and Zhongshan, and especially Shenzhen, have become magnets for China's rising entrepreneurial elite, particularly those with expertise in technology, who see new opportunities in the Delta's more open economies. Traditional restraints limiting migration within China have been relaxed for highly-educated

Mainlanders, and there are various incentives to attract top talent to cities. In the 1980s, more than 140,000 technicians and other professionals were brought into Guangdong from elsewhere in China. Inducements include higher wages, household registration, reimbursement for moving expenses, and housing. More recent efforts have focused on recruiting at elite national universities, and attracting overseas Chinese from abroad.²⁵

INFRASTRUCTURE

Airports and Aviation

Commercial aviation in Guangdong has expanded exponentially in recent years. The number of passengers flying to and from the region increased by a factor of nine between 1980 and 1992, and the total air cargo carried increased seven times. It has been predicted that air traffic in China — and southern China in particular — will expand at approximately twice the world rate in the next 20 years.²⁶

Eight airports currently serve the Pearl River Delta, half of which handle international flights. The proliferation of airports, which often duplicate infrastructure in a way that is inefficient and unnecessary, underscores the need to coordinate transportation infrastructure on a regional level. Not only have these facilities begun to compete with one another, they are contributing to a surge in air traffic, which must be managed carefully so that air traffic can function as safely and efficiently as possible.

Hong Kong's Chek Lap Kok airport is the busiest airport in the region, and among the largest and most advanced in the world. It is the leading international air hub in Asia, posting a throughput of approximately 30 million passengers in 1999 (ranking only behind Heathrow and Frankfurt).²⁷ Baiyun Airport in Guangzhou also handles international flights, and is the dominant domestic hub for southern China. A new airport is under construction there, as Baiyun has become constrained in recent years by limited capacity and the encroachment of adjacent urban development.

Other international airports in the region include those at Macao and Shenzhen (Huangtian). Regional airports within the Delta are located at Zhuhai Special Economic Zone (Sanzao), Jiangmen, Foshan (Shadi), and Huizhou (Pingtan). These last two are joint civil-military facilities.

Ports and Waterways

The Pearl River Delta has long been China's most accessible region, with a vast network of waterways reaching far inland. It has also developed exceptional port facilities. Its port has long defined Hong Kong, and in spite of extensive reclamation its harbour is still one of the finest on the China coast. Along with Singapore, Hong Kong is the busiest container port in the world: in 1998 alone it accommodated 236,000 vessel arrivals, and processed 14.7 TEUs (twenty-foot equivalent units) of cargoes.²⁸

Underscoring Hong Kong's role as a regional entrepot is the fact that 85 percent of all the cargoes passing through its port are goods being shipped to and from the Mainland.²⁹ All cargo handling terminals in Hong Kong Port are owned and operated by private enterprise. Hong Kong does not have a port authority; the SAR Government is responsible for the day-to-day administration of the port through its Marine Department.

In addition to Hong Kong, there are three primary clusters of major seaports in the Pearl River Delta, centred at Guangzhou (including Huangpu and Nansha), Shenzhen (including Chiwan, Mawan, Shekou and Yantian), and Macao/Zhuhai (including Gaolan and Jiuzhou).³⁰ Smaller ports are more numerous, with a total of 70 in operation throughout the Pearl River Delta.³¹ As with the airports, the potential for unproductive competition here is significant.

Rail

Currently there are two major inter-provincial rail links serving the Pearl River Delta. One is the Beijing-Guangzhou Railway, which splits at Guangzhou into an east and west line. The west line serves Foshan and Zhaoqing, continuing toward Maoming and Hainan Province; the east line heads to Dongguan and south to Shenzhen. The second major railway is the Beijing-Kowloon Railway, completed in 1995. This line enters the Delta from the northeast, passing through Huizhou, and meets the Beijing-Guangzhou Railway at Dongguan. The Guangzhou-Zhuhai Railway is a recently completed regional rail line, in operation since 1996. The portion between Guangzhou and Shenzhen is a three-track, electrified express line, with an operating speed of 100-120 kilometers per hour.

A number of improvements have taken place in recent years, in terms of both technology and management. In 1980, the majority of Guangdong's rail

tracks were managed as part of the national railway system. Today, most of its rail infrastructure is under local management, and has shown increased profitability. However, some studies have shown that Guangdong and the Pearl River Delta are still relatively under-served by rail.³²

Within Hong Kong, the Kowloon-Canton Railway has been operated since the early twentieth century. The twin-track, 34-kilometre line, electrified since 1982, carried some 790,000 passengers daily from Kowloon through the New Territories. The KCR terminates at the Lo Wu checkpoint. While a number of through trains to Guangzhou operate on this line (the newest of which is the Kowloon Through Train or KTT), a seamless link between Hong Kong and the smaller, intervening cities in the eastern Delta is not yet available.

Roads

Since the 1980s, hundreds of kilometres of new motorways have been built across the Pearl River Delta, while other roads have been upgraded and improved. Today the region possesses one of the densest and most extensive road networks in China, with a total mileage of approximately 85,000 kilometres throughout Guangdong Province. As part of its Ninth Five-Year Plan, Guangdong authorities will build coastal expressways to the east and west of the Delta, along with a network of 25 major roads to link its cities with Hong Kong and Macao.³³

In Hong Kong, there was a total of 1,865 kilometres of roadways in operation by the end of 1998. Last year, the total number of licensed vehicles included 317,872 private cars, 18,007 taxis, 11,460 public buses, 4,343 mini-buses and 114,957 goods vehicles. This gives an average traffic density of 268 vehicles per kilometre of road in Hong Kong, among the highest in the world.³⁴

A key component of the region's land transport infrastructure improvement was the construction of the 302-kilometre Guangzhou-Shenzhen-Zhuhai Superhighway. The 122-kilometre portion between Guangzhou and Shenzhen, with dual three-lane carriageways and a design speed of 120 kilometre per hour, was built by Gordon Y. S. Wu's Hopewell Holdings and opened to traffic in 1994. The road provides an additional land link between the Mainland and Hong Kong at Lok Ma Chau.

The Guangzhou-Shenzhen Superhighway was originally conceived as part of a great triangular road system linked by a causeway across the mouth of the

Pearl River between Hong Kong and Zhuhai. Several permutations of this bridge have been proposed in recent years, including a 27-kilometre, 16.6 billion yuan “superbridge” announced in 1998 by Zhuhai Vice-Mayor Zhou Benhui. At present, however, there are no plans to move ahead with construction.

The regional highway network now rivals the river system in terms of function, reach and extent. Roads now compete for a significant share of freight that once could only be moved by ship. Trucks are fast, flexible, and capable of penetrating the remote niches of the region. The expanding road network has also contributed to the rise of private bus companies in recent years, one of the fastest growing sectors of the transport industry. Many of these comfortable new vehicles run between Shenzhen and Guangzhou, while others originate in Hong Kong.

Telecommunications

The telecommunications infrastructure in the Pearl River Delta is the most advanced of any region in China, and that of Hong Kong ranks among the best in the world. The SAR is connected to the international fibre optic system via seven networks, and Cable and Wireless HKT is currently completing work on cable station facilities as the landing point for the Asia-Pacific Submarine Cable Network 2 (APCN-2).

A number of Guangdong companies have entered partnerships in recent months to bring satellite, broadband, wireless and other services to the Delta region. Guangdong South Satellite Telecommunications Service Company recently entered a joint venture with US-based Qualcomm to deploy OmniTRACS mobile information management system for transport and logistics services.³⁵ Nortel Networks has partnered with a number of Guangdong telecom ventures, anticipating increased demand for CDMA mobile phone and Internet backbone equipment. China’s telecom sector is newly opening to non-local investors, as these and other ventures attest.³⁶

Guangdong Province has more than 15 million telephone exchange lines currently installed, and a penetration rate in urban areas of 56.2 percent. China Telecom has more than 7 million mobile phone subscribers in the province, and the number is growing exponentially.³⁷ The growth of the mobile telephony in Hong Kong has likewise been meteoric. In 1993, there were only 290,000 registered phones in the entire territory. Just three years later, the number had risen to 1.2 million, doubling again by 1998. Today there are more than 3

million mobile subscribers in Hong Kong — a ten-fold increase in the last six years.³⁸ Mobile phone penetration is currently almost 48 percent of total population, while among adults seven out of 10 own a mobile phone. No nation in Asia has more wireless subscribers, and internationally only Finland and Sweden exceed this density.

PLANNING AND REGIONAL GOVERNANCE

Due to the special status of Hong Kong and Macao, no individual government (except for the Central People's Government) has supreme authority or responsibility to administrate and plan for the region across borders. Even within the Pearl River Delta, no specific regional authorities have been set up to govern development within the demarcated Delta economic development zone. The provincial government of Guangdong has overall responsibility for developing regional plans and drafting policy for the Pearl River Delta.

Hong Kong

There were several major plans made for Hong Kong following World War II. Patrick Abercrombie drew the first, never fully implemented, in 1947. This set a maximum population of two million in the existing urban area and proposed industrial locations, future reclamation, cross-harbour tunnels, new communications infrastructure and new towns. The second was the Colony Outline Plan, completed in 1971 and revised as the Hong Kong Outline Plan in 1979. It featured a 20-year development horizon and set forth planning guidelines for the key infrastructure and services. The plan is the basic document on which the government based its provision of facilities in suitable locations in Hong Kong.

The third major plan was the Territorial Development Strategy (TDS) of 1980, formulating a comprehensive long-term development strategy for Hong Kong during the 1990s and up to the year 2001. TDS was not only concerned with meeting population requirements for land, services and facilities, but also paid attention to sustaining the growth of key economic activities in Hong Kong. It also attempted to coordinate urban development with transport provision, a problem encountered in the development of new towns.

To cope with further pressures arising from increases of population, a higher standard of living, and economic growth, TDS was reviewed and revised by the Planning Department in the mid-1990s. The final report, named the

Territorial Development Strategy Review (TDSR) was approved in 1998 by the Executive Council of the Hong Kong Special Administrative Region Government. The TDSR provides a land use, transport and environmental framework to guide the preparation of details plans and programs, focusing on a range of development objectives.

It also lays the foundation for on-going reviews to take Hong Kong's changing role in a wider regional context into account, especially with regard to development trends in the Pearl River Delta and other parts of South China. Detailed development strategies were analyzed and recommended, assuming different regional development scenarios for the time frames of Years 2001-2006, Years 2006-2011, and Years 2011 and beyond.

The Pearl River Delta

Corresponding to the central-plan economic model, urban planning in China has traditionally been conducted in a top-down manner. Higher-level governments (provincial governments) supervise the plan making and implementation processes at the lower levels of governments (county and municipal governments) by controlling the redistribution of resources allocated from Beijing. Regional planning is generally executed at the provincial level to organize, balance, and coordinate the development of counties, municipalities and rural areas. The function of city planning at the local level is to coordinate the six major land use categories and to prepare a blueprint for policy in a 20-year horizon, according to such factors as population size and the nature of the city.³⁹

The implementation of the "opening up" reforms in the 1980s provided local governments with greater development flexibility and autonomy. Counties and municipalities in the Pearl River Delta region were among the first to implement the liberal policies inaugurated by Deng Xiaoping. In receiving the status of either a Coastal Open City, such as Guangzhou, a Special Economic Zone, or an Economic Development Zone, the local Governments were encouraged to absorb foreign investments directly, and to carry out their own economic development initiatives.

Land development and its accompanying problems became more intense; the Guangdong provincial government initiated the Pearl River Delta Regional Plan in 1994 and completed it in 1995. Five themes were researched in the plan: urban systems, environmental protection, infrastructure, economic

development and social development. Three major strategic goals were identified in the urban system plan:

- To develop the Pearl River Delta as a major urban region in Pacific Asia and to be the “dragon head” for socio-economic development in southern China;
- To develop a modern urban system with an improved rank size distribution of different types of cities, a clear division of labor with complementary functions, and a functional and balanced distribution of transportation and communication networks;
- To enhance rural-urban integration.

Various legal, managerial, fiscal, land supply and transportation policies and mechanisms were also proposed to improve coordinated planning and implementation of the Pearl River Delta Regional Plan.

The Boundary

The liberalizations of the Deng Xiaoping era further opened the boundary between Hong Kong and the Chinese Mainland, and between 1980 and 1987 Hong Kong residents had made more than 30 million trips to cities and villages in the Pearl River Delta.⁴⁰ They visited relatives, invested in Mainland ventures, and began forging new networks of trade and commerce.

There are currently three road crossing points and one rail crossing point between Hong Kong and the Pearl River Delta: Man Kam To, Sha Tau Kok, Lok Ma Chau, and Lo Wu, all located on Shenzhen-Hong Kong boundary. Man Kam To provides the most direct access to Shenzhen city center. Sha Tau Kok connects Hong Kong with Shenzhen East. Lok Ma Chau opened in December 1989, and has since become the most popular crossing. It provides a link to the Guangzhou-Shenzhen Superhighway and to the Shenzhen West area, and is open to traffic 24 hours a day. Lo Wu is the only rail crossing point at present, handling mainly passenger traffic. In addition, there are more than 60 ferry, hovercraft and catamaran lines connection Hong Kong to ports throughout the Delta.⁴¹

Few statistics more clearly illustrate the depth of Hong Kong's socioeconomic ties with the Chinese Mainland than the surging number of boundary crossings and China-bound trips. Cross-boundary vehicle flow topped

10 million last year, nearly 70 times the number of vehicles that crossed in 1980. Passenger crossings have likewise surged, doubling since 1992. The Chinese Mainland is by far the most popular destination of Hong Kong residents, and the Pearl River Delta in particular. Of the 39.1 million departure trips made by Hong Kong residents in 1998, 82 percent were to Chinese Mainland, as compared with 77.5 percent in 1996. At the same time, 74.3 percent of all arrivals to the SAR originated in China.

Today, crossing the boundary into China has become a daily routine for thousands of commuters, including schoolchildren who live in Shenzhen and attend school in Hong Kong. Most evidence suggests that the cross-boundary traffic flow will continue to increase in coming years. A recent study by the Hong Kong-China Relation Strategic Development Research Fund found that more than 15 percent of 1,200 Hong Kong residents polled (18 percent of respondents between 31 and 40 years of age and an equal number of those over 50) would consider living in Shenzhen.

NOTES

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Chapter 2

Hong Kong and the Pearl River Delta — Competing Together

Victor FUNG

INTRODUCTION: AT ANOTHER THRESHOLD

After two remarkable decades of partnership and growth, Hong Kong and our natural hinterland — the Pearl River Delta — stand at a new threshold of opportunities. Three positive trends are taking root simultaneously in Asia: China's further opening and economic reshaping with its impending accession to the World Trade Organization (WTO); Asia's economic recovery; and the Internet revolution. A fourth factor is also coming into play. Three years beyond the launch of the Special Administrative Region (SAR), the scope for Hong Kong and the Mainland to cooperate has never been greater - nor have the mutual incentives. These developments herald vastly expanded possibilities for economic cooperation between Hong Kong and the Pearl River Delta on many levels and across many sectors, including the "new economy". At the same time we must prepare ourselves for intensified competition of a global nature and on a global scale.

There is a need to begin a discussion between interested parties in Hong Kong and the Delta on how we can compete successfully **as an economic region** in this positive but challenging new scenario — *compete together*, not against each other. For as globalization takes hold, I believe the real contest in world trade will no longer be between nations but between advanced city regions such as that comprising Hong Kong and the Pearl River Delta.

What roles should Hong Kong and the Delta each play in jointly building a competitive economic region? How will these roles interface? Can we truly maximize competitiveness as partners rather than competitors, cooperating and coordinating across sectors and boundaries? And can we do so, all the time reinforcing and building on the framework of "One Country, Two Systems"? With the help of experts from both sides of the boundary, in this volume, we will be able to identify some of the factors, approaches and requirements for future competitiveness, and explore scenarios for coordinated regional action between Hong Kong and the Delta.

COMPARATIVE ADVANTAGE: THE EARLY PHASE

Before moving the horizon too far ahead it is useful to remind ourselves that the Pearl River Delta has been a vital source of nourishment throughout Hong Kong's history, with daily arrivals of fresh water, rice, meat and vegetables. It is also a rich source of human capital. Since the Mainland's first economic opening in 1978, the Delta has filled our rice bowls in ever more sophisticated ways. Likewise, Hong Kong contributes to the Delta's prosperity through a multitude of complex business interactions.

The combination of Hong Kong's manufacturing capabilities with the Delta's more abundant land and labour is a winning formula allowing each to maximize comparative advantage. It enables Hong Kong to remain competitive in world markets — despite our relatively high cost base — because we rationalize production. Labour-intensive work is done across the boundary. Higher-value-added operations and services are retained in Hong Kong. Largely on the strength of economic collaboration with the Pearl River Delta, Hong Kong rose from the 23rd to the 10th place in the world league table of trading entities in just 21 years, from 1978 to 1999. Per capita GDP soared 10-fold, to HK\$180,000. Hong Kong's workforce expanded by 72 percent — significantly outpacing population growth of 49 per cent over the same period.

Hong Kong's rapid transformation from factory to showroom brought widespread economic benefits, including a more diverse and flexible labour market for higher-value jobs. The rise of our manufacturing industries up the value chain also created many new professional jobs in Hong Kong's service economy. Services as a proportion of GDP went from 68 percent in 1980 to 85 percent in 1998. The Delta, too, has scaled new heights, as I shall elaborate later.

COMPETING TOGETHER: THE NEXT PHASE

With China's modernization now well into its third decade, other regions in the Mainland China and elsewhere are determined to open up — and catch up. This is propelling Hong Kong and the Delta towards a new phase of interaction, one in which we must respond to competition from *inside* as well as *outside* the Mainland. For many years production in the Pearl River Delta has been hard to beat in terms of low cost, high output and quality. But we cannot be complacent about this. With active encouragement, rightly, from the central Government, investment is moving inland and northwards in search of even more cost-competitive land and labour.

Competing on price alone is no longer a viable and desirable option, especially after China's WTO accession and the gradual opening of the Mainland's domestic market. Nor is it enough simply to go on rationalizing comparative advantage in our separate ways. We need integrated strategies that enable us to leverage a total *package* of each other's advantages, from the Pearl River Delta's labour pool and high-tech manufacturing to Hong Kong's port, airport, telecommunications and financial infrastructure. Already this is starting. We see a proliferation of mutually supporting activities in Hong Kong and the Delta region for businesses engaged in telecommunications services, software development and Internet services. The high concentration of domestic and overseas computer giants in Guangdong Province has fuelled rapid development of the software industry in Guangzhou and surrounding cities in the Delta.

Shenzhen alone is home to more than 1,500 computer component makers and over 500 software companies, according to local leaders. It has over 500 research and development centres and is attracting top talent from all over the Mainland. Leading Chinese universities such as Tsinghua and Beida use Shenzhen as a base to commercialize academic research in electronics and computer science, frequently in partnership with Hong Kong entrepreneurs. In 1997, high-tech industries accounted for more than 40 percent of Shenzhen's industrial output and one third of its exports.

In this fertile business environment many high-value jobs are being created and technology transfers are taking place on both sides of the boundary. Indeed the clustering of IT activities around Shenzhen is attracting global attention. It also increases the prospect of more "new economy" firms establishing themselves in the SAR to develop global strategic alliances in Hong Kong, the Delta and beyond.

WORKING TOGETHER

The "One Country, Two Systems" arrangement is proving highly conducive to such developments. It preserves Hong Kong's institutional autonomy and distinctive attractions to international business while facilitating — and supporting — a closer economic partnership with the Chinese Mainland. With a boundary and separate customs firmly regime in place, we are able to think without inhibition of Hong Kong and the Pearl River Delta in terms of their combined economic potential. As a modern, dynamic region of more than 26 million people — our combined populations — we can exert far greater leverage in world trade.

China's impending WTO accession will further help to free Hong Kong from long-standing constraints in the way we serve the Pearl River Delta. Under existing trade rules, Hong Kong can only interact with our natural hinterland in a rather **unnatural** way; in other words as an "overseas" trade partner. With China's WTO accession it will be possible for Hong Kong and other overseas firms to be major stakeholders in Mainland entities across many sectors. They will have access to the Mainland market as domestic entities enjoying national treatment. The Delta, being steeped in pioneering spirit and a tradition of bold experimentation, is a natural place to incubate such ventures ahead of China's full-scale opening.

Just as Hong Kong has been transforming since the late 1970s, so the Pearl River Delta Region has undergone significant change. It has diversified from a largely agricultural economy into a major manufacturer of light industrial goods for export markets. Today, Guangdong province is China's leading exporter, accounting for over 40 percent of the Mainland's exports. In the past decade greater number of Mainland companies have invested in Guangzhou and municipalities south of the city, along the eastern and western banks of the Pearl River. Dongguan, Panyu, Shunde, Zhongshan, Zhuhai — and Guangzhou itself — have become national leaders in key scientific areas. The region is among the wealthiest in the Mainland. It enjoys an exceptionally high living standard relative to other areas of the Mainland. Disposable income in Guangdong reached *RMB*9,000 last year, some 55 percent above the national average.

Nurturing *All* Resources

It would be easy to focus just on cooperation and coordination at business and commercial level. But this newest phase of interaction — the phase of Hong Kong and the Pearl River Delta competing *together* — demands that we go further. Preparing for the opportunities and challenges ahead will require Hong Kong and the Pearl River Delta Region to nurture **all** our resources —human and natural, as well as commercial, financial and administrative. We need to lift our sights and think of Hong Kong and the Delta not as two economic areas each pursuing their own agenda, but as one economic region with a holistic vision of its future.

We must look not just at maximizing our total package of advantages but also at minimizing our *disadvantages*, which are largely man-made. I refer, of course, to factors impacting negatively on quality of life, such as degradation

of air and water quality across the Delta region. Separate efforts to address these environmental issues, while commendable, can achieve only partial success at great cost. Air and water recognize no administrative boundaries.

More broadly, we must embrace the fact that the globalized “Information Age” thrives on knowledge creativity, participation and accessibility. In this new context competitiveness involves more than efficient allocation of inputs. All competitors — **whether developed or developing** — will need to invest in nurturing human capital. Quality of product will depend on quality of people. Being largely interdependent for human and natural resources, Hong Kong and the Pearl River Delta will compete more effectively if we work together on strategies for **sustainable** development of these resources.

Project 2022

Initial work on envisioning cross-boundary development has already begun. In Hong Kong, the multi-sector Commission on Strategic Development, spearheaded over a two-year period by Chief Executive Tung Chee-Hwa, broadly outlined the significance and the potential for further economic integration between Hong Kong and the Pearl River Delta Region. Since the establishment of the SAR, there have also been numerous high-level exchanges on joint development between officials from both sides of the boundary. Recently, particularly, new official discussions have focused on addressing shared environmental issues and concerns. The next step in developing concrete action is to engage relevant players in articulating specific factors, approaches and requirements for joint development, and exploring specific areas for coordinated regional action.

Project 2022, under whose aegis we are meeting, provides a forum and springboard for such engagement. It is entitled “Project 2022” because that year marks the halfway point for Hong Kong’s mandated 50 years as an SAR. It is also a reasonable time-scale for assessing the potential impact of greater regional cooperation and coordination. The project is sponsored by a group of Hong Kong business people interested in understanding the existing and potential administrative, social and environmental linkages between Hong Kong and the Pearl River Delta Region. Project 2022 explores specific scenarios of cooperation and coordination to enhance competitiveness for the Pearl River Delta Region as a **whole**. The report on Project 2022 has been published to assist follow-up actions.

Long-term strategies to elevate the competitiveness of the **entire** region will require intensive cooperation between officials and administrations at many levels. It will also require proactive initiatives and support from the private sector and concerned citizens. This applies not just to joint efforts to tackle shared problems, such as environmental degradation and disjointed infrastructure development. It also applies to joint efforts to maximize shared opportunities, in particular those arising from China's WTO accession.

PAINTING A VISION

Let me paint a vision for the Delta in the year 2022. We see a competitive, vibrant and prosperous region with blue skies and clean water. Traffic flows across the border as smoothly as a stream. This area bursts with such energy and diversity as to attract millions of admiring tourists and eager businessmen and women. The people of this domain look upon their homes with pride and affection because they inhabit one of the wealthiest, cleanest, most advanced and most competitive regions in the world. Turning this vision into reality is possible, but it will take commitment, cooperation and determination from all sectors and, above all, ordinary citizens.

For 22 years we have experienced the benefits of increasing economic interaction between Hong Kong and the Pearl River Delta. It has transformed us both. Now we look ahead to the next 22 years — the time-frame for Project 2022 — to see how we can leverage this success story to write a sequel, one in which the happy ending is measured as much by sustainable quality of life as by prosperity for all citizens of the Pearl River Delta region.

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Chapter 3

Modernization of the Pearl River Delta Region and the Stability and Prosperity of Hong Kong

DONG Hong

INTRODUCTION

During the past two decades of “Open Door” economic policy, Guangdong, the once economically-backward province in southern China, has now developed into one of China’s fastest growing, most externally-oriented and vibrant regional economies. Guangdong produces some one-tenth of the nation’s total economic output, with the Pearl River Delta (PRD) region serving as the “dragon head” and cornerstone of economic growth — maintaining an incredibly high annual economic growth rate of 20 percent in the past 20 years. In 1999, the PRD region’s Gross Domestic Products (GDP) reached *RMB* 643.9 billion (US\$78 billion), or 68 percent of the provincial total, while per capita GDP stood at *RMB*28,618 (US\$3,460). Foreign export and utilization of foreign capital in the PRD region constituted 87 percent and 83 percent respectively of the provincial total figure. The production value of high-technology commodities, fiscal revenue as well as the saving rate of urban and rural residents all stood at 70 percent; the rate of urbanization of the region has also reached 67 percent. These figures suggest a reasonably good living standard has been reached, and the region has basically met the prerequisites for realizing “socialist modernization”.

It is within this socio-economic context that “Special Economic Zones” (SEZs) in Guangdong, and the PRD region at large, have been designated to be the province’s herald of realization of the “socialist modernization” ideology, which was explicitly stated as the major policy goal in the review of the provincial developmental planning strategy in August 1999. The development goal is to expand development potentials through three main strategies: establishing an *export-orientated economy*, enhancing *science in education*, and planning for *sustainable development*. Through the above strategies, Guangdong will turn into a regional base for high-technology production and export trade, linking closely with the Hong Kong, Macao and international economies. As a showcase for the socialist market economic system and sustainable development, Guangdong strikes to achieve modernization in

around 2010, attaining a GDP of *RMB*2,050 billion (US248 billion) or a per capita GDP of approximately *RMB*6,200 billion (US749.7 billion) by then. This requires an annual growth rate of 9 percent for 12 consecutive years.

STRATEGIES FOR REACHING THE GOALS OF MODERNIZATION OF THE PEARL RIVER DELTA REGION

Having set the future scenario of a modern and prosperous Pearl River Delta region, we shall address the question of how we could achieve such a goal by focusing on six strategies of development as follows:

1. *To upgrade and optimize the industrial structure of the PRD region through technological innovation.* These include: (a) targeting development at the three pillars of industrialization, namely information technology, consumer electronics and specialized machinery, and petrochemical industry; (b) introducing advanced technology to the three major traditional industries, namely textiles and clothing, food and beverage, and construction materials; (c) incubating potential industries such as automobile manufacturing, pharmacy, marine product processing and environmental protection; (d) industrializing the agricultural sector and liberalizing the service trade sector. This will result in a capital-intensive industrial structure. The three pillar industries mentioned above (i.e. information technology, consumer electronics, and specialized machinery and petrochemical industry) will constitute a 4.7 percent, 42 percent and 53.3 percent respectively of the total added values to the region's industrial production.
2. *To establish an information economy by building a unified and open information network.* The state-of-the-art information network will mainly be built upon the broadband infrastructure, which is capable of transmitting high volume of data in high speed. This would promote electronic commerce and popularize the use of network information technology so that the "Composite Index of Digitization" ("信息化綜合指數") shall reach 67 percent.
3. *To enhance urban-rural integration through improving infrastructure development.* A web of regional transportation systems, with nodes of airports and container ports that are well-connected by the highway network, will greatly facilitate mobility while lowering the cost of traveling within and around the PRD region. Through coordinated planning of the

city functions and layout, the region has the potential to develop into a Greater PRD metropolitan region, with Guangzhou and Shenzhen as the dragon head leading the other metro-areas along the central, eastern and western banks of the Pearl River Estuary. Over 70 percent of the region will be urbanized.

4. *To maintain a coordinated balance among population, resources and the environment through optimizing the allocation of resources.* This could be achieved through: (a) controlling the residing population at below 32.8 million and an annual natural population growth rate of 7.5 percent; and (b) implementing the “Blue Sky, Clear Water” Scheme (“藍天、碧海”工程) for effective mitigation of water and air pollution. It is targeted to attain an “Environmental Composite Index” (“環境綜合指標”) of 90, which indicates a well-balanced ecological cycle in the region.
5. *To promote socio-cultural enlightenment and human modernization.* Resources should be rationally directed at training and retaining professionals and skilled workers with high calibre to promote economic development in the region. To secure a healthy and productive workforce, primary health care for all citizens would also be provided, targeting to reach a social insurance participation rate of over 95 percent.
6. *To establish a law-abiding society through consolidating the legal framework.* Regional legislatures should be functioning in compliance with national laws. Legislative power, judicial power and authority in law enforcement, together with the mechanism that monitors their operation, will be strengthened to ensure a secured and harmonious society with law-abiding administration and management practices.

FULL-SCALE COOPERATION BETWEEN GUANGDONG AND HONG KONG: A GUARANTEE ON MUTUAL PROSPERITY

Enhanced cooperation between Guangdong and Hong Kong is pertinent to the further socio-economic development of both regions. Since the return of Hong Kong’s sovereignty to China in 1997, we have entered the “golden era” for comprehensive regional cooperation between Guangdong and Hong Kong. There are great breakthroughs in cross-border cooperation including the extension of boundary opening hours; the promotion of language education in primary and secondary schools; and collaboration in tourism development and

environmental conservation. In the past, regional cooperation was mainly initiated by non-government organizations, with the mode of cooperation mainly determined by market forces that were based on the “back factories, front shop” relationship between Guangdong and Hong Kong. Now, a new form of ‘full-scale’ cooperation has emerged, which is governed by market forces, facilitated by the governments of the two regions, and catalyzed by technological advances. While Guangdong has maintained an average economic growth of 9 percent, it is encouraging to see Hong Kong recover remarkably from the adverse impact of the Asian Financial Crisis with the full backing of the Central Government and the strong leadership of Chief Executive Tung Chee-Hwa — Hong Kong is forecasted to experience 5 percent economic growth in 2000. With China’s accession into the World Trade Organization (WTO) and the implementation of the West China development strategy, we expect to have growing business and investment opportunities to sustain long-term economic prosperity and stability in Hong Kong.

In entering the 21st Century, humankind is faced with an ever-accelerating pace of technological revolution and economic globalization. We strongly feel that the PRD region is still lacking the competitive edge she requires — her technology and service sectors are lagging behind, both software and hardware infrastructures are not adequate. The region is also faced with intense environmental pressure; the path to sustainable development is a long and difficult one. The success in meeting them lies in both our continued efforts and the successful experience of Hong Kong. To achieve modernization of the PRD and sustain long-term prosperity and stability in Hong Kong, cooperation between the two must be enhanced in the following areas:

1. *Economic reform should be facilitated by technological innovations.* First of all, there should be more communication and coordination in the planning and positioning of technology development in Hong Kong and Guangdong. Hong Kong would become the Innovative Technology Centre in southern China, while the Guangdong-Pearl River Delta would develop into the regional hub of high-tech industrial manufacturing. A number of key industries should be focused on, including information technology, Chinese medicine, new material science as well as environmental protection technologies. Secondly, the various mega-infrastructure projects planned in the two regions, such as the Cyberport, “Silicon Harbour” and “Chinese Medicine Hub” in Hong Kong; and the Guangzhou International Bio-island, Software Park, Science Park and the “Optics Valley” in the

Pearl River Delta region, should be better coordinated in order to avoid duplication in resources utilization. Finally, the two regions should increase collaboration in the protection and management of intellectual property. To facilitate corporate upgrade and technological innovation, we should consider simplifying immigration control to facilitate the mobility of high-tech professionals, as well as to jointly establish “industry and technology development centre”.

2. *Service trade industry would become the new “growth pole” of the regional economy.* Service trade has already become the “growth engine” of the global economy. In Hong Kong, service industries constitute 84 percent of her GDP. With China’s entry into the WTO, there will be great development potential for the service trade sector. With the growing significance of service industries, Hong Kong will continue to serve as China’s major “window” for attracting foreign investment and financing. Guangdong authorities should therefore make swift action to open up their markets for a whole range of service industries to Hong Kong, such as financial services, telecommunications, transportation, tourism, retail business and real estate development, to attract capital, technological know-how and personnel that China needs in enhancing its overall competitiveness in the global economy. The ‘Disneyland Theme Park’ project in Hong Kong, which is due to be completed by 2008, presents exciting opportunities as well as a new kind of challenge for governments and relevant bodies not only in Hong Kong, but also in the whole PRD region including Guangdong and Macao. All the authorities need to coordinate among themselves on issues such as tourist-friendly immigration control, regional management of tourism resources and well-designed tour packages that can capitalize on and maximize the potential benefits of major tourism development in a single locality for the good of the entire Pearl River Delta region.
3. *To provide a conducive framework for sustainable development.* Regional collaboration in sustainable development and environmental protection has been emerging as the major issue to the governments, business leaders and the communities of Guangdong and Hong Kong. Cooperation between the two regions in urban planning and development should emphasize on the research and control of region-wide environmental and ecological impacts such development will bring. As “pollution knows no border”, governments of both regions should join hands in providing *regional*

solutions in tackling pollution-control and environmental management problems ranging from protection of water quality in Dongjiang river; the research on and mitigation of cross-boundary air pollution like acid rain and photochemical smog; as well as combating pollution sources such as vehicular emissions of air pollutants.

4. *To enhance coordination in major infrastructure projects* such as motor highways, railway, seaports and airports, as well as telecommunication networks in the two regions. Cross-boundary coordination in infrastructure development is particularly essential between Shenzhen and Hong Kong, which are two neighbouring metropolises in the PRD region. Such a cross-border cooperation in infrastructure development would help ensure the respective infrastructures are built not solely for blind competition, but for striking a balanced spatial division of labour among those development objectives in regional land use, utilization of natural resources and economic complementarity.

CONCLUSION

Mutual cooperation and support between Guangdong and Hong Kong are keys to the successful modernization of Guangdong as well as the continued prosperity and stability of Hong Kong. Our successful cooperation in the past decades and a critical scenario analysis of our great potential in future shall provide us some good reasons to remain optimistic that the Pearl River Delta region of Guangdong and Hong Kong will continue to enjoy their fruitful cooperation as one of the world's most vital regional economies.

Chapter 4

Managing the Hong Kong-Guangdong Relationship: Issues and Challenges

Peter T Y CHEUNG¹

INTRODUCTION

The divide between Hong Kong and Guangdong, the southern most province in China, used to be a tightly guarded “border” before the establishment of the Hong Kong Special Administrative Region (HKSAR) on July 1, 1997. However, after the reunion of Hong Kong with China, this boundary is still very much managed as if it were the border between two separate countries. Strict control over the flow of goods and people and tight border management are still in force. Under the “One Country, Two Systems” framework, the two territories interact frequently and extensively. However, they work under different social, economic and politico-legal systems. The interactions between the two areas have now developed to an extent that closer integration is only likely to proceed further in the future. This chapter is a think piece that attempts to: (a) provide an overview on the various dimensions of the Hong Kong-Guangdong interface and the competing perspectives on cross-boundary coordination and cooperation; and (b) explore a preliminary strategy in managing this relationship. A discussion of the key issues and challenges confronting this relationship in the near future will conclude this chapter.

THE HONG KONG-GUANGDONG INTERFACE

An Overview of the Hong Kong-Guangdong Interface

Interactions between Hong Kong and Guangdong since 1978 are dynamic and multi-faceted. They encompass a wide variety of areas ranging from boundary control, public security, management of demographic flow and migration to environmental protection, food and water supply as well as economic and technological links. In fact, the above list hardly exhausts the many issues that define the Guangdong-Hong Kong relationship. Since the establishment of the HKSAR in July 1997, the issue of cross-boundary coordination and cooperation has appeared frequently on the policy agenda of the HKSAR Government.

At the societal level, many forms of Hong Kong-Guangdong links are already flourishing, including most importantly tourism, trade and investment, scholarly collaboration, cultural exchanges, interactions between business, community and professional bodies as well as informal contacts between government officials. At the governmental level, a number of communication channels have already been developed to address different cross-boundary issues, especially boundary control, environmental protection and infrastructure. In addition to direct contacts between individual government departments, the main channels for cross-boundary contact include the Hong Kong/Guangdong Cooperation Joint Conference (hereafter the HKGDCJC), the Cross-boundary Liaison System and the Hong Kong and Mainland Cross-boundary Major Infrastructure Coordinating Committee.² In particular, the HKGDCJC is established as a “high-level forum for enhancing strategic cooperation with Guangdong.”

Several developments since 1997 further highlight the salience of the Hong Kong-Guangdong relationship. For instance, the flow of Hong Kong people across the boundary increased sharply and the average growth rate of passengers crossing Lo Wu was a staggering 16 percent per annum between 1996 and 2000.³ Since the Asian Financial Crisis, the number of Hong Kong people crossing the boundary to shop in Shenzhen and nearby areas has increased notably. In order to cope with the high operating cost in Hong Kong, some businesses, such as the banking sector, have already moved their labour-intensive operations to Guangdong while others began to expand their operations in the Mainland in preparation for anticipated business opportunities after China's entry into the WTO. With the steady improvement in the living standards and the growing affluence in the Pearl River Delta (hereafter the PRD), Hong Kong's real estate developers have also shown much greater interest in property development across the boundary. On the other hand, the rise of Shanghai as China's leading metropolis and the rapid development of the Yangtze Delta compel Guangdong to step up its efforts to restructure its economy and to maintain its economic dynamism. Such trends, which are likely to accelerate in the near future, have provided the most recent impetus to Hong Kong-Guangdong cooperation.

Competing Perspectives on Hong Kong-Guangdong Coordination and Cooperation

The following section attempts to highlight the gap in the perspectives of the key actors involved in Hong Kong-Guangdong coordination and cooperation. My focus will be on the HKSAR Government and the business sector and my scope will be restricted mainly to the economic sphere. Owing to the lack of space, this discussion does *not* attempt to provide an exhaustive or comprehensive treatment of this significant topic. Rather, my sketch tries to show that the various parties involved have rather different perspectives and expectations. These discrepancies provide a useful context for understanding some of the difficulties in achieving cross-boundary cooperation in the past few years.

Governments in Guangdong

The Guangdong provincial government has long considered the economic relationship with Hong Kong as very important. After all, the province has benefited tremendously from opening up to Hong Kong investment since 1978. However, it could not take a lot of initiatives on its own since 1997 because it would otherwise be seen as intervening in Hong Kong's own domestic affairs. Among the localities in the PRD, Shenzhen Special Economic Zone (hereafter SEZ) was most eager to expedite closer economic integration with Hong Kong because of its geographical proximity and extensive cross-boundary economic ties with the SAR. After all, most of the cross-boundary passenger or vehicle traffic from Hong Kong pass through Shenzhen. (In fact, Shenzhen was keenly interested in collaborating with Hong Kong to develop hi-tech industries in the mid-1990s, but in view of the slack response from the HKSAR Government, it finally decided to go for it alone and has made notable progress in this area in the last five years.)

By 2001, Shenzhen officials and researchers no longer expected any quick results from economic and technological cooperation between the two areas. What Mayor Yu Yaojun said publicly during his visit to Hong Kong in June 2001 might be indicative of the mood of Shenzhen's leadership.⁴ Not only did he pinpoint Hong Kong's weakness in manpower, R & D capacity and the industrial foundation for developing hi-tech, he even implicitly criticized the HKSAR Government by calling for faster decision-making and greater administrative efficiency. Further, the Shenzhen leadership has been publicly and repeatedly calling for 24-hour boundary crossing as soon as possible because Shenzhen might anticipate substantial benefits from such an arrangement.

Put simply, the priorities and expectations between Guangdong and Hong Kong in cross-boundary cooperation are not identical. As aptly pointed out by Guangdong's Governor Lu Ruihua in the inauguration of the HKGDCJC in late March 1998, he expected the cooperation between the two sides to reach a new stage characterized by three developments: from limited cooperation spearheaded by society to multidimensional cooperation promoted by government; from spontaneous and market-led cooperation to both market-driven and government-coordinated cooperation; and from cooperation based upon the transfer of labour-intensive industries to the development of a division of labour with technological innovation and rationalization of resource allocation as its core.⁵ According to Lu, the priorities for immediate cooperation should focus on three areas: (a) economic and business cooperation, especially over urban functions, infrastructure as well as industry, and in particular, information industry; (b) exchange and cooperation in education, science and technology, and human resources; and (c) construction of cross-boundary crossings and smoother boundary management. Hence the Guangdong provincial leadership's vision of cross-boundary cooperation anticipates much closer economic integration based on a clear division of labour in various business and industrial sectors. It also calls for much greater governmental initiative in many different policy areas. However, such an orientation is not entirely shared by the HKSAR Government, whose perspective on cross-boundary cooperation will be briefly analyzed below.

The HKSAR Government

Generally speaking, the HKSAR Government has much greater interest in pursuing cross-boundary cooperation when compared with the pre-1997 period. The Chief Executive (hereafter the CE) of the HKSAR Government, Mr. C.H. Tung, clearly has a policy agenda rather different from his British predecessors. In his maiden 1997 Policy Address, he highlighted the issue of cross-boundary cooperation by announcing the establishment of a high level HKGDCJC, to be headed respectively by Guangdong's Executive Vice Governor and HKSAR's Chief Secretary for Administration (hereafter the CS). In each of the Policy Addresses delivered since 1997, the CE has addressed different aspects of cooperation between Hong Kong and Guangdong (see below).

It would be useful to revisit the CE's expectations on cross-boundary cooperation set out during the first meeting of the HKGDCJC in March 1998:

“It is a very important meeting. It's a beginning of a very important

formal relationship... what we are going to do is to through this particular higher level liaison committee to look at, on the one hand, what we have done already: where we are already collaborating; can we do a better job in terms of efficiency cost and quality of co-operations, and also to look at other areas we can co-operate to our mutual benefit.”⁶

A number of alternatives on cross-boundary cooperation, especially over the environment, transportation and tourism, have already been undertaken through the HKGDCJC. Nonetheless, these efforts have not resulted in a major breakthrough in economic cooperation, perhaps with the exception of tourism. Hence it would not be too far-fetched to argue that this mechanism has not fully achieved the original objectives as set out by the CE or the Guangdong Governor. One plausible explanation is that there were significant gaps not only between the perspectives of the Guangdong and HKSAR governments toward cross-boundary cooperation but also between their conception of the role of government in managing social and economic development. There were probably different views about cross-boundary cooperation inside the HKSAR Government as well. In addition, as a result of the lack of extensive research on cross-boundary cooperation and a clear community consensus, the HKSAR Government was not in a strong position to respond to the many initiatives proposed by its Guangdong counterparts.

Another top-level advisory body, the Commission on Strategic Development (hereafter the CSD), was created by the CE in 1997 with the mission to examine long-term development trends affecting Hong Kong. The CSD report released in February 2000 set out the long-term goal of establishing Hong Kong as Asia's World City and highlighted the importance of cooperation within the PRD. The report conceptualized the PRD region as an emerging multi-centred city-region, and hence “continued cooperation is needed to foster better regional planning and economic development under “One Country, Two Systems”, including better understanding of the respective roles of the Government, non-governmental organizations, the private sector and professional institutions...” (para. 3.7). Two aspects of the CSD report merit attention: the idea of regional governance (albeit not developed further in any specific form) and a multi-centred PRD region. If this conception were to be developed further, some form of coordination or division of labour would probably be inevitable. Nonetheless, the CSD has *not* released any data or research findings substantiating the recommendations that it has proposed. Nor has it detailed a concrete strategy to achieve better regional governance.)

and cooperation. More importantly, the CSD has not galvanized public support for the world city vision or effectively sold the idea of a PRD city-region to the Hong Kong community.

The CE's Policy Addresses since 1997 have regularly addressed different aspects of cross-boundary cooperation. The priority of the HKSAR Government is to facilitate the flow of people and goods, especially through the improvement of boundary crossing and infrastructural links, and to cooperate with Guangdong in dealing with environmental problems. For instance, in his third Policy Address delivered in October 1999, Mr. Tung proposed several initiatives to cooperate with Guangdong in environmental protection. His fourth Policy Address delivered in October 2000 again highlighted the development of the PRD and suggested that "we need to work together with the Mainland over the long-term development of cross-boundary facilities" (para. 40) and "..... we will continue to expand our air services network and consider long-term plans to enhance our transport links with the Pearl River Delta to serve the entire region" (para. 41). Nonetheless, while both parties agreed that these infrastructural and boundary crossing issues should be addressed, the Guangdong (or Shenzhen) authorities favoured much more government initiative in expediting economic restructuring and industrial cooperation, especially in the hi-tech sector.

The HKSAR Government has seemingly paid much more attention to cross-boundary cooperation since 2001. For instance, in the Budget Speech delivered in March 2001, the then Financial Secretary (hereafter the FS), Donald Tsang, discussed the relations between Hong Kong and Guangdong in the following way:

"We must aim to complement each other, making the most of our different strengths, turning them into a competitive advantage for the entire South China region. We must grasp this opportunity to become the World City of Asia and a first-class international financial centre, providing an unrivalled breadth and depth of financial and high-value-added services..... we must work together with the Mainland. We must take the initiative to step up co-operation with Guangdong."

Specific alternatives proposed included: (a) enhancing infrastructural links with the PRD; (b) improving the supply of information support to small and medium-sized enterprises (hereafter the SMEs); (c) setting up an Economic and Trade Office in Guangdong; (d) improving the efficiency at cross-boundary

crossing; and (e) further expanding admission of talents in the area of IT and financial services.

With the appointment of Donald Tsang as the CS and Antony Leung as the FS in May 2001, more windows for policy change were opened because both have indicated their strong interest in seeking closer cooperation with the Mainland. In his fifth Policy Address delivered in October 2001, the CE promised that “The Government is determined to actively promote economic cooperation between Hong Kong and the PRD region with a view to achieving a ‘win-win’ situation. This is a key element in our efforts to consolidate and enhance Hong Kong’s position as an international center for finance, trade, transport and logistics, as well as a premier tourist destination” (para. 27). Since mid 2001, several initiatives on cross-boundary matters, such as extending boundary crossing hours to midnight, proposing more coordination in infrastructural development and facilitating the inflow of Mainland tourists, have been proposed. Another recent initiative is the CE’s proposal to set up a free trade arrangement between Hong Kong and the Mainland. In short, while the CE very much wanted to jumpstart the issue of cross-boundary cooperation since 1997, the undertaking of his “strategy”, which focuses on the flow of people and goods through the improvement of boundary crossing and the extension of crossing hours, the relaxation of the inflow of Mainland tourists, the coordination of infrastructural development and the development of logistics and other related sectors in Hong Kong, has gained much more momentum only since 2001.

The Hong Kong Business Sector

It is difficult to distill the diverse, sometimes conflicting, views of Hong Kong’s business sector into only one dominant perspective representative of the entire business community. Nonetheless, two broad perspectives of the business sector on cross-boundary economic cooperation could be identified. One dominant approach focuses on the need to reduce barriers to the flow of human resources, funds, and goods across the boundary. The underlying values and assumptions of this perspective are informed by the ideology of free market. This perspective supports closer cooperation by governments in both areas in order to expedite economic exchanges, such as facilitating Hong Kong’s investment in the Mainland (e.g., in sectors not yet fully opened to overseas investment), expanding inflow of talents and labour, reducing administrative obstacles to Hong Kong-Mainland economic ties, and further improving boundary management and infrastructural development. The financial, commercial,

infrastructural and trading sectors seem to subscribe to this perspective.

There is, however, at least another important but somewhat different perspective inside the business community in Hong Kong. The primary concern for SMEs is the lack of government support and the absence of a sound industrial policy. One key underlying assumption of this perspective is the belief that government support would be indispensable for them to overcome difficulties in the Mainland market where the legal and regulatory frameworks are not fully in place and to confront the growing competition in a globalized world. Government subsidies, technical support, and administrative assistance or advocacy for them in the Mainland are often considered key policy alternatives that should be taken by the HKSAR Government. While the various business sectors favour different policy alternatives, they seem to converge on one key theme: the role of government in managing cross-boundary social and economic issues must change as soon as possible.

Aside from the above two dominant views, other equally noteworthy perspectives that could be identified in the Hong Kong's business sector include the views of those most affected by the further economic integration between Hong Kong and southern China, such as the real estate developers and the retail sector, especially the small retail businesses. Again, it is hard to generalize the views of this diverse group, but evidently they would be most affected by the easing of boundary crossing, such as around-the-clock opening of the Lo Wu control point.

In view of the stagnant real estate market and the continuing supply of housing stocks in the public sector, some real estate developers are concerned with the availability of quality flats in Shenzhen and other nearby towns in the PRD. Any further improvement in cross-boundary crossing and transport will likely keep property prices in Hong Kong down because prospective buyers would be attracted by the flats across the boundary and would become much more cautious in investing in Hong Kong's property market.⁷ However, other real estate developers believe that the prices in Hong Kong have already come down significantly and the removal of the 24-hour crossing factor may actually remove an uncertainty which depresses market sentiments. The retail sector believes that the impact of the Asian Financial Crisis has speeded up cross-boundary shopping as Hong Kong consumers have become much more cautious about spending. Therefore, they would prefer the Government to do something to keep consumption inside Hong Kong, such as imposing a land departure

tax or relaxing the flow of Mainland tourists to Hong Kong.

Discrepancies in the Perspectives among the Key Actors

Several notable gaps characterize the perspectives of different actors toward Hong Kong-Guangdong economic cooperation. This section will examine these gaps and discuss whether they may help to explain the difficulties in furthering cross-boundary economic cooperation in the 1997-2000 period.

First, there is an obvious gap within the business sector in Hong Kong. The discrepancies between the business interests of major firms in finance, infrastructure and trade and that of the SMEs are obvious. Similarly, some real estate developers and small retail businesses have a more defensive orientation towards closer cross-boundary cooperation because their interests would be negatively affected, at least in the short run.

Second, another gap exists between the perspectives between the HKSAR Government and the business community. For one thing, the HKSAR Government, at least up to now, is much slower in proposing bold initiatives because, unlike the business sector, it has to consider a wider range of concerns in the community. For instance, a faster pace in admitting Mainland talents would arouse opposition from local professionals or university graduates. A quick move towards 24-hour boundary crossing might further dampen consumer confidence in real estate and keep prices down in an already weakened market. More extensive infrastructural links with Shenzhen and the western part of the PRD might over-load the existing transport system in Hong Kong. Most importantly, because of the domination of the free market ideology, the HKSAR Government has been reluctant to become a major investor in cross-boundary projects which require public funds. In addition, it is hampered by the lack of a solid community consensus on closer economic integration, which will have differential impacts on different businesses and sectors. For instance, the FS's floating of the idea of a land departure tax in 1998-1999 attracted diverse responses from different sectors in Hong Kong and criticisms from Shenzhen.

Third, there might well be differences even inside the HKSAR Government. Although exchanges between government departments in Hong Kong and Guangdong always exist and their cooperation over technical issues are quite smooth, it is a different matter when one talks about an economic strategy. Given Hong Kong's adherence to a laissez-faire philosophy, it would

be difficult for bureaucrats to come up with new thinking on cross-boundary cooperation. While the CSD is a high-level advisory body chaired by the CE, it has not set out a concrete PRD strategy in its first report on Hong Kong's long-term development needs and goals. Nonetheless, probably because of the increasing impatience of the business sector and the CE with the slow progress in cross-boundary economic cooperation, the HKSAR Government might be initiating more new measures in the CE's second term.

Most importantly, there are obvious gaps between the expectations and interests of the region's various governments involved. The above overview shows that the HKSAR Government has defined cross-boundary cooperation as a means to help Hong Kong consolidate its status as the hub of finance, trade, and transport in southern China. The perspectives of governments in Guangdong also show a similar orientation, however. They anticipate that closer economic cooperation between the two areas would enable the region to tap Hong Kong's financial and managerial resources in various financial, commercial, and technological development projects that rely mainly upon their human and technological resources. In the financial sector, closer links with Hong Kong are often defined as a venue for further opening up that sector in southern China, despite the fact that these policies are under the purview of the central government. In the technological arena, there were from time to time invitations from Shenzhen SEZ and Guangdong provincial authorities to Hong Kong for various joint investment projects in the late 1990s. They are also much more interested in direct government involvement in projects or investments, which are contrary to the free market orientation of the HKSAR. Most importantly, they expect much quicker responses from the HKSAR Government, but the Hong Kong side cannot easily follow suit because of the lack of a community consensus in Hong Kong and the unclear implications of closer economic integration. Hence it is plausible to argue that the divergence in the perspectives and interests between the different players in the PRD region has inhibited more initiatives in economic cooperation so far.

With the growing momentum toward closer ties with Guangdong, different political actors, most notably the Legislative Council (hereafter the LegCo) and other interested political groups, will bring the issue of cross-boundary affairs onto the political arena. In a LegCo house meeting held in mid-December 2001, for instance, legislators criticized the Government for making the long-term policy commitment of 24-hour boundary crossing before the completion of research studies (which would only be due in mid-2002) and for not liaising

sufficiently with the legislative body.⁹ Some legislators argued that this was a major policy change, hence different LegCo panels should be given the opportunity to scrutinize all aspects of the policy involved. One can anticipate that LegCo will have many more questions when the relevant government proposals, such as funding for various cross-boundary projects, are examined in the legislature later.

TOWARD A STRATEGY IN MANAGING THE RELATIONSHIP BETWEEN HONG KONG AND GUANGDONG

My preliminary thoughts on what Hong Kong, and in particular the HKSAR Government, should consider in handling the sensitive Hong Kong-Guangdong relationship are outlined below.

Three Key Dimensions of a PRD Strategy

How to craft an effective strategy to manage the Guangdong-Hong Kong interface is not purely an analytical or technical policy analysis exercise. After all, no strategy would work if it does not command sufficient support from the stakeholders and the community at large. Hence an effective strategy to manage the Hong Kong-Guangdong relationship should encompass at least three key dimensions:

- a) The political dimension: This involves, among other things, exercising political will, building consensus and coalitions, nurturing norms, and facilitating communication and dialogue between different actors and stakeholders. A clear consensus on the range of possibilities in enhancing the links between Hong Kong and the PRD does *not* exist in Hong Kong. For instance, as acknowledged by the CS, there was no consensus in the community about 24-hour cross-boundary crossing. People on both sides of the boundary might want to enjoy all the benefits without any trade-offs from a closer relationship. It is the responsibility of the HKSAR Government and the community leaders to alert the local community to the pros and cons of further engagement. Together with civic and business leaders, the HKSAR Government needs to cultivate and sustain popular support in order to build a shared vision for the PRD region that would be embraced by the community at large.
- b) The policy dimension: This involves exploring the most effective policy measures and developing the most appropriate processes and mechanisms

to achieve the key objectives arrived at the political stream mentioned above. For instance, the HKSAR Government should consider convening a series of expert panels to identify critical issues for further studies, scrutinize any emerging problems and explore innovative policy alternatives to achieve better cross-boundary coordination and cooperation. These panels should cover each of the key dimensions of cross-boundary links such as transport, environment, and economic and technological development. Panel members should include professionals and experts from academia, government, business and non-government organizations. The deliberation of these panels not only constitutes part of the much-needed consensus building process, but also allows for broader community participation in shaping an important public policy.

- c) The research dimension: Much more applied and policy research on cross-boundary issues would be critical in order to identify the costs and benefits of closer Hong Kong-Guangdong social and economic integration. This should be undertaken in parallel with the political stream of consensus and coalition building. These research findings can be used not only to provide input into government policies but also to narrow the gap between different views and interests in Hong Kong. Public opinion polls, focus groups and other studies on the perception and concerns of the Hong Kong people towards closer links with Guangdong should be regularly undertaken by the HKSAR Government (and other bodies). It was reported in mid December 2001 that the Central Policy Unit would conduct studies on public views toward 24-hour boundary crossing and its social and economic impacts. This study is actually long overdue. In the future, more studies on different aspects of cross-boundary coordination and cooperation should be carried out systematically and regularly to help the HKSAR Government better tap public sentiments and formulate an effective PRD strategy.

Crafting Hong Kong's Mainland Strategy

Developing an overall Mainland strategy to position Hong Kong in the Greater China region remains a critical task for the HKSAR Government. *Hong Kong's strategy toward the PRD should be an integral part of this overall strategy, not another isolated policy measure.* For instance, while Hong Kong's effort to develop itself into a logistics hub cannot ignore the PRD, its endeavour in developing hi-tech may call for collaboration with hi-tech bases such as Beijing rather than just localities in southern China. Similarly, Hong Kong's endeavour

to maintain its role as an international financial and commercial centre cannot ignore Shanghai's developments in this arena.

As China has already entered into the WTO, it is indeed imperative for Hong Kong to better position itself in the Greater China region and design coping measures to maximize its interests in the Mainland. Hong Kong's Mainland strategy could include, for instance, measures in the following areas, such as: (a) aggressively marketing Hong Kong as a "brand" for business, service, entertainment and tourism in the Mainland; (b) devising a long-term strategy and scholarship scheme to attract Mainland talents to work and settle in Hong Kong; (c) developing Hong Kong into an international education and research hub (at least for selected academic disciplines) in the Greater China region; (d) strengthening governmental expertise in monitoring economic and political developments in the Mainland (including the PRD); and (e) defining a proper bargaining strategy for the HKSAR Government in dealing with provincial and subprovincial authorities in the Mainland and establishing the necessary mechanisms to achieve such objectives. (A critical appraisal of the performance and positioning of the Beijing Office of the HKSAR and the Government's liaison mechanism with Mainland authorities should be a first step in this exercise.)

Better Steering by the HKSAR Government

Several immediate issues need to be addressed by the Government if it wants to be more effective in steering cross-boundary affairs. First, the HKSAR Government needs to have appropriate and effective advocates on PRD issues. For instance, the CE, the CS or the FS, together with selected members of Executive Council or the CSD, could serve as the key advocates for Hong Kong's PRD strategy. However, they need to be keenly aware of the political sensitivity and policy implications of the issues involved.

Second, a high-level internal mechanism inside Government, e.g. a special CE-chaired or CS-chaired taskforce on the PRD, is needed to coordinate governmental initiatives toward the PRD. In fact, the work of an increasingly number of policy arenas will develop a cross-boundary dimension as the two areas interact more frequently. This taskforce should carefully consider the political as well as policy dimensions of Hong Kong's ties with the PRD. Many mechanisms concerning the functional collaboration between government agencies in Hong Kong and Guangdong are functioning well, but certain cross-boundary issues such as environmental protection and economic

policy demand not simply technical consideration, but rather keen attention at the political level. The establishment of the Hong Kong Guangdong Cooperation Coordination Unit under the purview of the CS and FS in mid-2001 is a useful step to improve intra-governmental coordination at the operational level, but the need for a high-level coordination mechanism is still obvious.

Third, the HKSAR Government must realize that it alone cannot be the sole driving force to engage the community. Instead, the Government should be the coordinator and facilitator of public deliberation and research. Unlike other policy areas, there is no advisory body on cross-boundary issues because the issue cuts across many different policies. Hence whether the CSD should be reorganized to take on cross-boundary affairs merit serious attention. In any case, a revamped CSD (or other advisory bodies) could serve as a vehicle to build community consensus on cross-boundary cooperation.

Last but not least, the Government might need to consider setting a medium term agenda for Hong Kong's PRD strategy in the coming few years. A clear agenda would be essential for developing an effective strategy because the HKSAR Government and its leadership would then be keenly aware of the progress and seize the initiative in this important project.

THE WAY FORWARD: PERSISTENT ISSUES AND EMERGING CHALLENGES

Several special features of the Guangdong-Hong Kong relationship should be first appreciated before we can explore future possibilities. First, all boundaries/borders separating different social and political units are artificially created by governments. All these will be modified when the broader political and economic environments at the national and international levels undergo major changes. Second, even if Hong Kong has the privileged treatment of "One Country, Two Systems" developments on both sides of the boundary can influence the nature and transactions between them. In other words, the possibilities for change caused by endogenous changes in each territory are always there. Hence the bargaining relationship between the two parties may change if the political and economic resources at their disposal have shifted over time. Third, it should be noted that the current state of cross-boundary affairs is the result of a long historical process. The very creation of Hong Kong is an unprecedented example of historical contingencies. The boundary between Hong Kong and Guangdong once played a critical role in Hong Kong's

evolution into a capitalist haven. However, with China's growing integration into the capitalist world economy, the role of Hong Kong in the evolving Greater China economic region would inevitably have to change in order to cope with such drastic external changes.

A number of key issues and challenges confronting Hong Kong-Guangdong cooperation emerge from the above cursory survey. First, while both sides have expressed wishes for closer cooperation, the high-level institutional framework for Hong Kong-Guangdong cooperation still needs to be further refined. Both sides confront complex issues and challenges that are still unfolding.

For Guangdong, the provincial government should ensure that cross-boundary cooperative schemes would be observed by its subordinate cities, counties and lower level authorities. Because of the economic decentralization carried out since 1978, subprovincial authorities have become much more assertive in defending their own interests. Coordinating mechanisms between Guangdong and Hong Kong are unlikely to be effective unless the localities affected are also brought into the consultation process and given the opportunity to voice their concerns. For Hong Kong, the articulation of a PRD strategy will be a highly politicized process which calls for consensus-building among many different sectors in Hong Kong. To a certain extent, the economic slowdown and political contention inside Hong Kong have weakened the capacity of the HKSAR Government to deal with its counterparts across the boundary. The Government can proceed much more forcefully if it could command abundant financial resources and strong community support for its cross-boundary initiatives. Seeking support from Beijing is also critically important for Hong Kong.

Second, the different political, administrative and legal systems in Guangdong and Hong Kong continue to make cross-boundary cooperation a delicate task. There are not only competing interests between different localities inside Guangdong, but also complex interactions between different bureaucratic organs and processes in the province. There are obvious difficulties in coordinating economic development and infrastructural planning even inside the PRD because of the absence of a regional governance structure and the divergence of local interests. The fragmented bureaucratic polity in Guangdong (or elsewhere in the Mainland) suggests that the HKSAR Government should pay attention to the issue of proper coordination and communication in solving whatever difficulties in cross-boundary issues.

In order to better manage Hong Kong's relations with Guangdong and other localities, the HKSAR Government should pay much closer attention to the policy debates and policy making processes across the boundary. It is imperative for the HKSAR Government to go beyond its existing channels and establish more exchanges with its counterparts in Guangdong. It should also undertake systematic and rigorous research on various aspects of developments in Guangdong that concern Hong Kong's interests. Although some government agencies such as the Planning Department do carry out work on issues with a cross-boundary dimension, much more coordinated, in-depth and policy-oriented studies are urgently needed because of the complexity of many cross-boundary issues.

Third, in order to nurture better understanding and trust between officials in Hong Kong and the PRD, whether both sides need to have more direct contact and communication deserve further consideration. Aside from the different perspectives and expectations discussed earlier, the different institutional setup, professional culture and technical standards of the governments on both sides of the boundary already make communication a critical challenge. Shenzhen, for instance, has consistently complained about the lack of a regular channel for inter-governmental dialogue with Hong Kong.¹⁰ Given the growing economic prowess of the SEZ, Hong Kong needs to address this issue skillfully. One often-cited difficulty for regular cross-boundary contact is the discrepancies in the administrative status between Hong Kong and its Guangdong counterparts such as Shenzhen. One way to get around this issue is to utilize flexible arrangements. For instance, community leaders and scholars can attend discussion on PRD development on behalf of the HKSAR Government without formally taking on an official role, although some of them may serve as advisors to the Government. In fact, contacts between officials from Hong Kong and subprovincial authorities in Guangdong already took place in unofficial meetings, e.g. in academic conferences, but such venues could be regularized and be given quasi-official blessing as a vehicle for promoting better dialogue. Better exchange of information is also critical to promoting better understanding. For instance, the Guangdong authorities could be more forthcoming in providing or sharing data on cross-boundary environmental problems with Hong Kong. Research collaboration, whether joint research by independent professionals and academics or by official researchers from both sides of the boundary, should be encouraged as part of a multi-faceted effort to foster cross-boundary collaboration on developing the South China region.

Fourth, while economic cooperation between Hong Kong and Guangdong is driven mainly by market forces, cross-boundary cooperation in other arenas will heighten various political concerns. For instance, one of the biggest questions concerning social integration and policy coordination between Hong Kong and Guangdong is whether the boundary and hence the parameters of the “One Country, Two System” framework would be blurred over time and whether Hong Kong’s high degree of autonomy would be compromised. For instance, with the increasing inflow of Mainland immigrants, the growing use of the Chinese language, the flourishing of educational exchanges (including the acquisition of Mainland educational qualification) as well as the growing concern over Hong Kong’s high operating cost for business, it will become increasingly difficult for Hong Kong not to recognize Mainland qualifications and to accommodate a stronger and vocal constituency favouring Mainland workers and professionals. Further relaxation over boundary management and easier procedures for crossing the boundary will likely be considered in the future.

To conclude, to strike a balance between forging closer integration for mutual benefit and keeping the guarantee for Hong Kong’s special status under the “One Country, Two Systems” formula will be an arduous task for the HKSAR Government in the near future. Equality, reciprocity, and mutual benefit are definitely key principles in cross-boundary cooperation, but implementing these principles is extremely difficult in practice, however. Whether the HKSAR Government and the Hong Kong community are prepared or not, the rapid changes in the external environment will surely make cross-boundary coordination and cooperation a critical challenge for Hong Kong to tackle in the decade to come.

NOTES

- 1 This chapter draws upon the data and findings from a research project entitled “Managing the Guangdong-Hong Kong Interface: Issues, Processes and Politics”. The author would like to acknowledge the financial support from the Research Grant Council for this project (project no. HKU7131/98H).
- 2 The following information is provided by Mr. Michael Suen, Secretary for Constitutional Affairs, in the Legislative Council meeting on June 6, 2001 (<http://www.info.gov.hk/gia/general/200106/06/0606204.htm>).

- 3 *South China Morning Post*, 15 December 2001, p. 2.
- 4 *Hong Kong Economic Times*, 23 June 2001, p. A2.
- 5 *Wen Wei Pao*, 31 March 1998, p. A3.
- 6 *HKSAR Government Daily Information Bulletin*, 25 March 1998.
- 7 The following discussion is informed by several conversations with senior executives of two Hong Kong property development companies in 2001.
- 8 There are of course some important exceptions to this generalization. For instance, the HKSAR Government intervened in the stock market in the summer of 1998 in view of speculative attacks on the Hong Kong dollar and it is heavily involved in the building of the Disney theme park and the Cyberport. In the aftermath of the Asian financial crisis, it has also provided various financial support to SMEs and set up various funds for R and D.
- 9 Live broadcast of the LegCo house meeting in Hong Kong's Cable TV Channel 8, 2.30 to 4.00 pm, 14 December 2001.
- 10 This is based upon several discussions with various informed Shenzhen researchers in 2001.

Economic Development

Chapter 5

Further Strengthening Economic Cooperation Between Guangdong and Hong Kong: The Promotion of an Export-Oriented Economy in the Pearl River Delta Region

YANG Qifan

INTRODUCTION

Discussion on the long-established link between the Pearl River Delta (PRD) region and Hong Kong extends beyond a geographical sense; such discussion indeed focuses greatly on the enormous trade and economic links between the two areas in South China. Such economic linkage has become even more intensified during the past two decades of the “open door” policy of Mainland China, the kind of linkage that has proven to be mutually beneficial for the two areas in accelerating their economic development together. We can now witness the export-oriented economy of Guangdong Province entering into a new phase of development, which is believed to be conducive for consolidating the cooperation between the PRD region and Hong Kong in their economic activities and trade, and also pushing forward the development of an export-oriented economy in the Pearl River Delta region. Four aspects of such development require our special attention.

THE SOLID FOUNDATION NEEDED FOR STRENGTHENING ECONOMIC COOPERATION BETWEEN GUANGDONG AND HONG KONG HAS BEEN ALREADY IN PLACE

Economic cooperation between the PRD region and Hong Kong has gone through three successive stages, namely “exploration,” “integration” and “fast-track development,” through which substantial progress in cooperation has been witnessed. Economic cooperation of a vast scope between the two areas has already established in those areas such as finance and investment, trade and processing manufacturing. This has contributed, and will continue to contribute, to the development of an export-oriented economy in the PRD region and Hong Kong.

Data may speak better themselves in helping us to understand the

significant role the PRD region has been playing in the economic development of Guangdong Province. In 1999, the total volumes of imports and exports throughout the PRD region reached US\$129 billion, or 92 percent of the province's total figure in that year. The aggregate values of imports and exports of the region stood at US\$69.9 billion and US\$59.1 billion respectively, or 90 percent and 94 percent of the province's total.

The PRD region has turned its geographical proximity to Hong Kong, an international financial center in the region, into one of its comparative advantages in attracting foreign capital and technological know-how via Hong Kong. And, in due course, Hong Kong has become the "Number One" foreign investor in the PRD region. In the two decades following 1979, the total amount of foreign investment utilized in Guangdong reached US\$101.7 billion, 67 percent of which had been originated from Hong Kong. The PRD region has also benefited from such a huge influx of foreign investment by capturing some US\$91.2 billion.

MAJOR OBSTACLES AND CONSTRAINTS FOR DEVELOPING AN EXPORT-ORIENTED ECONOMY IN THE PRD REGION

China's entry into the World Trade Organization (WTO) will bring to the PRD region a great potential for further economic development as well as tremendous challenge at the same time. In this ever-changing international context, the continued development of the PRD region's export-oriented economy will not be possible without addressing the following concerns:

1. Strategic thinking and global vision have been lacking in planning the PRD region's economic development, the lack of which has hampered our capability to take up challenges in today's world dominated by technological revolution and knowledge-based economy.
2. The existing mechanism for foreign trade and corporate governance of major business enterprises in the PRD region have fallen behind internationally in terms of its performance standards, and hence competitiveness. On one hand, macroeconomic management system has become too complicated to operate efficiently; on the other hand, the management of business enterprises has shown a lack of organizational efficiency and coherence.
3. The market system in general, and its various economic sectors such as

foreign investment, exports and trade are not structurally optimized; economic efficiency is hampered as a result.

4. The 'soft' environment of the market economic system is under-invested. More specifically, the market mechanism and the legal infrastructure of the PRD region have remained underdeveloped despite rapid economic growth in the region during the past two decades. Low level of service quality and efficiency thus resulted has diminished the region's attractiveness to foreign investment.

A ROADMAP OF PROMOTING THE PRD REGION'S EXPORT-ORIENTED ECONOMY

Having emphasized the kinds of constraints the PRD region must overcome in continuing its export-oriented economic development, we should set out a number of policy areas that together will form the guiding post for such development of the PRD region.

1. In further developing the export-oriented economy of the PRD region, our focus can be summarized in "three sets of structural reform" and "five sets of policy changes." "Three sets of structural reform" refer to:
 - a) Repositioning the standing of the PRD region's principal export commodities in the global market by emphasizing the products' high-quality and high-technology added values;
 - b) Reorienting the direction for export trade development of the region by setting up a multi-nodal network of oversea markets for the export products; and
 - c) Readjusting the strategy of attracting foreign investment in order to absorb foreign capital and investment from a globally pluralistic network of sources of capital.

"Five Policy Changes," on the other hand, mean that:

- a) The current dependency of our economic development on a few "principal commodities" should be replaced with a new and pluralistic mode of economy with multiple-merchandise as the "growth poles".
- b) The existing industrial structure, which has been fragmentary and too small in scale, should be organized into a new structure characterized

- by highly efficient and powerfully organized business conglomerates;
- c) Foreign trade development should no longer be judged on a “single pace,” but rather on efficiency and effectiveness;
 - d) The mode of production for processing trade should be intensified in terms of its extent of production processing, and re-oriented from one of labor-intensive to one of technology-intensive;
 - e) The governments of the PRD region should redeploy their efforts in targeting those foreign investment that will bring in high technology, added values in their products and services, and therefore a better chance of capturing a larger market share in the global market.
2. The above changes in market structure and development strategy all aim to serve one crucial objective: to develop the PRD region’s externally-oriented economy into a system of high operational efficiency and international standards.
 3. It is also essential to ensure that regional economic cooperation between the PRD region and Hong Kong is geared in a comprehensive and open manner so that every aspect, level and domain of such cooperation will be explored and exploited to the benefit of both areas. This new form of “full-mode” regional economic cooperation will rely on high-technology and processing industry as its backbone and the rapidly-developing agricultural and trade and service industry as new “growth-poles” through a high degree of mobility of capital, technological know-how, information, human resources and goods between the two areas. As a result, the present production and marketing systems will be optimally redeployed, and new industries will be expected in both the PRD region and Hong Kong.

CONCLUSION

Having set out the right kinds of strategies in overcoming the major constraints in our way of developing further the PRD region’s externally-oriented economy, I shall conclude the chapter by outlining five issues that we have to address immediately for attaining such an ambitious goal:

1. All necessary steps to rationalize the externally-oriented economic system, such as the improvement in macroeconomic management, should be proceeded in compliance with the regulations of the WTO and the general

principles of a market economy. For the role of government in industrial and economic development, this means direct intervention in the market should be minimized, and replaced by indirect facilitation by means of legal, policymaking and economic incentives.

2. For the success of the “pluralistic” strategy of overseas market expansion and structural optimization, the PRD region cannot afford to ignore the significant role of Hong Kong, its neighbour and a centre of international trade. Hong Kong has played and will continue to play an important role in helping the PRD region to expand overseas market opportunities in the United States, European Union, the Middle East, Japan, the Southeast Asian countries, and even the newly emerging markets in Africa, Latin America and Russia.
3. As said earlier, new capital investments in the region’s industrial development should aim at developing new technologies and nurturing new industries as “growth poles” for both the PRD region and Hong Kong. Specifically, the intellectual capacity of the PRD region’s army of scientists and researchers in research and development, and the capability of Hong Kong’s financial market in financing new project and channeling latest information, shall be strategically guided by careful policymaking for developing as the “incubators” of both new and successful industries with latest, cutting-edge technologies.
4. The service industry, which comprises of a variety of so-called “smokeless industries” such as financial services like insurance and accountancy, information technology, tourism, as well as professional consultancy, is another area of economic cooperation between the two regions that exhibits a great potential for further strengthening. This, in turn, requires the liberalization of the existing restrictions on the free mobility of labour and capital between the PRD region and Hong Kong.
5. Finally, further development in the legal infrastructure and improvement in public services in the PRD region and Hong Kong should simplify the cross-boundary custom inspection procedure. A well-established legal and administrative system are most essential for providing a “safe, equitable and efficient” investment environment for foreign investors.

Chapter 6

Regionalization of the World Economy and Economic Cooperation in the Pearl River Delta Region

CHEN Guanghan

INTRODUCTION

Since the mid-1980s, economic regionalization has emerged as a major trend of world economic development. A “growth triangle” (Hong Kong-Macao-Pearl River Delta), centred around Hong Kong and with the Pearl River Delta region as the hinterland, has developed into an economic region best known for its economic vitality. This chapter serves to explore some of the characteristics of the new wave of regionalization of the world economy and, from the perspective of functional as well as institutional integration, to provide some insights on how both the scope and level of cooperation within the Pearl River Delta Region can be further enhanced.

World economic development since the mid-1980s has been characterized by a growing trend of regionalization and globalization of the world economy. A variety of “economic circles” (economic blocks) and “growth triangles”, which were formed through the process of “sub-regionalization” in Asia, constituted the fundamental fabric of regional economic integration in the region. A “growth triangle,” centred around Hong Kong and with the Pearl River Delta region as the hinterland, has developed into an advanced, well-coordinated and economically active region. How to form an effective structure and mechanism with which the economic integration of the three independent “Customs Areas”, operating under the “One Country, Two Systems” framework, could take place is posing a theoretical as well as practical challenge for researchers in the region. An examination of the trends and characteristics of global economic integration will be useful in enhancing economic cooperation within the Pearl River Delta region.

TRENDS IN GLOBALIZATION AND REGIONALIZATION OF THE WORLD ECONOMY

- 1. Globalization has emerged as a trend that is fundamental to the economic development of today's world; regionalization, however, has still maintained its leading edge in such development.** Following the disintegration of centrally planned economic systems of the former Soviet Union and Eastern Europe, and the transformation of other planned economies toward the system of market economy, economic globalization as well as regionalization have turned out to be an increasingly visible pattern of development in the contemporary world. Several factors have facilitated globalization, including unified world market led by the expansion of the market economy system in the global context, the full-scale application of the outputs from a new wave of information technology-focused technological revolution in the socio-economic domain, the ever-increasing significance of the role played by multinational corporations in the world economy, and finally the newly-established World Trade Organization (WTO). Parallel to this process we can also witness the process of economic regionalization. In the post-Cold War era, military conflict among nation-states has been replaced by economic competition at the centre stage of the international competition. Inequalities in economic development existing among different regions and nation-states combined with the increasing internationalization of economic competition have promoted as well as accelerated the process of economic regionalization. A survey by the Japan External Trade Organization (JETRO) indicated that by 1996 the worldwide number of regional economic alliances and organizations stood at 101, sixty-nine of which (or 70 percent) were formed after 1990. The results show that although economic globalization has formed the basic tenet of the world economic development since the 1980s, economic regionalization also played a leading role.
- 2. The process of regional integration has been dominated by the developed countries, with the European Union and the United States of America emerging as the two dominant political and economic forces.** Europe is the first region in the world that experienced economic integration. Back in the 1960s, Western Europe and a number of Scandinavian countries respectively formed the European Economic Community (EEC) and European Free Trade Association (EFTA). The

European Union (EU), which has grown from a “Common Market” of Europe to an “Economic Community” that uses a single currency and operates as a political coalition, has now become a model of regional economic integration for the contemporary world. The Amsterdam Treaty, signed by EU members in June 1997, symbolizes the realization of an economic-currency alliance and the transformation of Europe toward a regional political coalition through the efforts of the EU members. Such efforts can serve as a blueprint for how the scope and scale of expansion of the European Union to central and eastern Europe, as well as the process of European economic regionalization, can be accelerated and intensified.

In response to these efforts in Europe, the United States has been actively accelerating economic regionalization of America. The U.S.-Canadian Free Trade Area was formed by the end of 1989, with the North American Free Trade Agreement (NAFTA) established in 1994. Since the early 1990s, the United States has advocated the formation of an “Inter-American Free Trade Area” to unify the economies of South and North America. The “Enterprise for the America” initiatives proposed by President Bush back in 1990 was aimed at forming a “Western Hemisphere Economic Circle”. In December 1994, at the first summit of the Americas attended by the 34 heads of state of the Western Hemisphere, President Clinton advocated similarly for a “Free Trade Area of the Americas” to be established by the year 2000, an attempt that aimed at building an NAFTA-centered free trade area with a plan of expanding toward the central and western America and eventually achieving a geographical coverage stretching from “Alaska to Tierra del Fuego”. While advocating for a regional policy of “Go South”, the U.S. administration has also actively pursued a “Go East” strategy of facilitating economic cooperation in the Asia-Pacific region. The Asia-Pacific Economic Cooperation (APEC), with NAFTA and the Association of Southeast Asian Nations (ASEAN) forming its core membership, will be developed into a multi-level organization of regional economic cooperation built on the principles of accommodating member states in different stages of economic development, and with diversified cultural backgrounds as well as political institutions.

Regional economic cooperation in Asia has taken two major forms. Regional “free trade areas” with participation of national sovereignties in Asia constitute the first type of cooperation. Free trade areas in Southeast

Asia have attracted attention in particular. ASEAN has made its leaders' meetings (known as the "ASEAN + 3" informal summits) the best platform for increasing the scope and extent of its economic cooperation with China, Japan and South Korea. This is a move by ASEAN to enhance its influence in the Asia-Pacific region. Geopolitical economic circles and "growth triangles" constitute the second type of regional economic cooperation in Asia. These economic circles are characterized by their use of comparative advantages of their geopolitical positions in the region and specific policies, sometimes bypassing national control on the economy, in order to integrate successfully with the global economy. The Pearl River Delta-Hong Kong-Macao economic region is an example of such a kind of regional cooperation. Of the 101 regional economic alliances and organizations surveyed by the JETRO, 40 such organizations were originated from North and South America, with another 39 organizations from Europe. Such a simple count suggests that the focal point of regional economic integration still lies in Europe and the Americas. The European Union and the United States have remained as two major forces behind the development of economic regionalization.

- 3. Regional economic integration and local economic development.** The process of regional economic integration promotes the intra-regional mobility of goods and factors of production, brings transaction costs down, and expands the scope of markets as well as the division of labor, which in turn facilitates local economic development. The American economist Bela Balassa said that "economic integration could be understood as a process and as a state of affairs. Regarded as a process, it encompasses measures to abolish discrimination between economic units belonging to different national states" (Balassa 1965, c1962: p. 1). By its very nature, regional economic integration reduces transaction costs, facilitates division of labour among industries and thus achieves economic development through the establishment of a common market for goods and factors of production. Division of labour was regarded by Adam Smith as an important source for economic growth: such division of labour depends on the size of the market, which in turn is a function of the of transportation conditions. With regard to the modern market economy, transportation costs constitute only a relatively small proportion of the overall transaction costs. The functional role of regional economic integration can therefore be explained by Adam Smith's theorizing on division of labour, as well as by the "transaction cost theory" of the New Institutional Economics.

CHARACTERISTICS OF ECONOMIC REGIONALIZATION OF THE WORLD ECONOMY

The new wave of global economic regionalization, with its historical origin traced back to the late 1980s, flourished in the 1990s. It has exhibited some unique characteristics when compared to the old kind of regional economic cooperation and organization that prevailed in the 1950s and 1960s, and has been regarded as a kind of “Neo-regionalism.”

- 1. Regional economic integration and economic globalization are mutually inclusive.** The General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO), both dedicated to liberalizing global trade and investment, have shown flexibility and tolerance towards the existence of “Tariffs Coalitions” and “Free Trade Areas” (FTAs) to a certain extent. As an exception to the “Most Favoured Nations” (MFN) principle. Article XXIV of the GATT of 1999 stated that the signing parties of the GATT were allowed to create “Tariffs Unions” or “Free Trade Areas” among the constituent territories; alternatively, they would enforce certain types of temporary agreements reflecting their needs of establishing such kinds of unions and/or FTAs on the condition that such kinds of regional economic alliances are essentially beneficial to trade liberalization in the region and the trade barriers or restrictions to other GATT signing parties outside the region would not be enhanced as a result. Such a tolerance indicates international organizations’ recognition of the existence of economic regionalization and that such an existence is probably a necessity for the process of economic globalization.
- 2. Participation and cooperation by both developed and developing countries.** The general consensus during the 1950s and 1960s was that free trade between developed and developing countries would be harmful to the industrialization and economic development of the developing countries. Consequently, the developing countries, with the Latin American countries in particular, formed economic and trade organizations in a mode of “South-South” partnership. This new kind of regional integration fostered multiculturalism and a mode of partnership that accommodated inherent disparities in economic development and institutions. NAFTA, APEC and the eastward expansion of European Union are variations of such cooperation.

3. **Coexistence of “openness” and “exclusiveness” in regional integration.** Regional economic and trade cooperation is generally an “exclusive” and “discriminatory” process against non-members of the region. In order to avoid the re-emergence of such phenomena as “trade wars” among trading blocs during the 1930s, and to respond to the demand for intensifying interdependence in the world economy, organizations of regional economic cooperation that emerged during the 1990s are characterized by their “openness”. The emphasis of APEC is on “open regionalism”, a principle that indicates APEC opposition to the realization of liberalization of trade and investment in Asia via means that defy global trade and investment liberalization.
4. **The intersecting, multi-layered mechanism of regional economic cooperation.** During the process of regional economic integration, multi-layered regional economic organizations have emerged, in which economic and trade cooperation intersects *within* and *across* regions. The Asia-Pacific Economic Cooperation (APEC) is a hybrid of NAFTA, the “Free Trade Areas” of ASEAN as well as the free trade mechanism between Australia and New Zealand. The Pan-American Free Trade Area, which has been advocated by the United States, will also consist of a number of trade-related organizations at the sub-regional level.
5. **Mutual facilitation and reinforcement of the functional, as well as institutional, modes of economic integration.** Regional economic integration is in essence a reflection of how enhancement in productivity and division of labour of a society intrinsically require breaking through national and regional boundaries. Economic integration is of two modes: *functional* and *institutional*. Functional integration refers to the disintegration of those factors which have the effects of restricting economic and trade activities within a specific geopolitical region and hence impeding the resultant economic integration. Institutional integration, on the other hand, is a process of integration that proceeds in line with the international agreements as laid down by the member states, which are directed by the governance system and the institutional arrangements specifically designed for such integration. The former process is itself a kind of economic activity under the autonomous market forces, and it reflects the domestic requirements for economic development of individual member states amid the instability of such a process. The latter process is reflective of the requirement of functional integration for

being institutionalized and codified such that the fruits of functional integration can be further consolidated and enhanced. Ongoing progression and intensification of the global as well as regional economic integration therefore require the synergy and mutual facilitation of these two integrating processes — the essence of such a delicately intimate relationship between functional and institutional integration has been best captured by the integrating mechanism of the European Union.

ECONOMIC COOPERATION AMONG HONG KONG, MACAO AND THE PEARL RIVER DELTA

Back in the 1980s, the economic integration of Hong Kong, Macao and the Pearl River Delta was already proposed by some academics. What “economic integration” actually means here is that those obstacles which have prohibited the economy from operating with maximum effectiveness would be eliminated with the formation of a common market for goods and factor inputs, while the optimization of resource allocation and composition as well as the establishment of the optimized international economic infrastructure can best be achieved through free trade in goods and services and full mobility of factors of production. Mr. Tung Chee-Hwa, Chief Executive of the Hong Kong Special Administrative Region (HKSAR), has asked for strengthening the cooperation among Guangdong, Hong Kong and Macao in order to “allow the free flow and pooling of manpower, goods, capital and other resources in response to economic forces, so as to rise to a higher level,” which explicitly stated the intention of the HKSAR government to deepen the economic integration of Hong Kong, Macao and the Pearl River Delta.

1. **Can economic integration (in its ultimate sense) be achieved in the Pearl River Delta region?** Following China’s entry into the WTO, the Hong Kong-Macao-Pearl River Delta region will become a system of three independent “Customs Areas” under the world’s multilateral trade system, with Hong Kong and Macao both as “free ports.” Against such an institutional backdrop, it is legitimate to ask whether economic integration can ultimately be applicable to this region. As our analysis above has shown so far, it is imperative that Hong Kong, Macao and Mainland China abide by the multilateral trade agreements reached by these respective parties within the WTO framework because those arrangements for regional mobility of resources and free trade will not only be beneficial in the region, but they will also be operational. Secondly,

the mode of regional economic cooperation of the Pearl River Delta region should fully adjust to trends in trade liberalization as well as to economic globalization, and such cooperation should be open. The formation of institutional as well as organizational structures for Pearl River Delta regional cooperation in trade and economic activities has emerged as a brand-new topic on the research agenda of economic integration.

2. The formation of the Pearl River Delta regional economic integration.

There are basically four types of regional economic integration:

- a) **Customs alliances.** A customs alliance is formed when two or more countries eliminate any tariff barrier for one another but maintain such barriers to other non-member countries in a concerted manner. There is therefore no customs between the national boundaries of these member states.
- b) **Free Trade Areas (FTAs).** In an FTA, all the member states remove trade barriers for one another but maintain their respective barriers against other non-member countries. Customs and excise arrangements prevail among even member states, and tariffs are specifically targeted at the flows of goods and services to discourage other countries from entering or exiting the FTA through those member states with lower levels of tariffs in avoidance of other member states with higher tariffs.
- c) **“Common Market” or “Economic Community”.** In addition to establishing “free trade areas,” member states allow free movement of factors of production within their common market or economic community.
- d) **A Complete Economic Coalition.** In high level of economic integration, all member-states share a common set of economic policies including those relating to currency, public finance and social welfare, in addition to those that relate to trade and the movement in factors of production.

Economic cooperation within the Pearl River Delta region should adopt a model similar to an economic community: that is, a system of markets for goods and services based on the “Free Trade Area” model and the factor markets resembling the model of “Economic Community”. An economic community

of the Pearl River Delta region would gradually take shape in due course.

3. The Process of Economic Integration of the Pearl River Delta region.

The process of economic integration is divided into two modes, functional and institutional, in a well-coordinated approach that governs both. In our examination of how socio-economic development of the Pearl River Delta region can be achieved in harmony, we also have to consolidate both functional and institutional research. On the one hand, the various aspects of regional cooperation of the Pearl River Delta region in economic structures, urban functions and infrastructures as well as environmental protection should be examined from a functional perspective of economic integration. On the other hand, an institutional perspective of economic integration will help us explore the question of how, and through what mechanisms, the three independent “Customs Areas”, operating within the “One Country, Two Systems” framework, can be effectively organized to take the mutual cooperation to a new level. With the regional economies of the Pearl River Delta region growing even faster and diversifying even further, the degree of economic integration will continue to intensify. Despite such a hyper-growth in the region’s economic integration, it is also observed that institutional integration has lagged far behind functional integration. Such a disparity in the integrating process has rendered the economic cooperation of the Pearl River Delta region with a certain degree of unpredictability and instability. The focus for future economic cooperation in the region will be to reinforce the positive outcomes of functional integration via a strengthening of institutional integration of the system. The continuous improvement of the institutional arrangement of the regional economic integration amid deepening functional integration will become a long-term goal of regional economic cooperation.

Chapter 7

Trade and Commerce in the Pearl River Delta Region

C.C TUNG

INTRODUCTION

The Pearl River Delta (PRD) region in Guangdong Province and the Hong Kong Special Administrative Region (HKSAR) have been closely linked together by their relationship in trade and commerce. Since the implementation of the “Open Door” policy in Mainland China in the late 1970s, a large number of Hong Kong manufacturers have relocated their factories to the PRD region, which is renowned for comparatively low operational and labour costs, and which contributes to the phenomenon of “Front Shop, Back Factory” type of economic cooperation in the region. As a result, Hong Kong’s economy has also been transformed from a labour-intensive, light-industry oriented centre into a major regional financial and logistic hub with service industries making up Hong Kong’s current economic foundation.

With China’s imminent entry into the World Trade Organization (WTO), the connection between Hong Kong and the PRD region is expected to become even closer. The Hong Kong General Chamber of Commerce (HKGCC), in its recently completed research entitled *China’s Entry into the WTO and the Impact on Hong Kong Business: A Business Perspective* (hereafter *WTO Report*), concluded that the volume of bilateral trade between Hong Kong and Mainland China would increase substantially in view of China’s entry into the WTO, leading to a decline in trade tariffs and an increase in trade liberalization in China in the forthcoming years.

The PRD region and Hong Kong are not only close in geographical terms, but are also becoming close partners in trade and commercial activities. I will raise four issues that are relevant to the discussion on regional cooperation, coordination and planning in trade and commerce between the two locations.

COOPERATION IN TRADE AND COMMERCE

To some economists, reliance on the use of data on Hong Kong’s economy alone in any analysis has been increasingly proven to be inadequate in reflecting

the real economic situation of Hong Kong, as increasingly more Hong Kong people are spending money and time in the PRD. An increasing number of Hong Kong people choose to buy residential flats to settle themselves in Shenzhen as well as other cities in the PRD across the border. Therefore, some economists opined that we should take the economic data of the whole PRD region in any study in order to get the true picture of Hong Kong.

While such a view on the regional economy may be subject to debate, there is no doubt that trade and commerce links between the PRD region and Hong Kong have intensified. Hong Kong manufacturers have established their factories in the PRD region as their production bases for processing imported raw materials into finished products for China's domestic market as well as for international export markets. If such a chain of production, processing and export are well coordinated, it will be beneficial for the economies of both the PRD region and Hong Kong.

The HKGCC has suggested in its *WTO Report* that Hong Kong entrepreneurs and the authorities in Mainland China can go hand-in-hand to enhance further the competitiveness and overall quality of their services and products. Hong Kong's products such as watches, optical wears, and toys are included among the world's renowned "brand-names". Hong Kong manufacturers have also been highly and endlessly innovative in their marketing efforts worldwide, while the advertising and product packaging industries in Hong Kong are exceptionally talented. One could imagine that if Hong Kong entrepreneurs and professionals can team up with their counterparts on the Mainland, the resulting synergy would not only enhance the marketability of the products in the Mainland's markets, but could also be highly instrumental to expanding the overseas markets.

INFRASTRUCTURE

While the issue of infrastructure and cross-border planning has been well-researched and discussed elsewhere in this collection, I shall briefly touch upon the issue here given the significant impact that infrastructure planning could have on trade and commerce activities between the PRD region and Hong Kong.

The issue of infrastructure coordination between the two areas requires special attention because good coordination could greatly enhance efficiencies in business operations. It is understood that the governments of the HKSAR

and Guangdong Province have been closely cooperating on infrastructure issues; they discussed the planning and development of the Lindingyang (LDY) Bridge, the Deep Bay Bridge (which will link Shekou in Guangdong to Hong Kong), as well as the cross-border railway network. On this issue, I shall focus on three major concerns on the part of the business community:

1. First, the development of regional rail and land transportation links between the PRD region and Hong Kong in general, and the cross-border railway system and immigration checkpoints between the two jurisdictions in particular, require careful coordination. Roadways between Shenzhen and Hong Kong are severely congested, which can be easily observed at the cross-border checkpoints between the two cities. With China's forthcoming entry into the WTO, we expect an ever-increasing volume of cross-border traffic between the two cities. Hence, in addition to improving coordination in infrastructure development, there is a need to improve coordination in both the construction of road networks and the issue of streamlining of cross-border checkpoint procedures.
2. Secondly, when we turn our attention to ports in the region, we see that the two container ports at Shekou and Yantian in Shenzhen City have become highly developed. The question for policy makers and authorities then becomes: given the level of port development activities in the region, how can such a dispersed port network be better coordinated in view of Hong Kong's own container port development. And this issue should be high on the policy agendas of the authorities concerned. The HKGCC's Trade Unit, which contributed to the *WTO Report*, proposed that authorities in the PRD region and Hong Kong hold formal discussions on strategic port development and coordination within the region. Some members of the unit have suggested that, based upon the comparative advantages of different ports in the PRD region, there should be a stratified and diversified logistic and cargo-handling system on a regional scale in which a variety of cargoes can be handled separately at the appropriate port(s) with maximum cost-effectiveness and timeliness. The overall efficiency of the ports in the PRD region would be greatly enhanced as a result. For instance, although the cargo handling fees for container ports in Hong Kong are relatively high, it is still the place to handle time-sensitive and high value-added goods, if the high quality service and high efficiency level of Hong Kong port services can be maintained.

3. A third problem in trade and commerce between the PRD region and Hong Kong pertains to the issue of how logistics and backup services can be better managed in the region. While Hong Kong has been regarded as a regional logistic hub of international standards, it will become imperative for HKSAR to develop a better coordination system for coordinating the increasing demand for logistic support from an increasing volume of traffic emanating from scores of cities in the PRD region.

LOGISTICS

Since the northward relocation of Hong Kong's factories to the PRD region, the mode of trade in Hong Kong has changed from a locally-based export system to a "re-export oriented" trade system with Mainland China as its production center. To distribute goods manufactured in Mainland China to their clients, good logistic management (or "Supply-Chain Management") has become essential.

In order to transform Hong Kong into a major regional logistic hub, better coordination with Mainland China and the PRD region in areas such as trade, goods distribution, information technology, warehousing and transportation must be given first priority. Such improved coordination would comprise of two aspects:

1. The governments of the PRD region and HKSAR should consider supplying necessary land resources to support the setting-up of "Logistic Circles", which aim at handling container cargo with highly efficient operations and new technology. The So-called "Container Cargo Villages", or container cargo-handling centres dispersed across Shenzhen, will integrate with container ports and road systems in the region to form a massive distribution network that could facilitate cargo-handling and the delivery of products manufactured by factories around the PRD region for exports via ports in Hong Kong or Shenzhen.
2. Electronic commerce (e-Commerce) should be fully utilized to allow businesses to operate efficiently. The development in e-Commerce allows customers to place their orders for products they need directly with their suppliers. Suppliers, in turn, can deliver product orders directly to their customers via the "Logistics Circles".

A network of logistic circles, when operating at full scale, with high

efficiency and the latest technology, could further strengthen the role of the PRD region as a regional production base and help transform Hong Kong into a regional logistic hub for goods distribution.

LEGAL FRAMEWORK

In order to capitalize on the comparative advantages of the PRD region and Hong Kong, it is imperative for both jurisdictions to place greater emphasis on developing the necessary legal framework. Such a legal framework, if well-established, could help optimize the business environment — the key for such a success lies in how effective the governments of the two jurisdictions are in enforcing the laws and maintaining the transparency of their legal systems.

In April 1999, the circular No. 35, issued by the State Council, was aimed at putting the processing industries under tighter governmental supervision. The policy objective was aimed at supervisory management practices; however the implementation and enforcement of the policy was considered untenable because manufacturers were not consulted during policy development to inquire about how such a policy would impact their businesses. Predictably, there was some confusion at the beginning when the policy was formally implemented, which subsequently led to a temporary deferral of the policy. A similar situation was already witnessed during the implementation of the “Exemption, Deduction and Rebate” trade tariff and taxation policy. As both cases demonstrate, such confusion in law implementation and enforcement is not conducive to a smooth and healthy development of trade and commerce between the PRD region and Hong Kong. While it is acknowledged that such trade policies are sometimes promulgated at the central government level and are, thereby, beyond the local authorities’ direct control, local governments of the PRD region can still play a significant and active role in communicating the views and needs of the local business community to the central government and in enhancing the overall quality of law enforcement by better quality staff training.

CONCLUSION

Economic integration of the PRD region and Hong Kong will result in a “win-win” situation in terms of enhanced regional development in trade and commerce. Better coordination and cooperation between the PRD region and Hong Kong should result in new forms of synergy, leading to a bright future for the entire region.

Chapter 8

From Cross-Border Manufacturing Operations to Regional Economic Integration: Evolution of Hong Kong's Economy and the Guangdong Factor

Chyau TUAN and Linda Fung-yee NG

INTRODUCTION

The economic reform and opening in Mainland China since 1978 and particularly the establishments of the four Special Economic Zones (SEZs), namely, Shenzhen, Zhuhai, Shantou, and Xiamen have attracted huge influx of foreign direct investment (FDI) into China. The FDI from Hong Kong to China was mainly performed first via manufacturing cross-border operations (CBO) (or offshore production) in Guangdong and especially in the SEZs in the early 1980s in order to exploit the low cost resources of labour and land costs there. The diffusion of such manufacturing CBO was observed to evolve and further extended from Shenzhen to the north to the rest of the Pearl River Delta region (PRD) in Guangdong following the opening of the latter in 1987. In fact, 1987 had served as the turning point of Hong Kong's manufacturing production in terms of its input-output relations and employment structure (Tuan and Ng, 1995d), industrial structure and competitive patterns (Ng, 1995) via scale expansion with little significant change in total factor productivity (TFP) performance (Ng and Tuan, 1997b; Tuan and Ng, 2000b).

During the 1990's, Deng's speech in 1992 to reaffirm China's economic reform served as a catalyst in promoting heavy FDI inflows into China and particularly that from small entrepreneurs from Hong Kong. The source of the economic growth of Hong Kong has transformed from domestic exports to re-exports and its "trade derivatives"¹ (Tuan and Ng, 1998a). In essence, such a kind of re-exports trade and its "derived" activities were materialized not only via the increasing service contents of Hong Kong's manufacturing production other than CBO, but more importantly, it is the expansion of Hong Kong's economic boundary into the PRD (Tuan, Ng, and Wong, 1998a) by forming a "mega-city" to function as an economic-integrated region (Tuan and Ng, 1995b; 2001c) characterized by a core (Hong Kong)-periphery (PRD)

system (Tuan, Ng, and Wong, 1998a; Tuan and Ng, 2001c). Such regional specialization in resource (in labour and land) use has demonstrated the economic advantages being derived from the agglomeration economies generated by the Hong Kong-PRD region (Tuan and Ng, 2001d).

This chapter intends to provide a discussion of some major research findings of the authors performed since the early 1990s in exploring the evolution of Hong Kong's manufacturing and its impacts on Hong Kong's economic development during the past two decades.² The major aims include: (a) to describe the major phenomenon of Hong Kong's FDI in China and its diffusion process, (b) to review the patterns of the evolving manufacturing FDI and its service-oriented activities, (c) to examine the economic growth of Hong Kong in the context of agglomeration economies, and (d) to discuss Hong Kong's future directions of growth and changing its competitive advantage.

MANUFACTURING TRANSFORMATION SINCE 1980'S - FROM MANUFACTURING TO MANUFACTURING MANAGEMENT

The Evolution of Manufacturing FDI

The production activities of Hong Kong manufacturing in the 1980s were mainly reflected by the evolving operations in the form of CBO in the proximate PRD and then further diffusion in the form of plant relocation with more service operations. The evolution of the cross-border processing in China and especially in Guangdong can be described in three stages:

1. Cross-border operations (1980-1987) in the form of subcontracting which induced rapidly increasing outward processing trade (OPT)³ and consequently, the turning point in Hong Kong manufacturing production being observed in 1987;
2. Direct outward investment (1988-1992) mainly in the middle-stream of the manufacturing production to yield maximum real rate of growth in re-exports; and
3. Whole plant relocation (since 1992) to Guangdong which contributed to the second wave of heavy FDI. By relocating the whole manufacturing plant with more service-oriented operations to the north, Hong Kong's manufacturing was transforming into a sector engaging in manufacturing management.

FDI Diffusion and its Major Characteristics

Following the diffusion of manufacturing outward investment, the corresponding major phenomena and effects are summarized below.⁴

Stage I Cross-Border Operations in Manufacturing (1980-1987)

- Contraction of manufacturing industries in Hong Kong due to CBO in PRD including subcontracting partial manufacturing operations, original equipment manufacturing (OEM), and joint operations involving no financial investment;
- The prime locations of investment were in SEZs and other open-up PRD cities/counties;
- Manufacturing processing/assembly, product inspection, and packaging were the major manufacturing operations performed in the cross-border establishments;
- Resource costs, such as high rental, shortage of labour supply, and high wages in Hong Kong were the dominant factors for inducing Hong Kong firms to engaging in CBO. The secondary reasons were unstable political climate and opportunity in the penetration of overseas (Mainland China) market;
- The major problems encountered by the firms performing cross-border operations in China in this stage were shortage of managerial staff, inadequate and poor business regulations/laws, government administrative inefficiency, and lack of supporting infrastructure;
- The major heavy outward processing industries included electronics, watches and clocks, toys, textiles, and garments/clothing; and
- The CBO in manufacturing had been found mainly in labour-intensive production.

Stage II Direct Outward Investment in Manufacturing (1988-1992)

- More than 85 percent of Hong Kong's investment in Guangdong was found in the PRD in which Hong Kong accounted for 80 to 90 percent of the foreign investment received by the region.⁵ In 1992, the export values of Guangdong accounted for 32 percent of those of China while the PRD constituted 74 percent of the export values of the whole province;

- Declining manufacturing industrial concentration to be accompanied by increasing service industrial concentration; and restructuring of employment between manufacturing and services, input-output relations, and industrial competitive patterns were observed in Hong Kong;
- The diffusion of Hong Kong's FDI into Guangdong in terms of amount of FDI was found to be inversely related to distance (highway miles from Hong Kong) following the gravity model analysis; the other two key factors were labour supply and market potential;
- Approximately 80 percent of the firms had relocated part or all of their manufacturing processes especially to the SEZs and PRD. About 55 percent of them maintained only trading activities and industrial management business in their Hong Kong headquarters;
- A comparison of the Guangdong subsidiaries and the Hong Kong parent firms reveals that the Guangdong firms were larger in both plant space and work force, higher in capital expenses, more labour-intensive, with much lower labor productivity, shorter pay-back period, and higher returns and exports;
- Significant expansion of production scale of Hong Kong manufacturing firms in Guangdong via CBO and plant relocation with the same technology of production;
- Outward investment seemingly gains scale economies with the aid of analyses of the production function at the industry level;
- Insignificant manufacturing total factor productivity (TFP) growth in the last two decades except a shock (autonomous increase) in 1987 due to structural adjustment (such as scale expansion) in production; the outward investment contributed little to local TFP growth due to the fact that local manufacturing's difficulties in upgrading its basic technology of production;
- Strong relationships between manufacturing and trade loans/advances with the corresponding commodity trade and trade derivatives activities;
- Weakening associations between the growth of manufacturing production (and trade) and the growth of institutional financing after 1987 illustrated the diminishing contributions of Hong Kong's financial services to local manufacturing;

- Being dominated by small-sized firms and the higher management costs in association with small-scale loans, local manufacturers had encountered difficulties in competing for loanable funds; and
- Manufacturing management functions including both the upper-and lower-stream of manufacturing operations were further relocated to the PRD.

Stage III Complete Plant Relocations and Outward Service Processing (1992-)

- Foreign investment of Hong Kong origin still remained the dominant source of FDI in Guangdong. Including FDI from Taiwan, the two Chinese economies constituted a total of more than 90 percent in 1998 in Guangdong;
- Completion of manufacturing processing and relocation of the whole production plants while investment decisions on major plant locations remained unchanged. Increasing relocation in operations of service nature, such as in research and development (R&D), design, prototype manufacturing, shipping and exporting, and after-sale service and marketing management were found;
- Deepening region-wide division of labour in management functions between the two regions of Guangdong and Hong Kong. Only the high service-content operations, such as R&D and marketing functions of manufacturing, had remained in the Hong Kong headquarters. Such a phenomenon can be described as “intra-firm” division of labour via physical plant (manufacturing operations) relocation into in the peripheral PRD region, while keeping the pure “service operations” in the main core Hong Kong;
- The distance to be kept apart between the manufacturing facilities (in the PRD) and service facilities (in Hong Kong) would be balanced by the various transaction costs associated with the economies and diseconomies of agglomeration;
- At the firm level, the effect of gravity (distance) in affecting manufacturing FDI measured by production, investment amount, firm size and age, and location density was confirmed;
- The clustering effect of firms in a location depended on the inverse of distance (from the main core) while smaller firms were more responsive (elastic) than the large ones;

- Taking the electronics industry as a representative case, five major networked clusters of locations of electronics firms with the corresponding satellite cores were identified, namely, Shenzhen, Guangzhou, Huizhou, Panyu, and Shantou. The five satellite cores with the top 15 cities/counties had accounted for 87 percent of the total of electronics FDI in Guangdong; and
- Given Hong Kong as the core, FDI to the Guangdong region was found to depend on population agglomeration, market potential, inverse of distance (from the core), and size of the cities/counties. Such effects were more significant in manufacturing than service firms.

CROSS-BORDER OPERATIONS IN MANUFACTURING AND EVOLUTION IN TRADE — FROM CONVENTIONAL TRADE TO TRADE DERIVATIVES

A long-run relation of trade by components in domestic exports and re-exports (secondary domestic exports) and output growth was observed for 1961-1995. Three stages of development of trade can be examined in responding to the evolution (by three stages) of outward manufacturing processing and investment. First, rapid annual growth in domestic exports averaging 11 percent per annum from the 1960's to 1987. However, starting from the fourth quarter of 1987, re-exports as induced by CBO in manufacturing grew at a high rate of 24.1 percent per annum for the period of 1980-1987. Consequently, the value of re-exports exceeded that of domestic exports since 1988. Second, steady growth in re-exports in this period (1988-1992) and accompanied by a widening gap with domestic exports in terms of value. And third, re-exports growth started to decline since 1992 (averaged at 9.1 percent for 1993-1999), with a rise of offshore trade including transshipments and triangle trade.⁶

Table 8.1 presents the significance and increasing participation of the trade involving outward manufacturing process activities, the decreasing importance of local manufacturing in terms of firm number, employment, and value-added and the corresponding increasing significance and participation of trade manufacturing (manufacturing management). Table 8.2 provides some basic statistics of Hong Kong's domestic exports, commodity re-exports, and offshore trade since 1961 to explain the growth patterns in terms of the nature of trade for the three stages. The dominance of commodity trade from 1961-1987, re-exports trade from 1980-1992, and offshore trade from 1993-1999 explained the pattern of trade evolution.

Table 8.1 *Hong Kong's Manufacturing and Outward Processing Trade: 1990-1999*

	1990	1992	1995	1997	1998	1999
Imports from China Involving Outward Processing (%)	61.8	72.1	74.4	81.2	82.7	80.5
Re-exports of China Origin Involving Outward Processing (%)	74.1*	78.3	82.2	88.4	87.6	86.6
Number of Manufacturing Firms	51,820	41,710	27,600	24,930	22,430	-
Number of Trade Manufacturing Firms**	-	12,580	24,860	25,980	21,640	-
Employment in Manufacturing (in '000 person)	762.6	592.4	368.0	290.0	251.7	-
Employment in Trade Manufacturing** (in '000 person)	-	73.11	148.4	146.4	144.8	-
Manufacturing Value-added (HK\$10 billion)	92.2	97.4	84.4	80.0	70.8	-
Trade Manufacturing Value-added (HK\$10 billion)	-	17.9	52.0	68.8	63.2	-

Notes: * 1991 figure;

** Import/export firms with manufacturing-related functions, that is, firms engaging in trade manufacturing or manufacturing management

Source: Compiled from *Digest of Service Industries Statistics*, Hong Kong Government Statistics Department, 2000

Table 8.2 *Growth of Hong Kong's Domestic Exports, Re-exports, and Offshore Trade, 1961-1999*

Unit: %

Period	Commodity Export Trade	Commodity Re-exports	Services Exports	Offshore Export Trade
1961-1979	11.7	12.1	6.2	-
1980-1987	10.4	24.1	8.3	3.3**
1988-1992	1.9	27.0	6.2	3.1
1993-1999	-3.7	9.1	4.0*	10.2*

Notes: All values in real terms;

* 1993-1998

** 1981-1987

Source: Compiled from *Estimates of Gross Domestic Product*, 1961-1999, Hong Kong Census and Statistics Department, 2000

When taken together the evolution of cross-border manufacturing in the nearby Guangdong Province, the impacts of such outward investment upon

the changing trade pattern are critical. The relations between the evolving outward manufacturing investment and trade and their effects on the changing industrial structure were discussed (Ng and Tuan, 1997b). In fact, the growth of re-exports trade in the 1980s and its induced “trade derivatives” since 1992 have contributed to the sustained economic growth of Hong Kong in the past thirty years (Tuan and Ng, 1998a).

Formation of the Hong Kong-PRD Mega-City — From Hong Kong to the Hong Kong-PRD Economic Region

Based upon the authors’ longitudinal study of the intensive outward investment and its diffusion into Guangdong and especially the PRD during the past twenty years, we believe that for a more meaningful interpretation of the Hong Kong’s economy, we should consider Hong Kong SAR and its proximate region (that is, the “Greater Hong Kong”) as an integrated Hong Kong-PRD economic region. In fact, manufacturing CBO has enhanced the economic integration and development of these two regions into a “mega-city” economy with Hong Kong as its core (Tuan and Ng, 2001d). At the macro-level, gravity or distance (from the main core) was confirmed as a frictional factor to inversely affect the amount of FDI flows into the peripheral areas (Tuan and Ng, 1995b). Recent statistics show that in 1998, the total amount of outward FDI from Hong Kong was US\$12.8 billion in which 54.3 percent was invested in China and 65 percent of which was invested in Guangdong.

From a data-base of a population of 37,724 foreign enterprises operating in Guangdong,⁷ 82 percent of them were manufacturing firms (with 90 percent of which belonged to Hong Kong origin) and most of the joint ventures were of small and medium-size with an average investment of US\$4.16 million and employment of 160 persons per firm. Together with the fact that the majority (83.3 percent) of the investment were coming from Hong Kong, investment was found located mainly in the PRD cities/counties near the core city of Hong Kong. Fifty percent of the joint ventures were found in the SEZs and 68.7 percent in the PRD region as a whole. Figure 8.1 illustrates the significance of the distance factor in affecting FDI or firm location decisions. A clear pattern of diminishing intensity in terms of firm number for manufacturing from Hong Kong to the north at Shenzhen and then the other PRD cities/counties and then other peripheral areas can be observed (Figure 8.1).

From a spatial point of view, the relocation of Hong Kong manufacturing firms first to Shenzhen and mainly concentrated in proximate PRD areas has facilitated the economic integration between Hong Kong and PRD in forming

a mega-city economy. It was found that the economic boundary of the Hong Kong-PRD economic region coincides geographically within a radial distance of approximately 196 kilometres, or an equivalent of three hours traveling by highway (Tuan, Ng, and Wong, 1998a). It is only when further expansion of business is considered that Hong Kong manufacturers would choose the Shanghai or Beijing metropolis areas as their additional production sites (Tuan and Ng, 1998b).

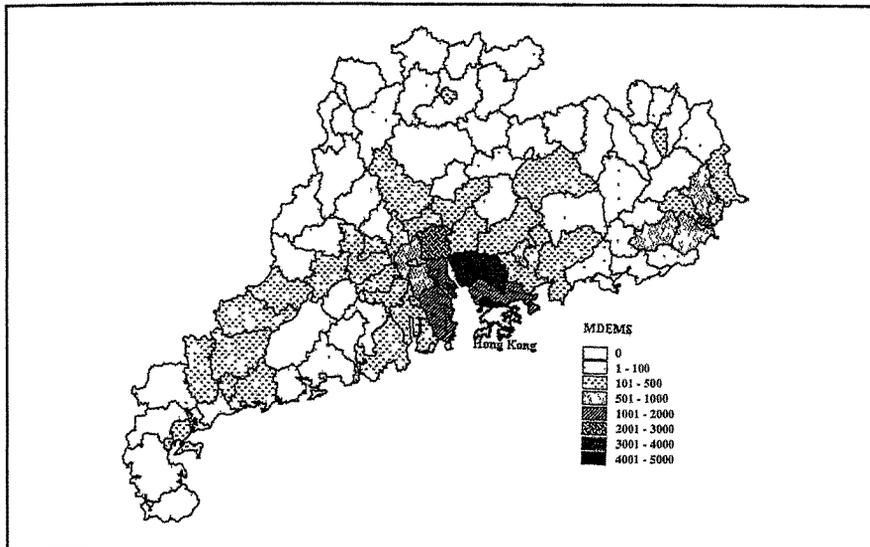


Figure 8 1 *Distribution of Manufacturing FDI Joint Ventures in Guangdong by Number of Establishments*

THE SIGNIFICANCE OF A CORE-PERIPHERY ECONOMIC SYSTEM — FUTURE DEVELOPMENT VIA UTILIZATION OF AGGLOMERATION ECONOMIES

Such a process of the development of the Hong Kong-PRD region, in fact, can be well explained by the theory of pattern of land use (Alonso, 1968). Herderson's (1988) view of urban agglomeration and development, Krugman's (1991, 1993) view of economies of urbanization in the context of spatial economics, and Richardson's (1995) suggestions regarding the economies and diseconomies of urban agglomeration serve as good references in this case. These considerations further explain the significance and development of Hong Kong (core)-PRD (periphery) as an integrated system in generating agglomeration economies. In constructing the agglomerative implications of

the Hong Kong-PRD region, the source or provider of the various economies due to agglomeration in the Hong Kong-PRD context can be well defined (Tuan and Ng, 2001c) to include scale economies, shared inputs, transaction costs, and knowledge spillovers.⁸

The Hong Kong case is, in fact, found parallel to Chinitz's (1961) suggestion that, in the study of the development of New York and Pittsburgh, an urban environment with many small-sized firms and heterogeneous production is more conducive to local economic growth. Firm relocations and FDI diffusion from Hong Kong (the main core) to PRD (periphery) were the result of exploiting the agglomeration economies as provided by the main core and balancing the agglomeration economies versus diseconomies arising from spatial diffusion. Furthermore, following the development of a core-periphery system, a few of the existing PRD cities/counties depicted their corresponding supplementary functions by forming networked clusters⁹ within the mega-city and further exploiting the economies of urban agglomeration. In this regard, Hong Kong SAR and PRD are mutually dependent.

In fact, at the macro-level, the agglomeration economies being generated by the formation of the core-periphery system has been functioning as a buffer to absorb the possible economic disturbances since the 1980's and especially after 1997. Any further economic growth of Hong Kong will rely on continuous cooperation with Guangdong by taking advantages generated by the core-periphery system (Tuan and Ng, 1995b, 1998a, 2001c). In the course of development, the growth and globalization of Hong Kong's financial market has also contributed significantly to the induced cross-border trade and its derivatives (Tuan and Ng, 1998b).

Nevertheless, the globalization of the financial and banking sectors also crowded out, in one way or another, the development of local manufacturing in the last decade. From a longer-term perspective, a well-balanced, more diversified economy, including a well-developed manufacturing sector is needed for Hong Kong SAR's sustainable growth. In this connection, the development of Hong Kong SAR's proximate PRD areas to serve as a strong manufacturing base is inevitable.

CONCLUSION

To achieve sustained growth via agglomeration economies of the Hong Kong-PRD core-periphery economic system, favorable government policy measures are critical in promoting continuous inflows of FDI into the region from the

rest of the world and in enhancing the region's competitiveness. On the part of the Hong Kong SAR, while the "One Country, Two Systems" policy is essential in mobilizing foreign investment,¹⁰ the SAR government's proactive attitude toward regional economic integration is also important. As for the Guangdong government, reviewing its FDI promotion policy to enhance FDI flows is essential. In Guangdong, government/government administration critically needs improvement.¹¹

To remain competitive, other than a strong economic base, the building up of a favourable investment environment for the Hong Kong-PRD region as a whole is the key dimension.^{12,13} The research findings revealed that government/government administration, restrictions on business operations, and infrastructural supports were being cited as the three top critical common factors of a favourable investment environment for FDI promotion in Guangdong.¹⁴ FDI characteristics or attributes, such as manufacturing versus services, firm size, and investment origin, etc., were found to act differently in responding to the common factors of a favourable investment environment. Relative to the service firms, the manufacturing firms in Guangdong would rely more on less business restrictions in their operations but less on their demands in living and social conditions.¹⁵ Such results demonstrate the significance of flexibility and heterogeneity of government designed FDI policies and environmental factors in catering to the needs of the various attributes of FDI.

Based on Hong Kong's successful experiences in the last thirty years in building up a business friendly environment, Hong Kong SAR can contribute more to the region in the following aspects:

- professional training and management development for the PRD;
- services rendered to Hong Kong business, SMEs in particular, operating in Guangdong; and
- more coordination in region-wide infrastructure projects and development planning. To make collaboration more effective, the Hong Kong SAR government should consider the possibility in using part of its reserves to form joint ventures for some key projects. The most critical implication derived from our mega-city hypothesis is that any good accrued to the PRD would eventually benefit the Hong Kong SAR. Only the Hong Kong SAR is most willing to facilitate the sustainable growth of PRD and vice versa is also true.

NOTES

- 1 The term “trade derivatives” was made to describe any further trade activities being evolved or “derived” from the traditional or conventional trade activities and operations to capture the normal nature and characteristics of trading per sec; the examples are transshipments and triangle trade (Tuan and Ng, 1998a).
- 2 This chapter intends to provide a summary of major empirical findings of selected research related to the subject by providing an overview and yet essential features. Interested readers are referred to the references for detailed discussion and analyses of the research findings. For some background of the development of Hong Kong’s manufacturing industry and the related researches during earlier stages, see Tuan (1982, 1989); Tuan and Lin (1988); Lin and Tuan (1989); Ng and Tuan (1991); Tuan, Wong, and Ye (1986); Tuan and Wong (1994); and Tuan and Ng (1995a, 1995c).
- 3 CBO or outward processing trade (OPT) refers to the importation of processed goods from China, the SEZs and the PRD in particular, of which all or part of their raw materials or semi-manufactures are, under contractual arrangement, originally exported from or through Hong Kong to China for processing.
- 4 For detailed discussion and analyses of the empirical findings corresponding to the three stages, the following major references were suggested. For Stage 1, see Tuan and Ng (1994, 1995a). For Stage 2, see Tuan and Ng (1995b, 1995d, 1998a, 2000b); Ng (1995); Ng and Tuan (1996, 1997b); Tuan, Ng, and Wong (1998a, 1998b). For Stage 3, see Tuan and Ng (1998a, 2001a, 2001c, 2001d).
- 5 Statistics reported by the Hong Kong Trade Development Council in 1993.
- 6 A detailed discussion of the trade evolution especially the induced outward processing trade and its “derivatives” was found in Tuan and Ng (1998a).
- 7 *Database of Joint Ventures in Guangdong, 1998* being released by the Guangdong Provincial Government, 1998 was designed for business information searching purpose for doing business in Guangdong.
- 8 Quigley (1998) provides four major factors to include scale economies in production and consumption, shared inputs in production and consumption,

transaction costs in production and consumption, and statistical economies in production and consumption. The five factors of economies to generate agglomerative implications in the case of Hong Kong was constructed to include the four factors and knowledge spillovers (Tuan and Ng, 2001c).

- 9 Following Porter (1998), clustering refers to the effects generated by the clustering of firms in a location. A cluster is defined as “a geographical proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. The geographic scope of a cluster can range from a single city or state to a country or even a network of neighboring countries” (Porter, 1998, p. 199).
- 10 For detailed discussion, see Ng and Tuan (1997a). The risk premium being cited by business investors was valued at 15 percent on top of the normal return of investment.
- 11 The economic and governmental policies dimension included eight measurements in promoting FDI inflows, and government/government administration has ten measurements (Ng and Tuan, 2001b). Stability and continuation of economic policy, preferential tax policy provision, and local government FDI policy and its appropriateness were cited by business investors as the top three key measurements in affecting their investment decisions. The top three measurements of the government/government administration dimension that the Guangdong government needed urgent improvements included its legal system, abuse in fees collection, and government corruption.
- 12 According to Tuan and Ng (2001b), the Pyramid Model of City Competitiveness was constructed to explain the competitiveness or competitive strength of a city (country). The model depicts three major dimensions in determining city competitiveness, namely, base of economic growth, investment environment, and global image.
- 13 For discussions of an investment environment in attracting FDI and investment location decisions in Hong Kong, see Ng and Tuan (1997a), and in Guangdong, see Tuan, Ng, and Li (1999), Tuan and Ng (2000a), and Ng and Tuan (2001c).
- 14 Government/government administration, restrictions on business operations, and infrastructural supports have, respectively, ten, eight, and

four measurements (Ng and Tuan, 2001a).

15 For detailed empirical results and analyses, see Ng and Tuan (2001c).

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Chapter 9

Issues on the Development and Cooperation of Marine Technology in the Pearl River Delta Region

ZHOU Houcheng, LI Ping, ZHANG Bixiong and YU Xijun

BACKGROUND

Science and Technology for Maritime Economic Development

There has been rapid economic development in the coastal provinces of China, particularly in the Guangdong Province. Maritime economic development of these coastal provinces, an important aspect of their phenomenal growth, has however received relatively little attention. This chapter aims at providing a general introduction on maritime economic development in the Pearl River Delta (PRD) region, with particular emphasis on how advancements in scientific and technological research and application of marine science and technology has had an impact on the region's maritime economic growth.

Coastal Zone Economic Development

The PRD's coastal region of Guangdong has also undergone socio-economic development on a significant scale in the past two decades. 48 percent of Guangdong's total population now live in the PRD region's 14 coastal cities, occupying thirty percent of the provincial's total land area. Growth in economic development of these coastal cities, measured by their "Gross Domestic Products" (GDP), has also been substantial and now accounted for 88 percent of the provincial total. The coastal area has become a very important region for Guangdong's social and economic development.

Over the last decade, the productive value of maritime industries in Guangdong's coastal area has been on a rising trend. In 1999, the total value of Guangdong maritime industries reached *RMB*123.7 million. Growth has been witnessed in those traditional ocean businesses like fishery, transportation, tourism, off-shore oil exploration, as well as maritime shipping.

Coastal Zone and Marine Resource

Guangdong Province, especially its southernmost region that is situated along the coastline facing the South China Sea, is well-known for its richness in

marine resources:

- The province's coastline is the longest among China's provinces (3,368 kilometres). A total of 1,431 islands of different sizes (759 of which have an average land area of more than 500 square metres) and geological characteristics scatter along the province's coastline, and provide another 2,414 kilometres of exposed and sheltered shores, in which a variety of marine ecology can be found. It is estimated that there are more than 200 different kinds of fish, which are of economic values.
- The geographical feature of the coastal region of the PRD region (which comprises of the Special Administrative Regions of Hong Kong and Macao, as well as other major cities in the region such as Shenzhen and Zhuhai) provides the province a near-shore maritime space of 130,000 square kilometres, which is in turn capable of generating 840,000 hectares of coastal bases for maritime economic activities such as fishery and marine tourism.

Abundance of marine resources in the PRD region naturally serves as a solid basis for further development in the maritime economy.

Challenges for a Balanced Maritime Economic Development

With abundance of marine resources and rapid economic growth in the PRD's coastal region, the utilization of the region's natural maritime assets on a massive scale may seem to be unavoidable in order to attain a high rate of growth in maritime economic development. But if we wish to achieve sustainable development of the region, we will have to find a better way of balancing the need of maritime economic development as well as that of protecting and conserving marine resources and environment. Research and development as well as the application of marine science and technology should be part of our strategies for such goals.

THE SITUATION OF GUANGDONG'S MARINE TECHNOLOGICAL DEVELOPMENT

The Current Situation

The development of marine technology in Guangdong in recent years can be examined in three interrelated aspects. First of all, government departments responsible for marine technology management have increasingly put more efforts in marine technology through a number of initiatives, including their

support for the establishment of marine hi-tech corporations and bases which have successfully facilitated the application of the results of marine technology research. Secondly, the combination of marine research institutes with institutions of higher learning has provided more technology supports. Finally, a comprehensive Guangdong's Science and Technology for Marine Development programme has developed for promoting further development and applications of marine science and technology in the twenty-first century. The programme will focus on the commercialization and application of marine science and technology in the following aspects of marine resource development:

1. The utilization of marine biological resources;
2. Sea water utilization;
3. Engineering solutions for coastal zone management;
4. New technology on marine energy and mine extraction;
5. The development of coastal tourism resources;
6. An evaluation of the technology for the development of marine environment and resources;
7. Marine environmental inspection and disaster forecasting; and
8. The prevention of marine pollution and ecosystem protection.

COOPERATION BETWEEN GUANGDONG AND HONG KONG IN MARINE TECHNOLOGY DEVELOPMENT

Facing the trend of globalization, Guangdong and Hong Kong SAR have increasingly recognized the importance of regional cooperation in economic as well as technological development between the two jurisdictions. The governments of Guangdong Province and Hong Kong have strengthened their communication on such issues, and substantive progress has been made. Most notably, there has been successful mutual cooperation in research and academic exchange between research institutes in Guangdong and Hong Kong on marine scientific and technological development.

A three-dimensional (3-D) marine environmental inspection system for the Pearl River estuary has been jointly developed by the Zhongshan University

in Guangzhou and the Hong Kong University of Science and Technology (HKUST) — a research project which is not only between the two research institutes in Guangdong and Hong Kong at the regional level, it is also a national scientific research project (State Marine Project No. 863). Symposiums that were held by the two research institutes in 1997 and 1999 respectively on coastal marine resource and environment in Guangzhou and Hong Kong also served as one of the successful cases demonstrating how researchers in both regions can work together in building up a solid foundation for advancing the development of marine technology in the PRD region.

It is equally significant for the sustainable development of marine resources in Guangdong and Hong Kong to further promote cooperation of the private sectors in both regions in applying marine technology. There is a bright future in marine technology cooperation between Guangdong and Hong Kong in the fields of development of Guangdong marine technology discussed below.

Comprehensive Development of Marine Biological Resources

There has been a breakthrough in Guangdong's scientific development in marine biology recently because of comprehensive development of marine biology resources. It has served as a major orientation for the development of Guangdong's coastal economy. Areas of such development include marine medicine, marine functional food, new breed of seawater cultivation and reproduction, ecological cultivation, further processing of marine lives, and R&D in disease prevention and cure.

Utilization of Marine Resources and Technology Development in Coastal Engineering

The problem of freshwater shortage has become an increasingly acute environmental problem worldwide, and there is no exception for Guangdong. It is therefore important for us to study the demand patterns for freshwater resources as a result of coastal socio-economic development of Guangdong, and to search for the technological solutions of solving the water shortage problem. Given the experiences of Hong Kong in the direct utilization of seawater in previous decades, Hong Kong can provide some insights to Guangdong on the engineering know-how as well as the policy consideration in exploring alternative sources of freshwater.

The Development of Coastal Tourism Resources

Guangdong's coastal region has a lot of beaches, bays and other tourism

resources. There is good prospect for further development of these resources in order to promote coastal tourism in the region.

Marine Resources and Environmental Evaluation

A comprehensive investigation of coastal zone and island resources in Guangdong Province was undertaken in 1980-1986. It has laid a detailed baseline on how marine development can be further pursued. Based on the current situation of marine development in Guangdong, relevant authorities of Guangdong Province will focus their research on topics such as the development of coastal and maritime space, an evaluation of marine resources in the near shore along the coastal zone, as well as a study on the feasibility of aquatic breeding in the bay areas of the PRD region.

Marine Pollution Prevention and Ecosystem Protection

Marine pollution prevention and ecosystem protection are important policy goals for sustainable development of the coastal region of Guangdong. A number of key areas have been identified: setting up a network of inspection on marine pollution and ecosystem; the development of technology in preventing oil pollution and optimizing coastal ecosystem; and investigation and conservation of endangered species in the marine environment. Hong Kong and Guangdong, both of which share the resources in the Pearl River estuary, are also responsible for further cooperation in protecting marine resources in the PRD region.

SOME SUGGESTIONS FOR FURTHER COOPERATION IN MARINE TECHNOLOGY DEVELOPMENT

Both Guangdong and Hong Kong have their respective networks of research institutes in marine science and technology which bear some similarities and differences. Both regions are not lacking of successful research projects and expertise in marine technologies. Marine technology enterprises have been the major force in Guangdong's innovative development in marine science and technology, with research institutes taking a supportive role. There are also a number of research institutes in Hong Kong that have conducted R&D in marine technology with a certain degree of success. Guangdong and Hong Kong can maximize the beneficial effect of their cooperation in marine technology development by focusing on the following prioritized areas:

a) Bilateral Organization

Guangdong and Hong Kong should aim to establish a bilateral organization for cooperation in marine technology, and to study the prospect of developing bilateral policies on marine technology cooperation. The Foreign Technology Cooperation Section, a subsidiary of Guangdong Province's Department of Science and Technology, is a government organization that can help to promote such mutual technological cooperation.

b) Information Exchange

Information exchange between the two regions is essential for facilitating mutual technological cooperation. This means that latest information on marine technology should be exchanged in a timely manner, possibly by taking advantage of the internet technology in addition to traditional academic liaison and exchanges such as conferences and seminars. Furthermore, we should promote a closer working relationship among institutes of marine technology, scientists and enterprises in Guangdong and Hong Kong.

c) Technology Transfer and Application of Marine Scientific and Technological Research

In addition to facilitating research and development in marine science and technology with comprehensive policies and better communication channels, we should develop a mechanism in which the results of scientific and technological development can be effectively and efficiently disseminated in an operational and cost-effective manner in Guangdong and Hong Kong. Technology transfer of scientific and research outputs between the two regions is crucial for the two regions to meet the pressing needs for the commercialization of marine resources and environmental protection and conservation in one of China's economically most prosperous and ecologically richest coastal regions.

Transport

Chapter 10

Competition, Cooperation and Governance of Airports in the Greater Pearl River Delta Region

James WANG and Cherry HO

INTRODUCTION

Stepping at disparate paces, many economic sectors in Hong Kong, Macao and the Pearl River Delta in Chinese Mainland have been integrated. Manufacturing was the first, which started its regional integration two decades ago. Sectors such as container port development have followed suit, making the Greater Pearl River Delta region (GPRD) a single regional economy. For various reasons, however, several sectors have been lingering in this process. The stagnation in these sectors becomes an obstacle for regional sustainability when the pressures from globalization and borderless development accumulate. Airport development is among the areas dawdling in regional integration and coordination. In the second half of the 1990s, five large airports of international standard were either newly-constructed or expanded in the GPRD, all within a radial distance of 100 kilometres of one another. The over-capacity¹ of these airports for the region has drawn a great deal of criticisms for the lack of coordinated planning. This is not surprising for a region of multi-level, fragmented jurisdictions, since air transport, as a business, always runs with geopolitics. Investigation into institutional settings and their effects on air transport infrastructure development is apparently needed before improvements in coordination can be made.

This chapter endeavours to tackle a few fundamental issues concerning the regional governance of airport development. It starts with a concise discussion on how airports, as local participants, interplay with their major client-airlines, including a special focus on the competition for the position as regional hub. A summary of the trends of the airline industry today and their impact on airport development follows. Next comes a preliminary examination of the airports in the Greater Pearl River Delta region with explicit attention paid to the relationship between airports, home airlines, and governments of different levels. Several policy recommendations for proficient governance on regional airport development in the GPRD conclude the chapter.

AIRPORT-AIRLINE INTERPLAY: A REFLECTION OF LOCAL-GLOBAL INTERACTION

As a form of transport terminal, airports are fundamentally different from urban transport terminals in three aspects: (1) airports are generally not owned and operated by airlines; (2) from the perspective of an airport, direct clients are not passengers but airlines; (3) the flight providers or airlines may have networks beyond the jurisdictions where the airports are located. The above nature of airports determines their outlook and motives, which digress from those of airlines in two ways. Primarily, airlines are more “global” or at least are more “regional” than airports in their outlook because the former provide network services while the latter offer only nodal services. Subsequently, countries such as the United States of America, where airports are mainly owned by city and county authorities (Hanlon, 1999), actually vie with one another to become hubs. “A clear motive is the huge potential for traffic growth, not just growth in transfer traffic, but in local origin-destination passengers as well” (ibid., p.156). In essence, therefore, the airport-airline relationship reflects a special kind of local-global/regional interaction through the matter of hub selection and operation.

In this relationship, a key issue for an individual airport on the “local” side is how to attract a “global” airline to settle itself there, or to foster a “local” carrier to go “global,” using the airport as a hub. To airlines, the attractiveness of an airport for hub operation is not simply easy access to all the origins and destinations. As illustrated in Figure 10.1, two sets of factors eventually result in a hub operation. The first set is about centrality — the term for local gravity of activities that generate air traffic demand, using the airport as an origin or a destination. Origin-Destination traffic, or O-D demand, is strongly correlated with the scale, trade volume, and attractiveness of a city and its surrounding areas. The volume of O-D demand contributes to the economic scale of major airlines’ operations at the airport, which may or may not lead to the second stage of hub formation — the building up of passenger transshipment or cargo relaying activities.

The second set of factors pertains to intermediacy — a term that refers to a proper location for transfers or relays. Different from centrality that generates relatively solid O-D demands, intermediacy is less geographically fixed with the scale of the local economy, and is assessed by network services providers. In other words, whether a place is of a good intermediacy for relaying or a hub-and-spoke operation is judged by potential hub-operating airlines. The

conditions that could draw the potential hub operator to utilize the airport for more transshipment become critical.

Even assuming the airport and its “owner” (usually the local government) would hold no obstacles for the airport business, expanding relay hub function and the capacity limit for regional air traffic are still challenging tasks. An airline would consider the following aspects to operate a hub:

1. The accessibility to international markets in terms of *air freedoms* at the airport;
2. The accessibility to domestic markets in terms of cities connected by or to be connected by the airlines;
3. The cost to upgrade the operation at this airport to a hub; and
4. The availability of alternative choices in the vicinity.

To a home carrier that has already developed with scaled O-D movements, being dominant is not a problem at the home airport and the consideration for alternatives nearby is unnecessary. But for foreign airlines, the latter two aspects are as equally crucial as the former two. As we shall see, the first two kinds of accessibility are largely affected by geopolitics as well as by trends and the means for borderless operation in the increasingly globalized airline business today.

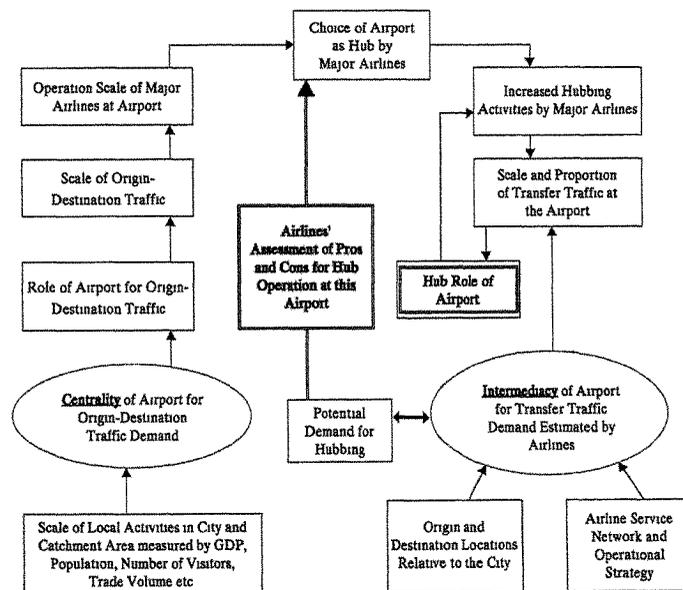


Figure 10.1 How an Airport Becomes an Airline's Hub

NEW TRENDS IN AIRLINE INDUSTRY AND THEIR IMPACTS ON AIRPORT DEVELOPMENT

Coincidentally, two reforms with worldwide impact — the deregulation movements in the US transport sector, and the economic reform measures in China — started in the same year, 1978. The deregulation of the US airline industry not only resulted in a revolutionary restructuring of its domestic air transportation system, but also led to a new international operational environment by a series of “open skies” initiatives between the US and other countries. These changes have reformed the overall relationship between airlines and airports, as well as the mechanisms of airport operation and management.

The trends of the aviation industry and their impact on airport operation can be summarized into three points. First, many major airlines practice the “Hub-and-Spoke” network structure in order to reduce operational costs while increasing city-pairs via their hubs. A single hub operation can reduce routes significantly from a point-to-point operation for the same number of city-pairs, while a multi-hub operation can increase the service frequencies of flights between hub cities when traffic from spoke airports are pipelined through two or more hubs. Whether such a network structure brings a large volume of intransit passengers and transshipment cargoes to hub airports, and the extra demand generated decreases the commerce of the airport business, depends purely on the local origin-destination traffic, which is strongly correlated with the scale and attractiveness of a city. The transshipment demand at hubs requires different airport designs. The hub airport, once well-established, will bring its reputation to terms of highly national or even international connectivity activities which are different from those with normal airports, such as the headquarters of international organizations, exhibitions and conferences, and logistic centres for express cargo.

Secondly, the dominance of “national flag” airlines has gradually faded out. Initially, many governments worldwide followed the US and tried to establish “contestable” market competition in the domestic airline industry in order to protect consumers and raise their airlines’ international competitiveness. After years of practice, what actually formed were often oligopolies, probably due to — indicating the nature of this industry — huge investments for entry and survival in the business. The oligopoly, together with the hub-and-spoke structure, has brought significant impact on airport development and operation. The developments include:

1. Each hub airport is often dominated by a single major airline;
2. In a relatively large country or region such as the United States, major airlines usually need more than one hub in order to maximize its coverage and market share; and
3. Due to the above two points, different airlines may need different airports in the same region for their hub activities, which will result in a few hub airports concentrated within a high-demand region within a few important cities, such as the Chicago region where Chicago and Milwaukee are super hub stations for different major airlines (illustration in Figure 10.2).

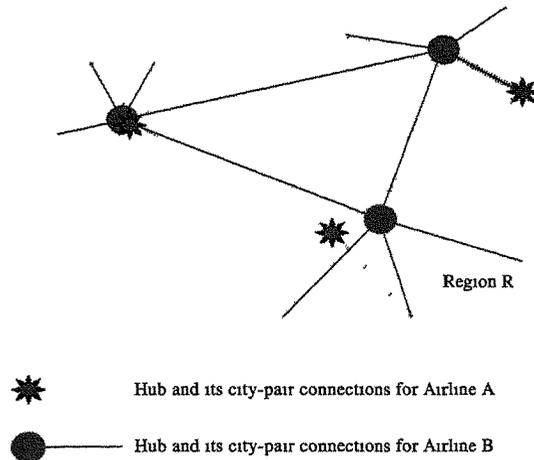


Figure 10.2 Illustration of Multi-Network Coverage with Two Separated Hubs in a Specific Region

Lastly, globalization demands far more international movements, which have exerted two important changes: less restrictive Air Services Agreements (ASAs) between countries and more global airline alliances. The re-negotiation of ASAs usually means an exchange of air freedoms between two or more countries. Although ASAs are supposed to be reciprocal and equal through bilateral or multilateral approach, exchange of rights between countries of different market sizes, different geographical locations and different economic interests and with airlines of different strengths are hardly considered to be "fair". For instance, to countries with only one airport such as Singapore, exchange of the fifth air freedom means a total open sky, while to countries with a large domestic market, like the United States, a reciprocal exchange of

the fifth air freedom with Singapore or Hong Kong may only mean an opening of several international gateway airports, but the access to its domestic market remains tightly closed. Even if an ASA is regarded “fair” between two countries, it does not necessarily bring equal opportunities to airlines and city-pairs in these countries.

For airlines to penetrate into another country’s market beyond gateway cities without getting a cabotage,² setting up an alliance with a “local” airline is one of the most common and effective practices. Through code sharing, seat sharing, route-connection, and airport facility and service sharing, airlines with different market coverages may form a larger and more cost-effective network for global competition. Currently there are already a few mega multi-national airline alliances established.

These new trends have great impacts on airports, particularly on gateway airports or those holding that potential. It becomes more likely for an existing hub airport, working for a major airline, to get more traffic when that airline joins a major global alliance. In other words, the hub-and-spoke concept will work in a larger geographical scale, and a few airports may become true world-class hubs. This change makes airports and their vendors (local governments) reconsider whether they want more gateway businesses by giving more air freedoms to other airlines, or encourage allying behaviour of home carrier(s).

AIRPORTS IN THE GREATER PEARL RIVER DELTA: A PRELIMINARY EXAMINATION

The GPRD region is the most dynamic region in Asia and probably in the world, with 30 cities and counties, a population of about 30 million, and 48,000 square kilometres of land. There are five aviation airports currently operating in the GPRD region. They are, in a descending order of actual movement volume, Hong Kong Chek Lap Kok International Airport, Guangzhou Baiyun International Airport, Shenzhen Huangtian International Airport, Macao International Airport, and Zhuhai Sanzao Airport. An additional six local airports have been put into long-term development plans (Zheng, 1995).

The Economic Foundation for Airport Development

To clarify the role played by each airport in the region with relation to the concepts of centrality and intermediacy, we have calculated the correlation

coefficients between local demand indicators such as GDP, total population, and the passengers and cargoes handled, as shown in Table 10.1. The table confirms the following points:

- The number of passengers handled at the Hong Kong airport has the least correlation (0.78) with the city population among the five airport cities, implying that about 20 percent of its traffic might be attributed to transshipments. The relay hub function played by Hong Kong is not found in the other four cities.
- In the case of Guangzhou Baiyun, all the selected indicators show very strong correlations with each other, implying (1) cargo and passengers are handled in a similar fashion (i.e., without all-cargo flights), and (2) very limited relaying activities for passenger or cargo.
- In various scales, all five airports show strong positive correlation between the local GDP and the total flights movements, indicating the important role played by an airport in aiding local economy.
- Both Macao and Zhuhai show an interestingly high positive correlation between the number of passengers handled and the import values. This possibly indicates, indirectly, a characteristic of tourist cities.

The Local Authority of Landing Rights and the Role of Home Carriers

The second aspect we investigated is the local institutional concept of airport governance, which includes the autonomy of regulation, the authority of ASA (Aviation Services Agreement) negotiations, and the dominance of home carriers. It is interesting to note in Table 10.2 that (1) Hong Kong has two home carriers, Cathay Pacific and Dragonair, each having different market coverage regulated by a “one-route-one-airline” policy; and (2) China Southern Airlines is the major player at its home (Guangzhou) as well as in Shenzhen and Zhuhai. Although the two smaller airports have their own local carriers, one of them is the subsidiary of China Southern, and the other is of smaller share than China Southern in the market of that airport. This indicates quite a dissimilar airline-airport relationship on the Mainland side.

The autonomy of the international ASA negotiations is granted with two Basic Laws, the mini-constitutions of the two Special Administrative Regions (SARs) of Hong Kong and Macao. This gives Hong Kong and Macao a certain

Table 10.1 Correlation Coefficients for Four Major Airports in the Greater Pearl River Delta Region

Hong Kong (1992-1998)	Population	Total GDP	Export Value	Import Value	Passengers Handled	Cargo Handled (tonnes)	Movement (landing and takeoff)
Population	1	0.911756	0.887718	0.800878	0.782635	0.903706	0.909111
Total GDP		1	0.989088	0.926435	0.957448	0.998276	0.982478
Export Value			1	0.938353	0.741220	0.990993	0.990936
Import Value				1	0.747298	0.935416	0.945091
Passengers Handled					1	0.761244	0.728470
Cargo Handled (tonnes)						1	0.987134
Movement (landing and takeoff)							1

Guangzhou (1992-1998)	Population	Total GDP	Export Value	Import Value	Passengers Handled	Cargo Handled (tonnes)	Movement (landing and takeoff)
Population	1	0.998768	0.978045	0.961253	0.904915	0.983916	0.970054
Total GDP		1	0.978314	0.952873	0.905075	0.990220	0.966893
Export Value			1	0.971428	0.956726	0.962174	0.976820
Import Value				1	0.943027	0.909836	0.960705
Passengers Handled					1	0.874233	0.964302
Cargo Handled (tonnes)						1	0.946243
Movement (landing and takeoff)							1

Shenzhen (1992-1998)	Population	Total GDP	Export Value	Import Value	Passengers Handled	Cargo Handled (tonnes)	Movement (landing and takeoff)
Population	1	0.966186	0.988306	0.939996	0.980700	0.990447	0.980567
Total GDP		1	0.945131	0.848710	0.969233	0.986218	0.979731
Export Value			1	0.970805	0.966682	0.971456	0.957766
Import Value				1	0.920278	0.907973	0.898811
Passengers Handled					1	0.993788	0.989704
Cargo Handled (tonnes)						1	0.995233
Movement (landing and takeoff)							1

Zhuhai (1993-1998)	Population	Total GDP	Export Value	Import Value	Passengers Handled	Cargo Handled (tonnes)	Movement (landing and takeoff)
Population	1	0.993413	0.987215	0.981554	0.776180	0.887516	0.918821
Total GDP		1	0.969791	0.956049	0.626777	0.773080	0.815736
Export Value			1	0.978939	0.830006	0.889897	0.939527
Import Value				1	0.922073	0.884988	0.980179
Passengers Handled					1	0.974998	0.961432
Cargo Handled (tonnes)						1	0.991988
Movement (landing and takeoff)							1

Note: Macao is not included due to the lack of information.

Sources: 1) Statistical Yearbooks of individual cities and Statistical Yearbook of China, various years;
2) Airport Authorities' Web sites.

advantage in determining their airports' future in the global market. However, at the same time, owing to the same political setup, the home-carriers of these two SARs are viewed as "outsiders" and do not enjoy cabotage rights to get "naturally" into the Mainland domestic market.

Table 10.2 Local vs. Non-Local Characteristics in Air Transport Autonomy and Market Share of Home Carriers

	The authority for market regulations and ASA negotiation	Position of home-carrier in local airport market (passenger flights only)
Hong Kong	Hong Kong SAR Government	Domination (Cathy Pacific 33% + Dragonair 8.2 %, as in March 2000)
Guangzhou	Central Government	Domination (China Southern 46%, as in the 3 rd season of 2000)
Shenzhen	Central Government	Minor (Shenzhen Airlines 14.7 %), (China Southern is the major, 26.6%)
Zhuhai	Central Government	Domination (Zhuhai Airlines 54 %)
Macao	Macao SAR Government	Domination (Air Macao 49.6 %)

The Ownership of An Airport and its relationship with Airlines

Since we believe that, after all, it is the owners and investors of airports and airlines who determine how air transport infrastructure and services should be provided and organized in this region, we have investigated the ownership relation among airlines, airports, government organizations, and other investors. Based on the proprietor survey, the ownership "network" is given in Figure 10.3. The figure reveals some important facts:

1. The major difference in airline ownership between Hong Kong and Chinese Mainland is that in Hong Kong there is no local government involvement. In the Mainland and Macao, local governments have ownerships in Zhuhai Airlines, Shenzhen Airlines, and Air Macau respectively, which may have caused compound effects in the relationship between home airlines and airports.
2. Zhuhai Airlines has two owners: China Southern Airlines Co. (60 percent) and the local city government (40 percent), reflecting a typical ownership structure for a small local airline in China.
3. Complicated ownership structure is found in three mid-sized airlines in this region: Shenzhen Airlines, Dragonair and Air Macau. It is worthy to notice that China National Aviation Cooperation (CNAC), a state-owned

enterprise under the Civil Aviation Administration of China (CAAC), is in fact the biggest shareholder of the latter two airlines directly or indirectly.

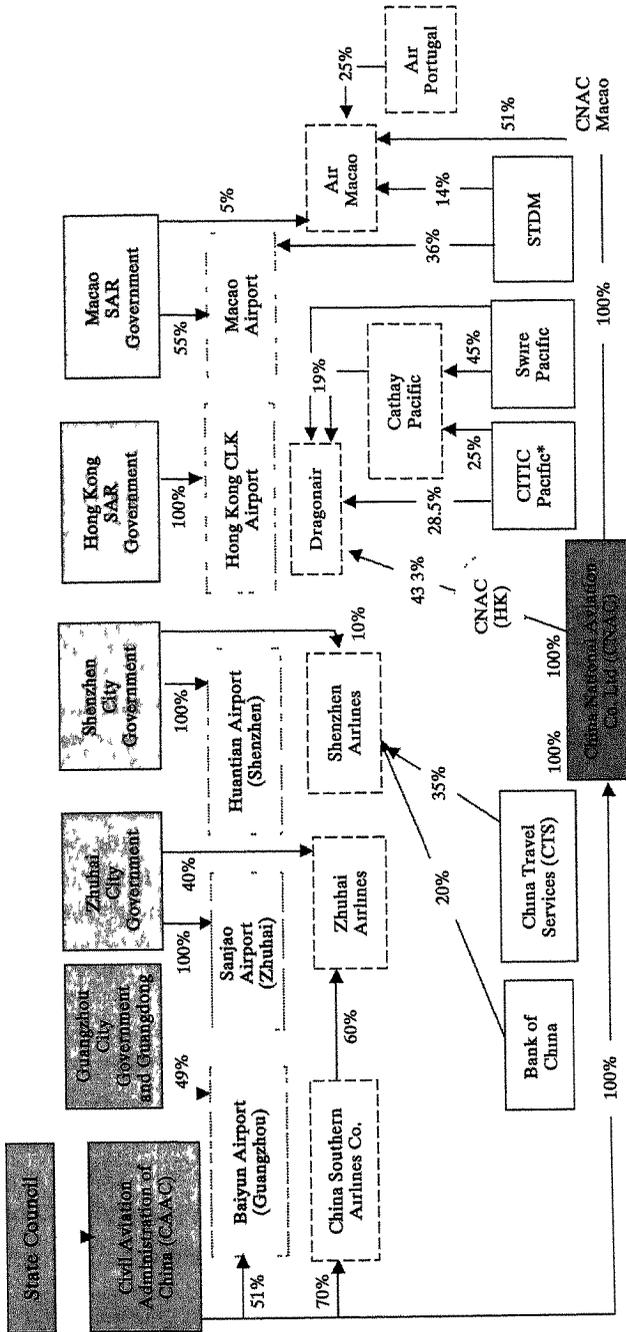
4. For airport ownership, we found that a variety of structure in the Mainland. It might reflect some complicated reasons, among which the most important one is that the CAAC has carried out a reform that gave the task of administering the airports to the city governments.

DISCUSSION

To summarize the above analysis, the complicated interrelationships among the GPRD region's airports are basically four-fold: the fundamental and transshipment needs that determine the centrality and intermediacy for airport development; the air freedom control through the authority of ASA; the role of airlines; and the ownership of the airport. Among these four aspects, the latter three are on the supply side. The complications on the supply side indicate both the existence of non-physical barriers and the room for improvement through better regional coordination and cooperation. Any scenario for improvement in regional airport governance should assume a win-win future for all existing airports in the region. The question is: could that be possible? If the answer is "yes", then what should the governments do collectively for the region, or what might they do individually for their own interests? Since a regional government or its resemblance does not exist in the GPRD region, it is important for individual governments, airports, and airlines to see all possibilities that may bring a win-win situation to all. Along this line, we would like to make a few suggestions based on our observation and investigation.

First, we believe that the effort to liberalize the air market is critical. Liberalization may first be applied to home carriers in the GPRD region, which can be followed by an incremental approach to a non-home carrier. Successful experiences to "open skies" within the European Union (EU), North America, and Association of South East Asian Nations (ASEAN) have resulted in lower air travel cost, higher travel demand as well as more airport expansion projects.

Disparated from these overseas experiences, in the GPRD region neither cities nor regions have the authority to deal with the ASA on their own. It is also unnecessary for all of them to have a home carrier (Zhuhai and Shenzhen, for example) or more than one home carrier (Macao on this point). The former condition makes the borderless solution difficult to achieve, while the latter condition indicates room for actions towards open skies. Indeed, for a city-



Note *To certain extent, CITIC Pacific has been regarded as an arm of the State Council to hold the share of Cathay
Sources: 1) Personal interviews with officials of various airlines and airports, 2) annual reports of listed companies, 3) the airlines Web sites

Figure 10.3 Ownership Relations among Governments, Home Airlines, and Airports in the Greater Pearl River Delta Region, China

state like Hong Kong, it is hard to argue that the government should protect a home carrier at the cost of developing its first-class international airport, not to mention the fact that Cathay Pacific is not widely seen as a genuine home carrier to Hong Kong. The airline's ownership, and the small proportion of local staff employed, may suggest that the airline does not consider the city its "home".

In essence, an open-skies policy may reassign the role of each airport to an airlines' network. For all the existing airports in the GPRD region, a true open-skies scenario between Chinese Mainland and other parts of the world means that they would no longer be situated at the geographical periphery of a vast domestic market (in the case of Guangzhou, Shenzhen and Zhuhai), or the edge of that vast market for which they have limited access (for Macao and Hong Kong). The claim by the Hong Kong Airport Authority of Hong Kong being the central location between China and Southeast Asia in attracting "half of the world's population within a 5-hour flying distance", would then become closer to reality. However, such a scenario does not seem to be possible in the near future since China still has a long way to go in reforming and modernizing its air-service industry. As summarized and analyzed by Ho (2001), the regrouping of major airlines, the separation of administrative duties from daily business operation in state-owned airlines and airports, clarification of operational functions of cargo handling at all Mainland airports, would all need to be done before China can start to consider a serious deal of "open-skies" with any major country in the air-transport industry. Ho also noticed that even the autonomy in ASA negotiations enjoyed by the two SAR governments could still be checked by Beijing's authority, if the latter wants to do so.

We, therefore, expect some piecemeal solutions coming from airlines, airport, and local governments instead. They may include:

- Instituting more code-sharing programmes between Chinese Mainland airlines and foreign airlines, which will get around the ASA constraints to make the Mainland market accessible by non-Mainland airlines, using one of the GPRD region airport as a hub for relaying activities;
- Relaxing gradually the "one-country, one-airline" policy in Hong Kong so as to make the CLK airport more attractive to all interested airlines;
- Fighting for more Hong Kong-based airlines to obtain cabotage right to

operate in the Chinese domestic market would enable the Hong Kong airport to serve both international and domestic markets; and

- Receiving designations as well as other support from the Central Government to operate more international flights and/or relaying activities in passenger and/or cargo handling.

Secondly, we believe that coordination and cooperation among governments in the GPRD region is extremely important in creating win-win solutions. As the air market is artificially alienated and will remain unchanged in a foreseeable future, the key role that these local governments can play is to improve the physical links among their airports, so as to make airport alliances possible. In an airport alliance, the role played by each airport is well-positioned according to the strengths that one possesses. With a division of labour, airports in the alliance can get rid of restrictions curbed by ASAs.

In the case of the GPRD region, fast and direct shuttle services between the airports should receive full support from local governments. This can be assisted by improvement in infrastructure development and simplification of customs procedures.

Lastly, the coordination and cooperation between airports may make a difference. Among other initiatives, exchanging airport ownership can be effective to reduce the conflicting interests that are apparently hampering the development of the region. However, as pointed out by Tam (2001), investing in airports in the Chinese Mainland is still a risky business, due largely to the lack of transparent financial operation and management, inconsistent government policies, and the tight cap on foreign ownership.

CONCLUSION

The political arrangement of “One Country, Two Systems” has created not only two Special Administrative Regions in South China, but also a special setting that keeps the airports in the region in separated markets under different institutional rules. Some rules are politically sensitive, while some are not easily changed by local authorities. In a nutshell, substantial improvement in air transport in the region needs creative thinking and initiatives from governments of all levels and the private sectors as well.

In addition to the suggestions we made earlier, learning from successful liberalizations of the air service industry in other regions and comparing them

with the GPRD region would be the next research topic that would be useful to the region, and theoretically challenging. It needs to deal with many issues concerning the policies and governance of a local quasi-public sector that is critical for a regional economy, under increasingly strong influences of a growing borderless economy at the global level.

NOTES

- 1 By “over-capacity” we mean that in 1998, the actual annual traffic for airports of Hong Kong, Shenzhen, Zhuhai, and Guangzhou were 45.5 million passengers and 2.16 million tonnes of cargoes against a total design capacity of 90 million passengers and 4.15 million tonnes of cargoes (based on our calculation and the *Jane’s Airport Review*).
- 2 Cabotage is defined as the right of an airline of one country to carry traffic between two points within the territory of another country (Productivity Commission, 1998).

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Chapter 11

Port Planning for the Pearl River Delta Region: A Hong Kong Perspective

Alex FONG

PORT PLANNING IN HONG KONG: THE CONTEXT

The port has always been a key factor in the development and prosperity of Hong Kong, making significant contribution to our Gross Domestic Product (GDP) and employment. Over the past ten years, the port of Hong Kong has kept the title of the world's busiest container port for eight years. Over the last two decades, the port of Hong Kong has evolved to serve not only the freight needs of the domestic market but has become a leading hub port serving the international trade needs of the region. In 2000, our port handled 174.6 million tonnes of cargoes, including 18.1 million TEUs of container cargoes.

Our current framework supporting our strategic planning for the port of Hong Kong is based on the *Port and Airport Development Strategy (PADS)*, a Study that was completed in December 1989. In the PADS, it was recommended to build an integrated port and airport infrastructure comprising a port complex in the Western Harbour, and a new airport at Chek Lap Kok in North Lantau. The PADS was implemented in phases since the 1990s with the opening of the airport in July 1998, and the commencement of operation of the River Trade Terminal (RTT) in Tuen Mun in October 1998, while the development of Container Terminal 9 in southeast Tsing Yi is in progress.

As observed in the report "Bringing the Vision to Life — Hong Kong's Long-term Development Needs and Goals" published by the Commission on Strategic Development in 2000, Hong Kong's position as one of the busiest container ports in the world faces increasing challenges from ports elsewhere in the Pearl River Delta (PRD), given the significant cost advantages they offer to customers. Between 1998 and 2000, the leading container ports in Shenzhen (i.e., Yantian, Shekou, Chiwan and Mawan combined) have grown from a throughput of about 2 million TEUs in 1998 to nearly 4 million TEUs of containers in 2000. Yantian, in particular, with deep water access, ample supply of back-up land, rail link to the Pinghu Station which connects with the Guangzhou-Shenzhen main line, and proximity to the cargo base in the eastern part of the PRD, has posed as an alternative deep water port to Hong Kong to

serve the needs of the PRD region. In our future port planning, Hong Kong cannot consider her strategy in isolation. As our cargo base is largely in the PRD, we have to look at Hong Kong in the context of the PRD in our future port planning.

Recognizing this point, the Port and Maritime Board (PMB) maintains contacts with the Mainland authorities responsible for port planning to exchange views and information on port planning matters to enhance both sides' understanding of our respective port development plans and forecasts. Our recently completed *Port Cargo Forecasts (PCF) 2000/2001* was produced after information exchange with our counterparts in the Mainland. We believe these contacts and information exchange are helpful to our formulation of realistic port development plans.

PORT PLANNING FOR HONG KONG: THE APPROACH

The main objective of our port policy is to ensure a realistic planning of port-related infrastructure and a timely provision of port facilities to handle Hong Kong's forecast cargo throughput. The *Port Development Strategy Review (PDSR)* is an exercise carried out in support of this objective. Since the completion of the PADS Study in 1989, we have undertaken such reviews from time to time, to ensure that adjustments can be made to reflect updated information and that our port development strategy can meet the needs of the changing environment. The last PDSR was completed in 1998 and we are currently conducting the fourth review.

Every PDSR includes an update on the productivity of container terminal berths so as to give a better estimation of the timetable for new container terminal facilities. The scope of PDSR covers not only container port facilities but also other cargo handling facilities and ancillary port facilities, intermodal links and related supporting facilities. The PDSR update will translate the PCF findings into demand for cargo handling facilities as a basis for reviewing the need for new port facilities.

PORT CARGO FORECASTS (PCF) 2000/2001

The *PCF 2000/2001* was completed in March 2001. The study had updated the trend of key factors affecting cargo demand, such as trade growth in our cargo hinterland, competitiveness of our port, impact of the planned investment in ports in South China and other regional ports, China's accession to WTO and cross-strait trade. The main findings of the study are summarized below:

- a) The cargo base of the PRD, which is in the main hinterland of Hong Kong port, is expected to continue to grow at a high rate fuelled by an expected general increase in world trade and increase in foreign direct investment generated by China's accession to the WTO, leading to increased imports and exports from China, especially for the Guangdong province;
- b) It is forecasted that Hong Kong port will become increasingly reliant on cargoes originating from the Pearl River Delta area as the main source of cargo. However, due to the development and expansion of the northern Mainland ports, increasing competition from the Shenzhen ports, these factors will divert some of the cargoes that might otherwise flow through the port of Hong Kong;
- c) Although ports are being developed in northern Mainland and there are increasing competitions from the Shenzhen ports, cargo from southern China will grow sufficiently fast to support the planned expansion of ports in the region, including Hong Kong and Shenzhen;
- d) Cargo demand for Hong Kong in the next fifteen years would grow at an annual rate of 5.1 percent, which is faster than the forecast of 4.6 percent in our previous study in 1997;
- e) The port throughput of Hong Kong is expected to grow from 18.1 million TEUs in 2000 to 30 million TEUs in 2010 and 40 million TEU in 2020, representing an average absolute increase of around 1 million TEUs per annum over the next 20 years.

Guangdong is a major province for foreign trade. Its trade value accounted for 36 percent of the Mainland's total in 2000. According to the Tenth Five-Year Plan (2001-2005) announced by the State Council, Guangdong's trade value is projected to increase at an average rate of 8.5 percent per annum. Accordingly, it is estimated that the containerized cargo throughput of Guangdong will reach 22 to 24 million TEUs by 2005, representing a 9.5 percent to 11.9 percent growth per annum. Hong Kong is currently the hub port for Guangdong cargo. It is estimated that about 80 percent of Guangdong's container cargo is exported/imported through the Hong Kong port, about 20 percent is through Shenzhen ports' and only less than 1 percent is directly transported through the Guangzhou port.

With a projected average annual growth of 10.5 percent in South China cargo base in this decade, the South China cargo pie is going to be big enough

for the measured growth in both Hong Kong and Shenzhen ports.

PORT DEVELOPMENT STRATEGY REVIEW 2001

We are now updating the fourth PDSR based on the above PCF findings. The PDSR will assess various major factors affecting Hong Kong's port development and consider how the port development Strategy should be supported to meet the changing circumstances. These factors include *the impact of China's accession to WTO; the development in the Western Region, and port development plans in neighbouring ports in South China.*

To cope with the expected growth in demand in the coming decade, both Hong Kong and Shenzhen are developing new port facilities. We commenced the construction of Container Terminal 9 (CT9) in the summer of 2000. We expect that the new terminal will be commissioned in phases between 2002 and 2004, adding six berths to the existing eighteen-berth Kwai Chung Port. During the same period, Shenzhen will also construct 9 additional container berths in its 3 major container terminals at Yantian, Shekou and Chiwan.

As both Hong Kong and Shenzhen ports are serving the South China hinterland, we would need to take into account the port development plans in the neighbouring ports when assessing the demand for and supply of our port facilities in the PCF and PDSR.

PORT PLANNING FOR THE TWENTY-FIRST CENTURY

The Government of the HKSAR is committed to providing an environment conducive to the development of the trade, transportation and logistics sector. Port development occupies a pivotal role in this process. With rapid changes in e-commerce supply chain management and logistics services development, it is important that in future port planning, we should seek to develop our port as an integral part of the "total logistics" chain, especially in the context of the developments in the Pearl River Delta. There is also increasing concern in the community on environmental and social aspects of port development. We would also need to consider future port development in the context of "sustainable development".

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Chapter 12

A Study on an Integrated Cross-Border Transport Network for the Pearl River Delta

XU Xueqiang and XU Yongjian

THE NEED TO ESTABLISH A CROSS-BORDER INTEGRATED TRANSPORT NETWORK TO MEET THE NEEDS OF ECONOMIC DEVELOPMENT IN THE DELTA REGION

Global Transport Network Restructuring

A study on the economic and social development processes and cross-border transport network improvement in the Pearl River Delta (PRD) should be examined within the context of globalization. Today's world economy is increasingly regionalized and globalized. Transnational corporations and regional trading alliances such as North America Free Trade Agreement (NAFTA) and European Union (EU) are gaining influence; and some major global cities have benefited from these processes. The transport system plays an important role in reducing friction in international trade, promoting new technologies and allows marketing activities to take place on a global basis (Janelle and Beuthe, 1997).

The conventional industrial production process may now take place in different parts of the world to take advantage of lower labour costs and other input costs, saving the overall production cost in the process. The prevalence of transnational management has given rise to a new mode of production and trade such as the just-in-time transportation. It has also helped standardize the management of integrated production and transportation. As hierarchically structured production and distribution systems give way to greater interdependence and flexibility in locational decision-making, the demand for a higher degree of responsiveness in freight and passenger transportation increases. Motor freight transport has benefited from the shift to less bulky goods as a result of increase in high-tech commodity production and from the trend to establish direct linkages between manufacturers of final products and the consumers (ibid.) In such a context, global logistical companies have gradually appeared in the past 20 years. As an indispensable component of the global logistical network, the shipping lines and container terminal companies

are eager to globalize their services to meet increasing demand in freight transport.

The world's transport network is being restructured accordingly. The emergence and dominance of the hub-and-spoke pattern in the global airlines industry is a good example. Besides the most important global cities, only those cities that have direct links with the hubs have gained accessibility advantage. The shipping lines, however, have concentrated their calls on such major ports as Hong Kong, Singapore, New York-New Jersey and Rotterdam. Meanwhile, many transportation corridors of high density and diverse transportation options (e.g., Tokyo to Osaka, Boston to Washington and London to Birmingham) exist in many regions of the world. At the national level, the transport investment mainly goes to the largest cities and those centres with direct transport and communication access to world cities and capital resources (ibid.) Furthermore, the impact of information exchange on transportation has become increasingly evident. Many cities or regions have spared no effort to develop the information industry or "cyberport" as a strategy to sharpen their competitive edge and to attract foreign investment.

Transport Network Development in China

In a developing country with steady and rapid economic growth like China, infrastructure is vital to the regional economy. In the Ninth Five-Year Plan period (1996-2000), the amount of nationwide transport infrastructure development projects has been unprecedented in scale, pace and quality, with the total investment amounting to *RMB*1,020.9 billion yuan. Highways were expanded, inland waterways dredged and coastal ports witnessed substantial improvement and rapid growth. The bottleneck effect of a poorly coordinated transport network on the national economy has been alleviated to some extent. In the coming Tenth Five-Year Plan, transport infrastructure will be developed at an even faster pace.

In the PRD, since the open and reform policies were carried out, the dominant industries taking advantage of cheap labour force are mostly simple processing and assembling of various kinds of goods. Although the highway network has been developed simultaneously with the rapid economic development of the PRD, the expansion of processing and assembling industry has led to increasing pressure on transportation, electricity supply and water conservancy facilities. Due to a major gap between the investment required and the fund available, such infrastructure could not be improved significantly

to ease the “bottleneck” effect until 1994-1995. The period of 1990 to 1993 saw a steep rise in the amount of fixed assets investment and foreign investment. The inflow of household bank deposits and influx of foreign investment into the region has made it possible to make substantial investment in infrastructure. As a result, between 1994 and 1997, the total length of highways greatly increased.

From 1996 to 2000, in response to, and as an outcome of, further foreign investment in Guangdong Province, an increasing amount of transport infrastructure of higher quality was built. During this period, investment in the transport sector totalled *RMB*112.13 billion, which almost doubled that of the 1991-1995 period. A large number of facilities were added: 1,050 kilometres of expressways, 340 kilometres of waterways, highway terminals of 1.25 million square metres in size and 139 berths.

In 1995, the Guangdong Province completed the Strategic Plan for the PRD Economic Zone, which suggested that a well-planned, integrated transport network of high standard, high quality and high efficiency should be established in the zone. With the firm support of such a modern transport network, the Plan argues, the PRD will be well connected with other parts of the province, Hong Kong, Macao and other parts of the Southeast Asia. Moreover, the PRD will be able to take a lead in the development of modern transportation facilities and industries (The PRD Economic Zone Planning Committee, 1996). It has to be admitted, however, that the Plan does not contain enough detail to guide the development of the transport sector, especially the cross-border transportation network. New problems are arising and they call for new solutions.

Transportation Network Development in the PRD

At the moment, the PRD’s integrated transport network — composed of highway, railway, river transport, sea transport and air transport — has been significantly improved in recent years, turning this densely populated area into one of China’s region with the most advanced transport infrastructure. Railways lines are playing an important role in connecting the region with other parts of China. For example, the Beijing-Guangzhou line acts as the trunk line bearing most of the passenger and freight traffic between the PRD and other parts of the country. The Guangzhou-Kowloon line and the Beijing-Kowloon line are the major rail links serving trading activities and passenger traffic between the Mainland and Hong Kong, while the Guangzhou-Sanshui-

Maoming line connects the Delta region with southwest China.

Furthermore, a trans-border port group consisting of more than 60 ports has begun to take shape in the region, which includes, as its hub, the Hong Kong port. The throughput of this port group (Hong Kong and Macao included) has been rising steadily since the 1980s, rising from 79 million tonnes in 1980 to 100 million tonnes in 1985 and then to more than 300 million tonnes in 1995. In 1999, the freight traffic handled by the Guangzhou port reached 100 million ton. In 1998, the container throughput of Shenzhen port was 1.95 million TEUs, turning it into the second-ranked container port in China (Luo and Zheng, 2000). As a result of this increasing density and intensity in the development of the region's integrated transport network, the time-space map in the PRD has shrunk substantially (Figure 12.1).

Major Problems in the Transportation Network in the PRD

The high-order transport systems require considerable traffic and their tendency to adopt hub structures may have negative effects on the density of the network in more peripheral areas. It is not long ago that the mono-modal structure of such network gave way to the bimodal one with the rise of Shenzhen as another hub of communications besides Guangzhou. Correspondingly, manufacturing, banking, and other operations have been centralizing at hub centres, contributing to additional service delays in smaller bypassed cities and counties. Now it is the regions beyond the PRD, especially those comparatively less developed areas unconnected with the PRD by powerful transport network and poorly connected with each other, are facing difficult challenges.

The highly imbalanced spatial pattern has become one of the major problems in the PRD's transport network. The highway system development is a case in point. Expressways in the region have not formed the network shape, since some prefecture-level cities, especially those in mountainous areas, such as Meizhou, Heyuan, Shaoguan and Yunfu have no direct access to expressways. The Guangzhou-Zhuhai expressway has not been constructed in a timely manner. And some expressways are not well designed. For example, after starting from Guangzhou, you have to take a devious route to Shanwei by way of Shenzhen. Such deficiency in highway networks has deterred it from efficient operation. The railway network is of no exception. Some regions such as Zhuhai have suffered from the absence of railway, and the well-known flourishing cities such as Shunde, Zhongshan and Nanhai have no access to railways.

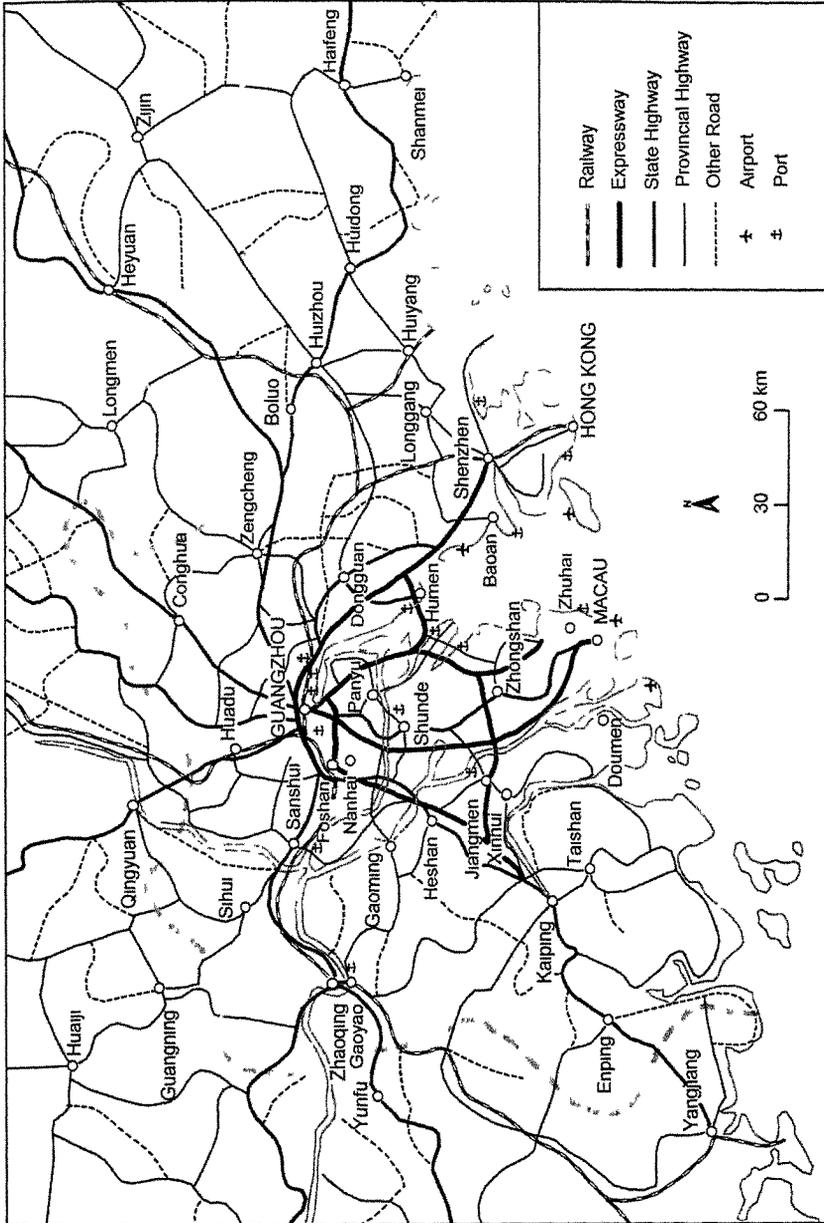


Figure 12.1 The Current Integrated Transport Network in the Pearl River Delta

The coexistence of overload of certain transport facilities and under-utilization of others is another problem faced by the PRD. For example, some airports are underutilized while some others crowded with people. In the year 2000, the Zhuhai International Airport handled only 570,000 passengers, and its average monthly passenger throughput is only equal to the average daily record of the Guangzhou Baiyun International Airport. Such inefficient operation has caused enormous losses.

THE NEED TO ESTABLISH A CROSS-BORDER INTEGRATED TRANSPORT NETWORK

Plans for the Formation of a “Port Alliance”

The cooperation and interaction between Hong Kong and the PRD on port and industrial area development date back to the early 1980s when China Merchants Group developed the Shekou Industrial Zone in Shenzhen, which benefited both Shenzhen and Hong Kong. In the mid-1980s, the progressive diffusion of the bulk and general cargoes handling from Hong Kong to the western port areas of Shenzhen Harbour has made it possible for Hong Kong to concentrate on container handling. Similarly, the successful creation of a well-known Shenzhen Harbour could not have been possible without the heavy investment of the Hutchison-Whampoa Group in the early 1990s on the Yantian container berth development. In 1993, the Swire Group of Hong Kong and the R&O Group (50 percent) became the major shareholders in Shekou Container Terminal. In 1998, Hutchison International Port Holdings Ltd, a wholly owned subsidiary of Hutchison Whampoa partly acquired the Shekou Container Terminal from the Swire Group and the R&O Group and became responsible for the management and operation of the container facilities, resulting in the great leap in the number of containers handled by the deepwater port of Yantian in west Shenzhen.

Hong Kong is the world's busiest and largest container port, and 18 million containers (20 feet) were handled by it in 2000. Hong Kong is also the port of call to 37,000 ocean-going vessels and 119,000 inland water cargo vessels. Yet several factors have posed restriction on Hong Kong's port development including overload of container berths due to demands beyond handling capacity, too expensive rates, shallow water due to reclamation in the port areas and insufficient back-up logistical land. The difficulty to expand its land transport support system and its associated adverse impact on the environment are among the problems, too. Nevertheless, it is undeniable that as a free port

with services of high efficiency and high quality, especially with the simplified customs clearance formalities, superior logistical services and high-frequency calls by ocean-going vessels from all over the world, Hong Kong is still the best choice for Mainland owner of time-pressing and high-value cargoes, through which the containers collected by cross-border lorries or barges were exported. Meanwhile, several measures have been taken by Hong Kong including reduction of the rates to sharpen its competitive edge. All these make it safe to conclude that the competitiveness of Hong Kong's port is not expected to be weakened in the near future.

Considering the boom of the container throughput in the PRD, it is vital for the ports in this region to have berth and other facilities up to standard to play a significant role in promoting the regional economic development. Since the ports are close to each other geographically and have joint economic hinterland and water/land transport support system, the regional linkage should be the first concern of each component of the port system. The function of the port complex should be adjusted in accordance with its position in the national or even global context while the cargo volume should be estimated and designed in the perspective of the whole region or major transport corridors instead of each single port. Cooperation should be carried out between the port system as a whole and shipping lines and agents beyond the region for possible alliances to maximize the utilization rate of facilities and to minimize cost of the customers and themselves by joint capital allocation, joint marketing and market sharing. The rate standard and the internal labour division need be coordinated and the information, logistical facilities and technical training should be shared, too.

As to the PRD, such alliance may be developed between Shenzhen and Hong Kong, which is the overture of the Hong Kong-Shenzhen international hub. In order to alleviate the adverse effect such as traffic congestion in Hong Kong and on the Shenzhen-Hong Kong border due to the "over-successfulness" of the Hong Kong port, rather than to develop more container berths, Hong Kong should continue to capitalize on its expertise in managing and operation ports by "exporting" its skills to ports such as Yantian, Shekou and even Gaolan. By doing so, the dispersed distribution of cargo volume will relieve Hong Kong from too much pressure while making it possible for the PRD's port complex including Shenzhen to approach the level of Hong Kong in operation and management in the long term. In contrast to the significant growth of Guangzhou Port and Shenzhen Harbour in the central and eastern parts of the

PRD, no port is competitive enough in the west. Such a situation is expected to change through the emergence of a certain hub in the west PRD, although it is not clear which port or ports will be responsible for that.

Coordination of Airport Development

The PRD boasts of huge capacity of handling both passenger and freight air traffic. At present, five large-scale international airports, i.e., the Hong Kong Chek Lap Kok Airport, Guangzhou Baiyun (the third largest airport in mainland China), Shenzhen Huangtian (the fourth largest in the Mainland China), Zhuhai Airport and Macao Airport are in operation in the area. The Guangzhou new international airport is presently under construction. The initial planned capacity of Chek Lap Kok Airport, which started operation on July 6, 1998, is 90 million passengers and 4 million tonnes of cargoes per annum. Extension of the airport facilities is now underway. The airport freight village is under construction and projects such as the second passenger terminal and the convention centre as well as the logistical management centre is expected to commence soon (*Yangcheng Daily*, 2001). By attracting more export/import traders and residents from the PRD to utilize these facilities, the freight and passenger handling capacity of the Hong Kong new airport will expand significantly. Located at where Baiyun District adjoins the Huadu District, the Guangzhou new international airport is planned to handle 80 million passengers and 2.5 million tonnes of cargoes per annum in the long term. Similarly, the Shenzhen Airport will be able to handle 25 million passengers per annum at most; the maximum planned capacity of Zhuhai Airport is 12 million per annum while that of Macao Airport is 6 million. The maximum passenger handling capacities of the airports in this region, therefore, add up to 210 million per annum. Compared with the estimated population of the region, i.e., 60 to 70 million in 2020, such capacity seems quite high.

According to some researchers, the coordination of the airport development in this region has not been successful (Zheng, 1990). This chapter argues, however, that the current situation has made it possible for the airports in this region to share passenger/freight resources so as to set off a new round of coordination.

Table 12.1 *Passengers and Cargoes Handled by the Major Airports in the Pearl River Delta-Hong Kong-Macao Region, 1998-2000*

Airports in the PRD region	Passengers handled (10,000 person times)			Cargoes handled (10,000 tons)		
	1998	1999	2000	1998	1999	2000
Hong Kong	3,260.00	3,380.00	n.a.	162.55	197.60	220.00
Macao	221.80	264.00	323.94	6.31	5.30	6.81
Guangzhou	1,241.24	1,189.93	1,300.00	40.76	44.81	50.00
Shenzhen	515.04	524.63	n.a.	11.47	15.46	n.a.
Zhuhai	71.32	57.85	n.a.	1.17	1.00	n.a.

Source *Hong Kong Economic Yearbook, 2000, Guangdong Yearbook, 1999, 2000, The website of Macao International Airport (n a data is unavailable)*

Table 12.1 shows that except for Zhuhai Airport, in which the volume of passenger/cargo traffic dropped in 1998 - 1999 period, all the other airports in the PRD region have witnessed traffic increase in recent years. As to passengers handled, Macao Airport has grown rapidly since its passengers volume in 1999 is 19 percent higher than 1998, and that of 2000 is 22.7 percent higher than the 1999 figure. In 2000, the passengers of Guangzhou Baiyun Airport increased by 9.3 percent over 1999. In 1999, Chek Lap Kok Airport saw an increase of 3.7 percent over 1998 and Shenzhen Airport experienced an increase of 1.9 percent. The volume of freight handled by the above-mentioned airports has increased at even higher rate. In 1999, the cargo volume of Shenzhen Airport increased by 34.8 percent over 1998. In 2000, the cargoes handled by Macao Airport increased by 28.5 percent over 1999. The cargoes volume of Chek Lap Kok Airport in 1999 is 21.6 percent higher than 1998, and that of 2000 is 11.3 percent higher than the 1999 figure. In 1999, Guangzhou Baiyun Airport saw an increase of 10 percent over 1998, and 2000 saw an increase of about 12 percent over the 1999 figure. The growth of the cargoes handled by the major airports except Zhuhai merits attention. It is foreseeable the majority of cargo traffic will be accomplished via air transportation. The fact that Hong Kong, Guangzhou, Shenzhen and even Zhuhai all attempt to be the logistics centre and are planning their own airports based on this objective may imply that a time of fierce competition might be on the horizon. Coordination of airport development in this region appears now to require a sense of elevated urgency.

Hong Kong New Airport. To enhance the role of Hong Kong as an international and regional centre for air transportation is one of the strategic objectives of the Hong Kong authority. The Hong Kong government is also devoted to enhancing the role of Hong Kong as the business and logistics centre in Asia with the support of the Chek Lap Kok (CLK) Airport, one of the busiest airports in the world. To become a logistics centre, Hong Kong has to further improve its air transportation. Thus it is suggested that more cooperation between Hong Kong and the airports in the PRD is needed to form a more rational transportation network. The fiercest competition facing CLK Airport may come from Guangzhou. When Guangzhou develops into one of the three hubs in China, part of the entrepot activities that used to concentrate on Hong Kong airport may shift to Guangzhou, enabling the Guangzhou new airport to rival Hong Kong in scale and potential in the future. It is undeniable, however, that CLK Airport is attractive to passengers from Guangzhou, Shenzhen, Zhuhai and Macao at present, and many international passengers to the above-mentioned cities/regions are expected to arrive via the CLK Airport. Given the very high, planned capacity of the new airport at CLK (90 million passengers per annum, which would be in excess of Hong Kong's own needs), there is a need to enhance the capacity of all forms of transport connections from the airport to the above new links to the rest of the PRD region (Planning Department, 1996). That is why the prospect of the shortcut sea bridges in this region merits special notice here. Three proposals for shortcut sea bridges, i.e., the Lingdingyang Bridge, the Hong Kong-Macao Bridge and the bridge linking Hong Kong, Zhuhai and Macao integrating with a mega-port are currently under consideration (*Guangzhou Daily*, 2001a). When the plans (especially the third proposal) come true, it will be practically more convenient for the passengers to and from Macao and Zhuhai to use the Chek Lap Kok Airport.

Guangzhou New Airport. With the introduction of hub-and-spoke into the air transportation in Mainland China, Guangzhou new international airport will connect with Beijing and Shanghai (*Guangzhou Daily*, 2001b). Guangzhou's new international airport will mainly function as the transfer centre between domestic and international lines toward the long-term goal of international hub.⁹ Now a considerable amount of passengers leave Hong Kong and Macao for Guangzhou and then depart from the Guangzhou Airport for their destinations. Guangzhou Airport is also attractive to some passengers departing Shenzhen and Zhuhai for destinations at home and abroad. With the completion of the new airport, especially the expressway and the light rail

connecting the city area with the airport, more passengers may be attracted.

When Guangzhou's new airport is in operation, large-scale freight planes will be in service and more international lines will be developed. As the distributing centre of the cargoes from Central and South China, Guangzhou will witness considerable increase in cargo volume. Guangzhou has expressed concern to develop trading and logistics centre by taking advantage of its transport network, especially its new airport. It will be a wise choice for Guangzhou to expand its market abroad with the help of Hong Kong in developing its logistics industry.

Shenzhen Airport. Shenzhen Airport is somewhat peculiar in its relationship with neighboring airports. On one hand, it is difficult for Shenzhen Airport to share passenger resources with Guangzhou. In spite of the Guangzhou-Shenzhen Expressway and Huangtian Airport-Jihe Expressway that make the Shenzhen Airport more accessible to Guangzhou, passengers from Guangzhou are hardly attracted to Shenzhen Airport and it is not so possible for those whose destination is Guangzhou to arrive via the Shenzhen Airport. With the Guangzhou new international airport, Shenzhen Airport will have little chance in attracting passengers from Guangzhou. On the other hand, Shenzhen Airport is able to divert part of the passengers from Hong Kong and Macao. Therefore, in order to reduce restrictions on the right of navigation of Shenzhen Airport, Shenzhen Airport should enhance cooperation with Hong Kong and Macao airports in resources sharing. Progress has been made in this aspect. Ferry shuttle service will soon be able to ensure passenger a speedy and comfortable tour between Shenzhen and the CLK Airport. Similar express service is also being planned between the two airports to transfer air cargoes for sea transportation. 900,000 square metres logistics park will also be developed in the Shenzhen Airport, where the value-added services will be provided from cargo transportation, warehousing, customs clearance to distribution, commodity inspection and simple processing.

Airports of Zhuhai and Macao. The passenger volume handled by Zhuhai Airport in 1999 is less than 5 percent of its planned capacity. Facing such a low volume, top priority should be given to attracting more passengers by Zhuhai Airport. Yet due to the locational characteristics, it is comparatively difficult for Zhuhai Airport to attract passengers from Hong Kong and Macao. The prospect of Guangzhou new airport to become one of the hubs in Mainland China may somewhat improve the situation of Zhuhai by increasing the scheduled flights in Zhuhai Airport. Cooperating with Guangzhou will be vital

to Zhuhai Airport in the future. More cooperation and coordination is needed between Zhuhai and Hong Kong-Macao, too. It has been realized that even after the operation of the CLK Airport, the Macao Airport is able to attract some inbound and outbound passengers from Hong Kong and some international passengers to Hong Kong. Importance has been attached to improving the functions of both Zhuhai and Macao airports by developing special transport links jointly.

Zhuhai Airport is now aiming at becoming the regional hub for cargo air traffic in South China. To attain this goal, the major advantages of Zhuhai are the advanced airport facilities such as airport parking lots and runways as well as the sufficient land (50 square kilometres) for freight village development. The improvement of the expressway network in the western PRD region will facilitate the support of air transport by land transportation links, which will help to bring about changes in the airport development of Zhuhai. However, it is the general level of the economic growth and the transport improvement of the western PRD region (the cross-border shortcut sea bridges included) that will most likely determine the fate of Zhuhai as a potential transportation hub.

Improving The Land Transport Network

The PRD will mainly be connected by highway systems with other parts of the province. Within the PRD, based on the framework constituted by the crisscross grids, beltways and radial roads will be added to form a multi-functional highway system. All prefecture-level cities will have access to expressways and the major ports, airports and railway terminals will be linked by expressways or freeways. Key towns will have access to first-grade highways or trunk roads; general towns have access to second-grade highways while certain towns in the peripheral regions to third-grade highways. The expressways planned in the near future include the Guangzhou-Shaoguan Expressway and Guangzhou-Qingyuan Expressway to be completed by the end of 2001, the Shenzhen-Heyuan Expressway, Puning-Meizhou Expressway, the Western Coastal Expressway and the expressway from Guangzhou to Zhanjiang by the end of 2003 and the expressway from Guangzhou to Yunfu by the end of 2005. It is estimated that by 2010, the length of the highways will reach 33,000 kilometres including over 1,583-kilometres expressway and 3,500-kilometres first-grade highways. An expressway network connecting the PRD with the east and west wings and the northern parts of the province will come into being (Guangdong Transport Bureau, 1998).

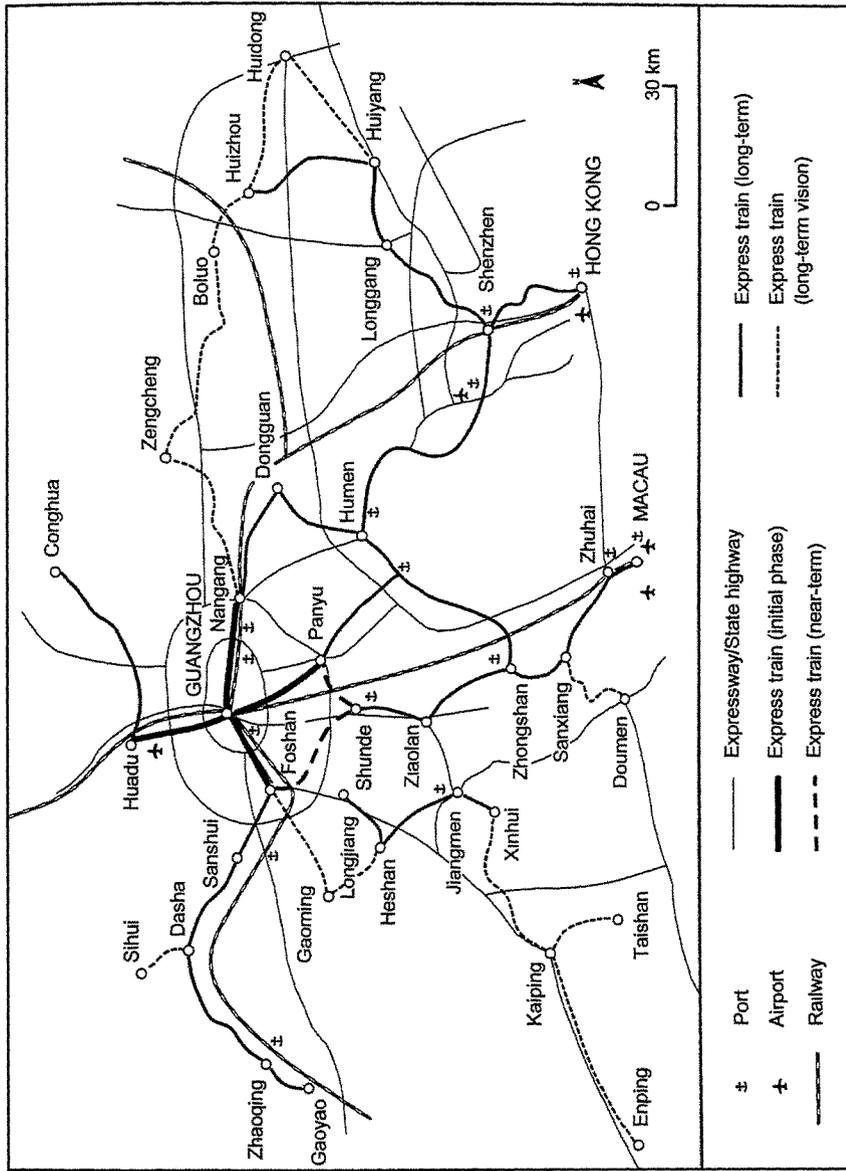


Figure 12.2 A Bold Vision into the Long-range Integrated Transport Network of the Pearl River Delta-Hong Kong-Macao Region

Meanwhile, the intercity rapid railway transit network will be developed in the PRD step by step. With Guangzhou (Foshan), Shenzhen (Hong Kong) and Zhuhai (Macao) as the nodes while the Guangzhou-Shenzhen and Guangzhou-Zhuhai economic corridors as the axes, the A-shaped network will benefit the whole PRD including Zhaoqing, Jiangmen, Huizhou, Zhongshan and Dongguan. Figure 12.2 shows a bold vision into the long-range integrated transport network of the PRD-Hong Kong-Macao region based on the highway systems and rapid railway networks.

As to the major passes across the Shenzhen-Hong Kong border, there are four now in operation, of which Huanggang pass is the busiest one. According to the statistics of 1998, 66 percent of the cross-border vehicles were handled by Huanggang pass. Tremendous volume of cross-border traffic has posed great pressure on both the facilities and the city environment. It is expected that the West Corridor between Hong Kong and Shenzhen may play a positive role in alleviating congestion of the existing passes. In addition, measures should be taken to divert at least part of the cross border vehicles to Shenzhen port instead of concentrating on the land passes (Zhang, 1999).

CONCLUSION AND DISCUSSION

More competitive regional economies are closely linked with more competitive regional transport network. To establish a cross-border integrated transport network is a strategy of the PRD-Hong Kong-Macao region to meet the "external" need of steady economic development and the "internal" demand of transport network itself. To achieve this goal, first of all, the network of each transport means has to be significantly improved, based on which an integrated multifunctional transportation network will come into being with the highway as the pillar, railway as the framework and the major port and airports as the hubs. It will be a challenging task to integrate the transportation network in the real sense, which requires the establishment of cooperation and coordination systems in the fields of transport economy, transport technology and operation process. And to the PRD-Hong Kong-Macao region, the cross-border transportation links and transportation coordination issues are of great importance. It seems that the author discuss the two questions separately, i.e., the improvement of the transportation network within the PRD and the establishment of the cross-border network, especially the coordination on major infrastructure construction. In fact, these should be parallel concerns of the region, which usually require simultaneous considerations.

More theoretical and practical researches are needed to cover the organizational or governance aspect of the problem of cross-border transport integration. First, in an increasingly globalized world, local/regional economies are based on an international division of labour. For many regions including Hong Kong, this may mean more dependency on the global trends and economic insecurity. Against the backdrop of technologies and organizational forms that increasingly diminish the fixity of borders and the ability of authorities to screen information and resource flows, and against political pressures for open markets, it is a significant challenge for the PRD to choose to establish more extensive and intensive transport links with Hong Kong and Macao to make it more open to the outside world. What would be the appropriate regional mix and distribution of transportation resources? Will there be a need to change the organizational frameworks to make this possible? What governance frameworks would be favoured by the developing alliances in the PRD-Hong Kong-Macao region? These questions need to be addressed in further studies.

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Environment

Chapter 13

An Overview of Environmental Protection in Guangdong Province

CHEN Min

INTRODUCTION

Guangdong Province is situated in southern China, surrounded on one side by its neighbouring provinces: Fujian to its east, Jiangxi to its north and Hunan to its west; and on the other, by the South China Sea to its south. The Qiongzhou Peninsula extends from the southwestern region of Guangdong Province to face the provincial island of Hainan. Guangdong is in the subtropical region, with the Tropic of Cancer running midway across its land area, with its weather characterized by relatively high temperature, high level of humidity and rainfall throughout the year.

Guangdong has a total land area of 178,000 square kilometres (equivalent to 1.85 percent of China's total land area). The province has a coastal line of about 3,368.10 kilometres in length, along which there are a total of 759 outlying islands (excluding Macao and Hong Kong). The water system of Guangdong comprises of mainly the Zhujiang (Pearl River) river system consisting of Dongjiang, Beijiang and Xijiang as its components; the other major river system, comprising of Hanjiang, Rongjiang, Moyang Jiang and Jianjiang, runs on its own in the eastern and western region of Guangdong.

Guangdong's gross domestic products (GDP) ranks among the top in the country, with the provincial economy growing at an annual rate of over 10 percent in recent years.

THE ENVIRONMENTAL PROTECTION ADMINISTRATION

The environmental protection administration of Guangdong Province was established in 1973. At present, environmental protection agencies (Environmental Protection Bureaux, EPBs) are set up at all administrative levels (provincial, municipal and county) of the People's Government. EPBs (at all administrative levels) are placed under the direct leadership of the corresponding levels of the People's Government, while internally EPBs operate in a professional supervisory system. An institutional framework

of environmental management, environmental supervisory testing, supervisory management, scientific research and education has been established in the entire province.

Statistics show that within the province, there are 132 Environmental Protection Bureaux (EPBs), 122 Environmental Monitoring Stations (EMS), 118 Environmental Administration Offices (EAOs) and 18 Institutes of Environmental Scientific Research within the provincial Environmental Protection Administration — a system of environmental protection agencies with a staff of 6,932, among whom 46.1 percent are engaged in scientific research.

THE STATE OF ENVIRONMENTAL PROTECTION ACTIVITIES

In the past two decades, the environmental protection activities in the Guangdong Province have two major focuses, namely industrial pollution prevention and remedy, and urban environmental management.

Industrial Pollution Prevention and Remedy

Through industrial policymaking, we streamlined the structure of industries and products and introduced improved industrial technologies, and in so doing combed out those industrial processes and equipment that were highly energy-intensive and heavily-polluting. We have also put forward the regulation of “Environmental Impact Assessment” (EIA) for construction projects, implemented the “Three Synchronizations” system, levied “Discharge Fees” on polluters for excessive pollution, and enforced the regulation of “Treatment of Pollution by Deadline” as well as the regulation of “Discharge Certificates”. All these measures have proved to be effective policy tools of industrial pollution prevention and remedy.

Through our continuous efforts, sewage treatment in Guangdong Province has been increased from 40.0 percent in 1990 to 89.3 percent in 1998, which was above the national average of 88.2 percent. Industrial exhaust treatment reached 89.26 percent in 1998. While for industrial solid waste, comprehensive treatment and utilization stood at 78.22 percent and 65.58 percent respectively — the latter was also above the national average of 44.4 percent.

Urban Environmental Management

We have fully implemented comprehensive urban environmental management, and have set objectives of comprehensive environmental remedy for every term of the administration at all levels of the government. Since 1990, we have put in place an evaluation system for assessing the effectiveness of the comprehensive urban environmental management system and of the objective-setting mechanism of the comprehensive environmental remedy for every term of the administration. A set of more than twenty indicators, grouped under four categories namely *environmental quality*, *pollution prevention and remedy*, *environmental construction* and *environmental management*, form the basis of the evaluation and ranking system. Such an evaluation process has effectively promoted the construction of urban environmental infrastructure in many cities and retarded the trend towards urban environmental deterioration.

In the meantime, campaigns on proactively building environmental model cities and healthy cities, such as the “Nanyue Cup” and “Lingnan Cup” competitions (which emphasize the use of urban-rural city planning in achieving environmental standards), have all contributed to the improvement of the urban environment in most of the cities in Guangdong. Among cities with exceptional environmental achievement, Zhuhai and Foshan were awarded by the United Nations “The 1998 Dubai International Award for Best Practices in Improving the Living Environment”. Moreover, in 1997, Zhuhai and Shenzhen were included among the first batch of “The National Environmental Protection Model City” programme. Zhongshan was listed in this list of honour in 1998. In short, Shenzhen, Zhuhai, Foshan and Zhongshan had all been honoured as “National Clean Cities”.

MAJOR EXISTING PROBLEMS

Although some progress has been made in the environmental protection of Guangdong Province as described, a series of severe environmental challenges are still facing Guangdong Province amid the province’s ongoing socio-economic development. At present the major environmental problems facing Guangdong Province are:

1. **The water pollution problem is getting worse.** Domestic sewage has become the major source of river water pollution in the urban areas; the adverse impact of industrial waste water has also remained significant. Portable water sources are polluted and water shortage due to deterioration in water quality has become more evident.

2. **The urban air quality is also deteriorating.** At present, the urban air pollution is mainly originating from emissions of air pollutants by vehicles. Air pollution due to the presence of nitrogen dioxide (NO₂) has become increasingly severe among the cities in the Pearl River Delta region. Other air pollutants such as sulphur dioxide (SO₂) and TSP have also been observed at alarmingly high levels.
3. **Acid rain pollution has become more acute.** The frequency of acid rain occurrence in the province is recorded at around 50 percent; the control zones for acid rain are now covering up to 63 percent of the total land area of the province.
4. **Noise pollution has severely impacted the residents in cities and towns.** Noise pollution is worse during the night-time than during the day-time, with restaurants and entertainment businesses as the main sources of noise pollution that cause nuisances to urban residents.
5. **The solid waste pollution has turned into a serious problem that requires an urgent solution.** In 1998 alone, the total volume of solid wastes stood at 27.97 million tonnes, 10.25 million tonnes of which were domestic solid wastes, while another 588,000 tonnes were industrial solid wastes. The intensity and extent of how solid wastes can be further recycled, reduced and made innocuous should be enhanced to a greater degree.
6. **Environmental pollution extends from the urban areas to the countryside.** With the rapid development of rural-township enterprises, the application of chemical fertilizers and pesticides at a massive scale and the booming of the farming industry, the ecology and the environment of the rural villages have become seriously polluted as a result.
7. **Marine resources near the coastal areas in the province are rapidly deteriorating.** The damages are due primarily to the shortsightedness inherent in human activities such as over-fishing and excessive land reclamation along the coast. Increase in the discharge of land-based pollutants into the ocean and the high-density marine aqua-culture have intensified the problem of oceanic eutrophication — a major factor contributing to the increasingly frequent occurrence of red tides in recent years, and hence the subsequent environmental damages.

OBJECTIVES AND STRATEGIES

Based on the actual conditions in Guangdong Province, the control over environmental pollution, the enhancement of environmental quality, the maintenance of biodiversity, as well as the insistence on achieving sustainable development are among the major operational objectives/aims of environmental protection for Guangdong Province. We are determined to achieve the target of significantly improving the overall environmental quality in the province by 2010. In achieving the objectives of environmental protection as mentioned above, our corresponding policies and strategies will focus on the following areas:

- 1. Strengthening macro-level control to achieve the strategic goal of Sustainable Development.**
- 2. Establishing and improving the following institutional apparatuses:**
 - **Comprehensive policymaking;**
 - **Supervisory management and management with joint efforts;**
 - **Investment in environmental improvement, and**
 - **Public participation.**

Environmental protection should be a formal element in macro-level policymaking. In general, the programmes and campaigns for environmental protection should be integrated into the socio-economic developmental planning process. More specifically, however, environmental impact assessment and evaluation should be among the essential components of policy concerns in important economic and technological planning, regional development, industrial restructuring, etc.

It is imperative to establish an integrated, operational framework in which the supervisory management of the various administrative units of environmental protection, the division of labour among them as well as public participation by society can be unified and better coordinated under the direct leadership of the Communist Party-led government, coupled with supervision by the National People's Congress (NPC) as well as inspection by members of the Chinese People's Political Consultative Conference (CPPCC).

- 0 Equally important, a multi-channelled investment mechanism should be set up to capture public financial credit, business investment, foreign capital as well as other sources of funding from society in financing the necessary investment in environmental protection. A public participation mechanism, based upon reporting, public hearing and Environmental Impact Assessment (EIA), should be further improved in order to maximize the social supervisory roles of public opinion as well as that of the mass media.
3. **Intensifying the degrees of the essential work such as environmental legislation, public education, science and technology, as well as investment.** Legislation in environmental protection laws and regulations should be further strengthened, with more emphasis put on the governance by laws and respective law enforcement and supervision. The research and development in environmental technologies should also be intensified; so are the subsequent transformation, dispersion and application of these technologies. Education aimed at enhancing public awareness on the environment, particularly public education focusing on primary, secondary and university students, should be strengthened.
 4. **Enhancing the intensity of the “one kind of control for achieving two sets of targets”, via the control over the aggregate pollutant discharges, is necessary. This will help ensure that the levels of industrial pollutant discharge, on one hand, and the levels of air and water quality by functional zones in key cities, on the other, can be simultaneously controlled and achieved within the prescribed targets.**

In order to fulfill successfully the “one kind of control for achieving two sets of targets” system, it is essential to designate such a system as the goal for every term of the administration, and to facilitate the implementation of such system at both the regional and municipal level. This system should also be applied to enterprises, and is to be supplemented by operational arrangement and supervisory inspection.

Based on the aggregate requirement of pollution control, the execution of construction environmental management system requires strict control of new project appraisal, the aims of which include non-pollution in increased production, or better still, reduced pollution with increased production. Stricter measures are also required for the remedy of long-existing pollution sources, with the aims of eliminating the technologies

and uses of equipment which are lagging behind in terms of environmental standards, as well as of facilitating economic policymaking in pursuit of discharge standard fulfillment by the intensified “pollution remedy by deadlines” mechanism.

5. **Promoting and implementing the “Clean Water Project” and the “Blue Sky Project” as means to enhancing both the water and air quality in the Guangdong Province.**
6. **Further enhancing the protection of ecological environment by emphasizing the two policy objectives of pollution control and ecological protection.** As such, relevant policy areas such as the requirement for environmental impact assessment for development in natural resource and river-flow systems, the monitoring and alert systems for the “Ecologically Significant Sites”, the supervisory management of natural protection areas as well as the environmental protection in rural villages should be strengthened.
7. **Continuing and expanding international cooperation in environmental protection, through both bilateral and multilateral mechanisms, for the facilitation of foreign capital investment and the exchange and transfer of environmental technologies.**

Chapter 14

Fighting Air Pollution in Hong Kong

Thomas CHOW

INTRODUCTION

Hong Kong is facing two air pollution problems. The first is an acute air pollution problem at the street level, which is caused by the intensive use of vehicles in Hong Kong. Diesel vehicles are the main cause because of their considerable emissions of particulates and nitrogen oxides and their heavy usage. In Hong Kong, diesel vehicles constitute 30 percent of all vehicles whereas in Singapore the corresponding figure is 17 percent, 10 percent in the UK and 4 percent in the USA. Moreover, diesel vehicles account for about 70 percent of all vehicle miles driven in Hong Kong. Thus reducing emissions from diesel vehicles is our primary target for action.

Apart from the roadside air pollution problem, we also have a highly visible general air quality problem, which is largely caused by emission sources in Hong Kong but is also affected by regional air quality.

Let us take a look at the general picture on air quality and the air pollutants that affect us most.

AIR QUALITY AND AIR POLLUTANTS IN HONG KONG: AN OVERVIEW

In Hong Kong, Air Quality Objectives have been set for seven principal air pollutants to gauge our air quality. Our target is to ensure that concentrations of all these principal air pollutants in the air do not exceed the Air Quality Objectives.

At present, we have high concentrations of respirable suspended particulates and nitrogen dioxide in the air, which always breach the Air Quality Objectives. The concentrations of ozone are also on a steadily rising trend.

Vehicle emissions are the major source of respirable suspended particulates and nitrogen oxides in the urban area. We need to reduce vehicle emissions to bring these pollutants to lower levels. To reduce ozone, we need to decrease

nitrogen oxides and volatile organic compound emissions in both Hong Kong and the region through joint efforts with the Guangdong authorities.

Our primary objective is to contain the level of all the principal air pollutants within the Air Quality Objectives. To achieve this, our first priority is to reduce emissions from vehicles. The Government has already derived a comprehensive programme to control vehicle emissions and set a target to reduce respirable suspended particulates and nitrogen oxides emissions from vehicles by 80 percent and 30 percent respectively by the end of 2005. I will talk about measures to deal with vehicle emissions later. As Hong Kong is affected by the regional air quality, we also see the need to address the regional air pollution problem in the longer term.

The Government is implementing measures to reduce vehicle emissions at all possible fronts. Let me highlight our strategies and the major programmes that are being implemented:

- a) We are actively looking for practicable cleaner alternatives that can replace diesel vehicles. Following the successful introduction of LPG taxis, we have started a trial of alternative-fuelled light buses;
- b) We have a standing policy of introducing higher vehicle emission standards and fuel quality that are viable. We have been upgrading our vehicle emission standards progressively since 1995. The more stringent Euro III emission standards was implemented from January 2001 and the fuel quality will be upgraded at the same time;
- c) Programmes have been derived to retrofit in-use older vehicles with practicable mitigation measures. To reduce particulate emissions from older vehicles, we have assisted pre-Euro light diesel vehicle owners to retrofit their vehicles with particulate trap in 2000. A trial of diesel catalysts for heavy diesel vehicles has also started in 2000. Subject to satisfactory results of the trial, we will provide financial assistance to owners of such vehicles for installation of catalysts;
- d) We have been promoting better vehicle maintenance to reduce emissions. We have set up a working group in 2000 with representatives from the vehicle maintenance trade, professional bodies and government departments to look into measures that could help improve the standards of vehicle repairers;

- e) Enhanced inspection programme and enforcement: starting from October 2000, all commercial vehicles will have to undergo a more thorough smoke test during their annual inspection. The Police and the Environmental Protection Department will step up their programmes to control smoky vehicles. The legislation to increase the fixed penalty for smoky vehicles from HK\$450 to HK\$1,000 was passed by the Legislative Council in May 2001; and
- f) Better transport planning: we see the need to have better coordination between transport and land use planning to reduce the need to travel. We will accord priority to railway as backbone of our public transport services to reduce the pressure on road traffic.

Let me turn to the regional air quality issue.

REGIONAL AIR QUALITY ISSUE

The continuing development and urbanization of Hong Kong and Guangdong are putting pressure on the air quality in the Pearl River Delta Region. Both Hong Kong and Guangdong sides recognize that joint efforts are required to deal with the cross-boundary pollution problem.

A Hong Kong-Guangdong Environmental Protection Liaison Group has been established since 1990 to coordinate joint efforts to tackle regional pollution. The HKSAR Government and the Guangdong Government have already started a joint study into the air pollution of the Pearl River Delta Region and the control measures needed.

The objectives of the joint study are to identify air pollution problems in the Pearl River Delta Region, to project air quality trend in the future and to recommend feasible joint control measures.

The study area will cover the whole Pearl River Delta Region including Hong Kong. The Hong Kong and Guangdong side divide their work based on their main concerns: Hong Kong will investigate air pollution from motor vehicles (specifically on nitrogen dioxide, photochemical smog and particulates) which threatens health while Guangdong will look into acid rain which is affecting farming and other activities in the province.

The study involves sharing of air quality data, joint measurements of air quality at different locations and gathering of relevant data, such as distribution

of transport networks and industry. With all the information, we will project air quality trend in the future and recommend pollution prevention and control options. The study is scheduled for completion in early 2002.

WORKING TOGETHER TO SOLVE THE AIR POLLUTION IN HONG KONG

While the government is the primary agency to implement measures to clean up our air, we cannot achieve our goals without the support from the community. We are glad to see that people nowadays are more aware of the air pollution problems we are facing and in general supportive of our control programmes. However, it should be emphasized that in eradicating our air pollution problems, all of us should be prepared to accept changes and the costs for implementing measures.

It is pleased to see that partnerships have been developed in dealing with air pollution problems. Examples include the LPG taxi scheme and the trial of alternative-fuelled light buses, where the transport trade and the Government have been working in close partnerships to put forward measures to reduce air pollution.

As discussed above, we need joint efforts in partnership with various sectors in the community to help clean the air. If you are engaged in the transport sector, you can help by:

- a) Using cleaner transport technologies;
- b) Regularly maintaining your vehicles, which is a very effective way to reduce their emissions;
- c) Retrofitting in-use vehicles with mitigation measures such as particulate traps and diesel catalysts;
- d) Phasing out those older vehicles by newer ones which have higher emission standards;
- e) Training drivers on eco-driving habits; and
- f) Not using illegal fuel that will increase emissions.

If you are engaged in the industrial sector, you can help by:

- a) Using cleaner fuel such as gas as far as practicable;
- b) Conserving energy;

- c) Adopting less polluting processes;
- d) Reducing emissions by installing control equipment; and
- e) Directing exhaust to locations where dispersion is good to prevent causing local air pollution problems.

If you work in the commercial sector, you can help by:

- a) Conserving energy and materials;
- b) Using energy efficient equipment;
- c) Planning routes to minimize delivery trips; and
- d) Minimizing travelling by using phone, fax, e-mail and teleconferencing.

As a citizen, you can help by:

- a) Avoiding driving as far as possible;
- b) Taking public transport;
- c) Planning ahead to minimize trips and mileage;
- d) Properly maintaining vehicles
- e) Switching off vehicles while stationary;
- f) Selecting energy efficient appliances; and
- g) Switching off unnecessary lighting and air-conditioning.

CONCLUSION

To conclude, fighting air pollution problems against the pressures of rising population, economic activity and demand for transport is one of the major challenges that Hong Kong has to face. But we are determined to overcome this challenge. We will continue our efforts and look forward to all sectors in the community joining in effective partnerships with the government to clean up Hong Kong's air. With your help, we would be destined for success.

Chapter 15

Photochemical Smog: An Air-Pollution Problem Requiring Regional Solutions

WANG Tao

INTRODUCTION

In the last 20 years, Hong Kong has experienced remarkable economic and urban expansions. Human population and vehicle number have increased substantially. During the same period, industrial and urban developments of unprecedented scales have been taking place in the surrounding Pearl River Delta (PRD) region. Accompanying these developments, photochemical smog — an air-pollution problem first discovered in Los Angeles some 50 years ago — has emerged to be a major health concern in the PRD region. Monitoring results in Hong Kong indicate that smog related pollutants — ozone (O₃) and nitrogen dioxide (NO₂) — have increased by about 45 percent to 85 percent during the past ten years and are now a principal cause of high Air Pollution Index in Hong Kong (EPD, 2001). This short chapter intends to give an introduction of ozone pollution and some research results on the problem in Hong Kong. The major point is to call for coordinated PRD efforts to tackle this regional-scale problem.

BACKGROUND ON OZONE POLLUTION

Ozone is a major gaseous pollutant in smog formed near major urban areas. As a very reactive gas, ozone can cause respiratory distress and diseases in human, reduce yields of agricultural crops and forests, and damage rubber products, plastics, and paints used outdoor. For these reasons, ozone concentrations near the ground level of the atmosphere are monitored and regulated by air pollution control authorities around the world.

Ozone pollution has some unique characteristics as compared to other conventional air pollution problems. Unlike sulphur dioxide, which is emitted directly from sources of emission, O₃ is produced by chemical reactions involving oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) (collectively called ozone precursors) in the presence of sunlight. NO_x is emitted primarily from high-temperature combustion processes such as those used in

power generating plants, industrial boilers, and vehicle engines. VOCs are released from more diverse sources including both man-made (e.g., vehicle exhaust and evaporation, and various industrial processes) as well as natural origins (trees and vegetation).

The physics and chemistry involved in O₃ formation and transport are very complex, involving the interaction of meteorology, precursor emissions, and atmospheric chemistry (National Research Council, 1991). In particular, the photochemical mechanism responsible for O₃ production is not “linear”, that is, the amount of ozone produced depends not only on the absolute concentrations of the precursor compounds but also on their relative abundance and chemical reactivity. This means that control strategies for a city may be different from the one with different emission and meteorology. In addition, because the chemistry that produces ozone in the atmosphere takes hours to reach its maximum strength, highest levels of ozone often occur downwind of the major urban centre where the precursors are emitted. Since ozone has a fairly long lifetime in the atmosphere, it can be transported to hundreds of kilometres and more, and causing pollution elsewhere. Owing to the regional nature of the problem, control efforts often have to be made across the political boundaries (National Research Council, 1991).

SOME RESULTS OF HONG KONG OZONE POLLUTION STUDIES

Ground-level O₃ concentrations in Hong Kong have been monitored by the HKSAR Government’s Environmental Protection Department (EPD) in a number of urban areas and also at two newly established suburban/rural sites (EPD, 2001). In addition, O₃ and related air pollutants have been measured at the Hong Kong Polytechnic University’s (PolyU) Atmospheric Research Station located at Hok Tsui on the Hong Kong Island (Wang *et al.* 1998; Wang *et al.* forthcoming). The PolyU station has objectives that are complementary to those of the EPD network and is aimed at monitoring air quality reflecting regional (i.e., background) conditions and at studying scientific issues related to atmospheric chemistry and climate change. In several research projects, the data recorded at the PolyU station has been integrated with the EPD database. By analyzing the combined data set, valuable insights have been gained on the sources of ozone pollution observed in Hong Kong. Some of the relevant results are given below.

1. Unlike most of the other pollutants, O₃ concentration is higher in suburban and rural areas (e. g., Tung Chung) than in urban centres (e.g., Sham Shui

Po), as illustrated in Table 15.1. This is due to the titration (loss) of ozone in high-emission areas ($O_3 + NO \rightarrow NO_2 + O_2$) and the production of ozone in downwind locations.

- Ozone levels are unevenly distributed around Hong Kong. In general, ozone pollution is more serious in the western and northwestern parts of the territory. This is due in part to the land and sea breezes and terrain-induced winds unique to western Hong Kong (Figure 15.1). The reversing wind can re-circulate photochemically “aged” plumes which are originated from the Hong Kong and Shenzhen urban centres. Case studies also show that pollution from the inner PRD can be transported to the western part of Hong Kong (Wang *et al.* 2000).

Table 15.1 Hourly Concentrations ($\mu g/m^3$) of Ozone in Various Locations of Hong Kong (1-hour standard=240)

Location	Highest	2 nd highest	3 rd highest	4 th highest
Central/Western	264	245	213	208
Eastern	130	129	120	107
Kwai Chung	180	152	144	137
Kwun Tong	125	122	120	116
Sham Shui Po	203	195	123	119
Tsuen Wan	201	183	162	161
Sha Tin	295	290	273	246
Tai Po	209	208	184	180
Tung Chung	335	311	281	278
Yuen Long	193	173	145	144
Tap Mun	294	284	284	269
Hok Tsui	270	263	256	251

Data source: HKEPD and PolyU

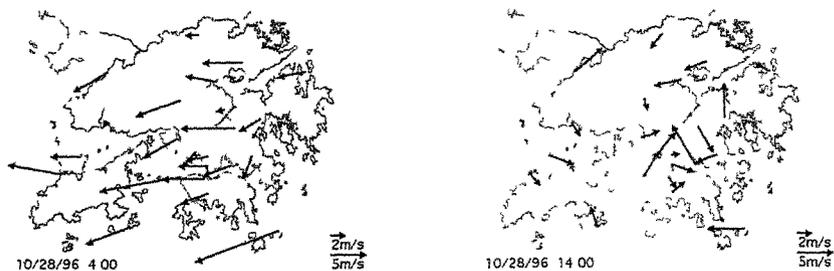


Figure 15.1 Land-Sea Breeze Circulation Showing Reversing Wind Directions in Western Hong Kong (O_3 Concentrations Reached $282 \mu g/m^3$ in Sha Lo Wan on Lantau Island)

3. Analysis of limited air quality data obtained from outside Hong Kong suggests that ozone pollution found in Hong Kong is not restricted to the territory, but is likely part of regional-scale pollution. Figure 15.2 shows the ozone distribution measured in 1994 on board from an instrumented research aircraft (EPD, 1996). The figure reveals that O_3 at over 100 ppbv ($\sim 200 \mu\text{g}/\text{m}^3$) was present over the Pearl Estuary.

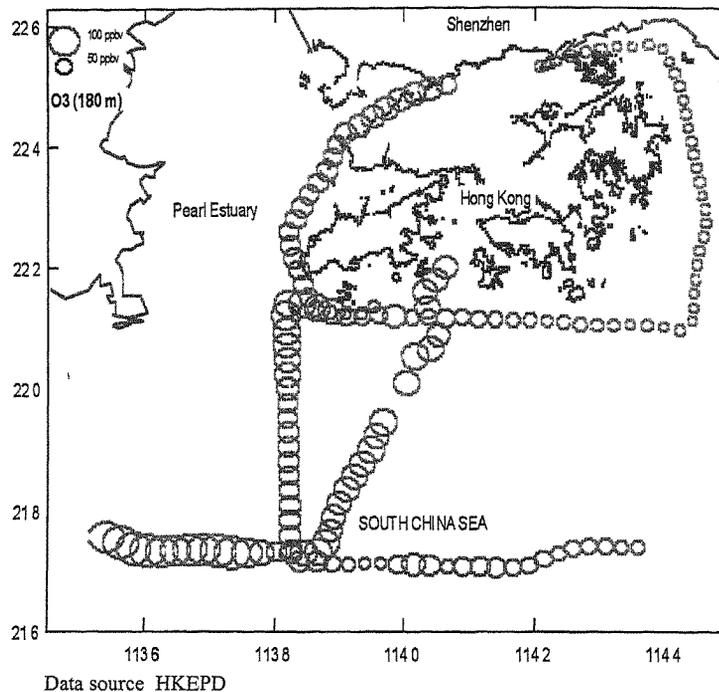


Figure 15.2 Aircraft Survey of Ozone Air Quality Over the Pearl Estuary and the South China Sea at 180 m Above Sea Level

4. As mentioned in the introduction, ozone can be transported over a distance of hundreds of kilometres and further. To understand the ozone problem in the PRD region it is important to know the contribution to the “background” ozone from distant northeast Asia. Analysis of the data from the PolyU background station shows that average ozone concentration in autumn background air already approaches half of the level set in the EPD Air Quality Objective (Wang *et al.* forthcoming). Thus local pollution needs only to add the other half to cause a violation of the standard.

THE NEED FOR REGIONAL SOLUTIONS

Although ozone pollution has now been recognized as a serious environmental problem in Hong Kong and the larger PRD region, our understanding of the issue is not enough to support the formulation of control strategies. Many policy-relevant scientific questions remain to be unanswered. For example, How does intercity transport of air pollution affect downwind cities in the region? What is the role of coastal meteorology in ozone formation and transport? Which are the most important chemical ingredients (ozone precursors) in O₃ production, and where (i.e., source region and sector) do they come from?

In order to address the complex issues of ozone pollution, coordinated multi-disciplinary efforts have to be undertaken. Given the regional nature of the problem, the PRD community needs to better integrate and utilize existing resources and technical expertise in universities, research institutions, and government agencies across the region. As a starting point, effective mechanisms must be set up for exchanging key environmental information, such as land-use, emission, air quality and weather data. These data are the critical input parameters for the state-of-the-art air quality models that are used for evaluating various control options. Close cooperation within the PRD community will also be essential in the implementation of abatement strategies.

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Chapter 16

Air Pollution Considerations in Town Planning in Hong Kong

Johnny C L CHAN, Andrew YS CHENG, LIU Heping and Andrew WALTON

INTRODUCTION

In Hong Kong and many places in the world, when one speaks of air pollution in a city, the focus is generally placed on the emission sources such as motor vehicles, factories, power plants and incinerator. And in the studies of air pollution, emphasis is often placed on the physical properties and chemical composition of the pollutants, e.g., size of the aerosols (total suspended particulates, respirable suspended particulates), different species of nitrous oxides, ozone, sulphates, etc. Such considerations therefore lead to proposals to mitigate the problems of air pollution that aim to (a) reduce the amount of emission such as filtering and scrubbing, and/or (b) change the chemical composition of the pollutants such as the use of alternate fuels (e.g., low-sulphur diesel).

While these solutions are important, one fundamental issue is often overlooked, which is the transport of pollutants. Such an issue is of particular importance to Hong Kong given its complex terrain and its nature as a coastal city, as well as its proximity to large industrial towns to the north. In the past, this issue had not been taken into consideration in town planning, which results in areas in Hong Kong that are severely polluted. These include not only notorious places such as Mongkok and Causeway Bay, but also in new towns such as Tung Chung and Tin Sui Wai (in the Yuen Long valley area) (Figure 16.1 for the location of these places).

Although much research has been carried out on the transport of pollutants within urban areas (e.g., Landsberg 1981), no such study has been done for the Hong Kong area until recently (Liu et al. 2001a). In this chapter, a summary of previous research of the authors will be presented to describe the various effects that can cause the transport of pollutants from either outside of or within Hong Kong. The discussion will go from the regional scale that include East Asia, to the local scale that focus on the transport within the territory, and then

to the urban scale by examining the transport within an idealized urban canyon. Based on these effects, a set of strategies is proposed that should be taken into considerations when planning any new development in Hong Kong. Without such considerations, any mitigation measures will not be completely effective.

REGIONAL EFFECTS

Chung et al. (1999, hereafter C99) studied the regional atmospheric flow conditions associated with high carbon monoxide (CO) episodes that occurred in 1994 at Cape D'Aguilar, which is at the southeastern tip of Hong Kong Island. Because this location is free from local traffic influences, high CO concentrations must be brought about by atmospheric transports from outside. A high CO concentration event was classified as an episode if the concentration of at least two consecutive hourly mean in a given month exceeded two standard deviations from the monthly mean. They found 20 such episodes in 1994, which can all be associated with one of four types of regional atmospheric flow patterns. Each of these will be described below.

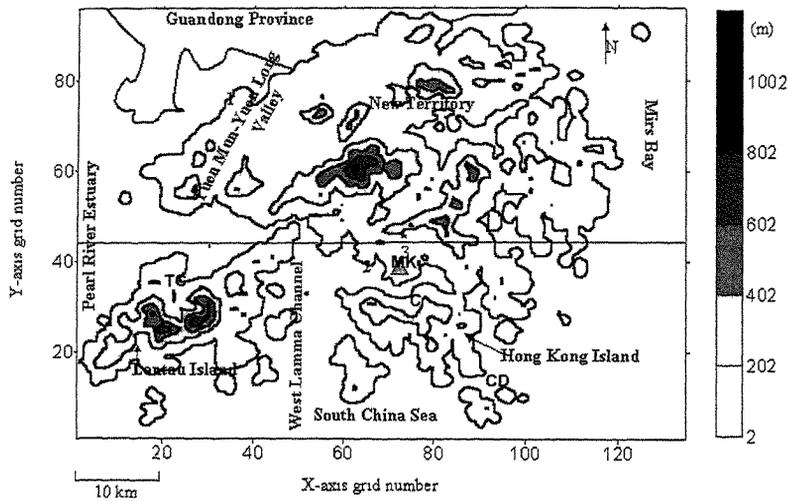


Figure 16.1 Map of Hong Kong Showing Height Contours and Name of Places Referred to in the Text. TC - Tung Chung, MK - Mongkok, C - Causeway Bay, CD - Cape D'Aguilar.

Continental High Pressure System

During the wintertime in Hong Kong, the mainland of China is generally dominated by a high-pressure system (Figure 16.2a). The clockwise flow associated with this system would then bring highly-polluted continental air to Hong Kong. Indeed, Chung et al. (1997, hereafter C97) computed the trajectories of air particles that reached Hong Kong during the high CO episodes and found that the air all came from the north (Figure 16.2b). Notice that in a few cases, even though the air originated from the East China Sea, it moved over the China mainland, and apparently collected more pollutants, before reaching Hong Kong. C99 also found that the winds in all such episodes were less than 5 m s⁻¹. The relatively light wind condition did not facilitate the dispersion of the pollutants once they reached Hong Kong and they are hence trapped.

Cold Front

Similar to the first category, air behind a cold front that often passes through Hong Kong in the wintertime is generally from the north and hence could also bring about a pollution episode (Figure 16.3a). Computations of the back trajectories (C97) show that for the high CO episodes, the air again originated from the mainland (Figure 16.3b). In some cases, the air actually moved down the Taiwan Strait before reaching Hong Kong. Apparently not much dilution occurs and the high CO content was still transported to Hong Kong.

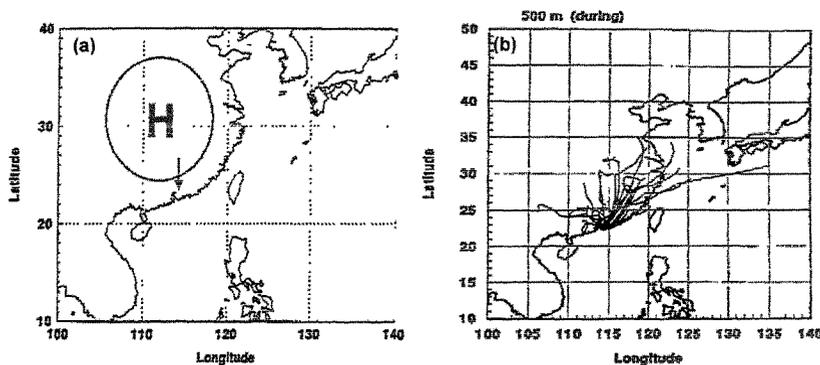


Figure 16.2 (a) Schematic Showing the Pressure Distribution Associated with a Continental High-pressure System. "H" Indicates the Centre of High Pressure and the Arrow the Wind Direction Near the Surface of the Earth.

Figure 16.2 (b) Trajectories of Air Parcels at 500 m Above Ground During Episodes of High CO Concentrations Associated with the Pressure Pattern in (a). Each Line Represents the Trajectory for One Episode.

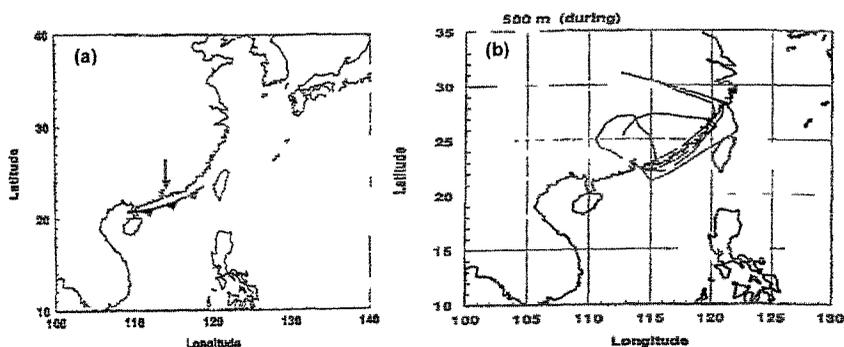


Figure 16.3 (a) Schematic Showing the Situation after the Passage of a Cold Front. The Curve with Triangles just off the South China Coast Indicates the Position of the Cold Front and the Arrow Indicates the Wind Direction near the Surface of the Earth

Figure 16.3 (b) As in Figure 16.2a Except for the Situation Depicted in Figure 16.3a

Low-pressure Trough

This situation is similar to the cold front case except that it generally occurs in the summer. The passage of low-pressure trough from the north causes the winds to change from southwesterly to northeasterly (Figure 16.4a), which again would bring polluted air from the north. However, the polluted air could also come from Indochina, as can be seen from the trajectories of the air particles (Figure 16.4b). Thus, during the passage of a low-pressure trough, a pollution episode could occur as a result of transport of pollutants either from the north or from the southwest.

Tropical Cyclone

In Asia, tropical cyclones (TCs) are commonly known as typhoons although technically speaking, the latter only refers to TCs with wind speeds exceeding 63 knots (32.5 m s⁻¹). The circulation associated with TCs is anti-clockwise in the Northern Hemisphere. Thus, when a TC approaches the coast of China, the atmospheric flow over the South China coast will be northerly or northeasterly (Figure 16.5a). Following the same reasoning, it is likely that polluted air from the north could be brought to Hong Kong, as can be seen from the computed trajectories of the air particles (Figure 16.5b). Note that in some cases, the airflow reversed in direction.

Clean-air Situations

C97 also examined situations in which the winds over Hong Kong were

consistently from the southwest to southeast. In these cases, the CO level recorded was much lower and comparable to those reported by Badr and Probert (1994) for oceanic background CO concentrations. Computations of the trajectories in these situations show that the air mostly originated from the ocean (Figure 16.6).

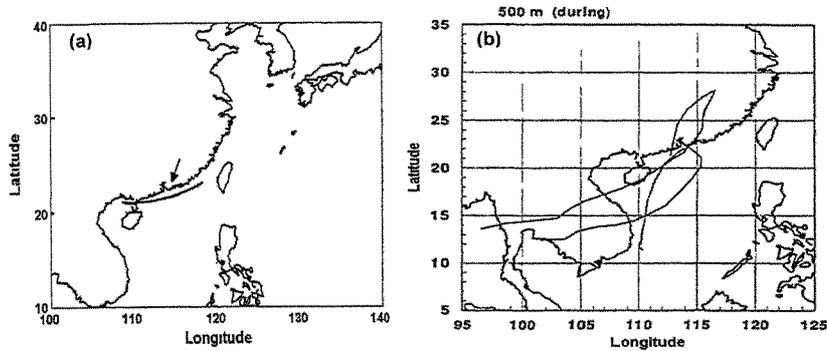


Figure 16 4 (a) Schematic Showing the Situation after the Passage of a Low-pressure Trough, Indicated by a Curve just off the South China Coast. The Arrow Indicates the Wind Direction Near the Surface of the Earth

Figure 16 4 (b) As in Figure 16 2a Except for the Situation Depicted in Figure 16 4a

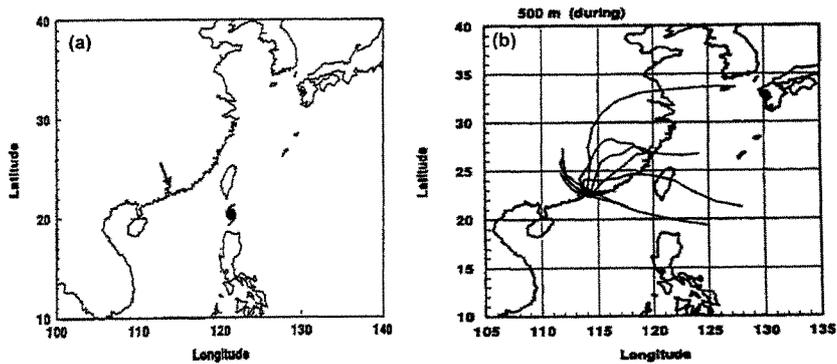


Figure 16 5 (a) Schematic Showing the Location of Tropical Cyclones Associated with High CO Concentrations in Hong Kong. The Blue Dot with Curves Represents the Position of the Tropical Cyclone and the Arrow Indicates the Wind Direction Near the Surface of the Earth

Figure 16 5 (b) As in Figure 16 2a Except for the Situation Depicted in Figure 16 5a

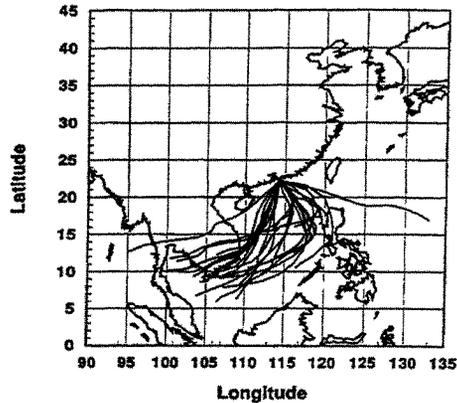


Figure 16.6 As in Figure 16.2(a) Except for the Clean-air Situations

Summary

The results presented here clearly indicate that pollution episodes do not have to develop within Hong Kong. Given the right atmospheric conditions, pollutants as far away as Indochina or central China can be transported to Hong Kong to cause severe pollution situations. Therefore, when understanding or predicting the occurrence of a pollution event, the atmospheric conditions over a large area must be examined.

LOCAL AIRFLOWS

In addition to the regional-scale airflow pattern, the local airflow must be studied in detail to determine whether an air pollution episode is likely to occur. Basically, the local airflow can be categorized into two types: thermally induced and mechanically induced. Thermally-induced circulations are forced by differential heating or cooling of air over different areas. Such circulations could include (a) land and sea breezes that develop as a result of the thermal contrast between the land and the ocean, (b) urban heat island effect that causes air to be thermally more buoyant over an urban area relative to its rural surroundings, and (c) mountain-valley winds that result from differential heating/cooling along the mountain slopes and its surrounding air above the valley floor. On the other hand, mechanically-induced circulations result from land features that force air to change its "natural" course. These could include (a) windward blocking in which air on the windward side is either forced to go up a slope or around the obstacle, (b) leeward vortex that forms in the leeward

side of a large object such as a mountain or an island, (c) channel flow due to the forcing of air to go through a channel such as a long valley or between two islands, and (d) street canyon vortex that develops between two rows of tall buildings.

All these effects are likely to occur over a place like Hong Kong with such complicated topography adjacent to the South China Sea, extensive urban areas and the presence of urban canyons in most commercial districts. In the following sections, three examples will be shown to illustrate these effects.

The Sea Breeze Effect

Clear-sky conditions and weak atmospheric flow are essential ingredients for the development of a sea-breeze circulation. Liu et al. (2001a) have performed computer simulations of a number of actual cases by solving a set of differential equations that largely represent the physical processes occurring in the atmosphere. As an example, consider a case in which the initial conditions are weak northeasterly flow ($\sim 5 \text{ m s}^{-1}$) throughout Hong Kong near the surface of the earth at 8 a.m. As the day progresses, the sun's energy raises the temperature of the land. Air over the land is then heated up and starts to rise, and air from the sea moves in to replace the heated air. By 2 p.m., the airflows at different parts of Hong Kong become very different (Figure 16.7).

Several important features can be noted. First, the easterly flow that covers most of the eastern and central part of Hong Kong with the westerly flow in the western part, forming a strong confluence zone around Tuen Mun and Yuen Long (Figure 16.1 for the location of these and other places). The presence of the Tuen Mun-Yuen Long valley also produces a channel flow that funnels the air from Tuen Mun to Yuen Long. In other words, any pollution generated in Tuen Mun area is likely to be channelled to the Yuen Long area under such conditions. A similar situation also occurs to the extreme western part of the New Territories.

A second noteworthy feature is the strong southerly flow along the West Lamma Channel that can transport pollutants from Lamma Island and southwestern part of Hong Kong Island all the way to Tsing Yi and Tsuen Wan areas. Note also that this flow is met by easterly flow from the northern part of Hong Kong Island where the pollution is generally severe (e.g. Causeway Bay). This result suggests that pollution from Causeway Bay and North Point is likely to be transported to Central and the Western District, and further downstream to Tsing Yi, Tsuen Wan and the northern part of Lantau Island.

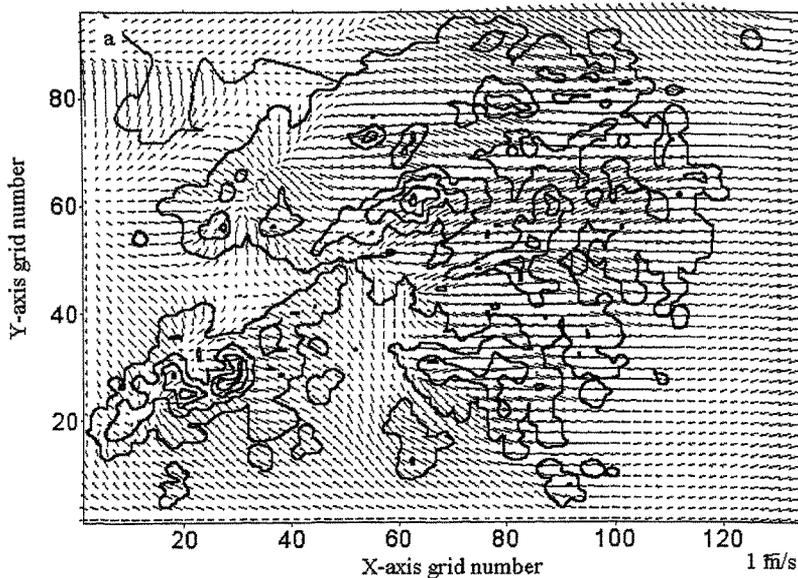


Figure 16.7 Computer-Simulated Airflow Pattern Near the Surface of the Earth Around Hong Kong at 2 p.m. on a Clear Day with Weak Northeasterly Flow at 8 a.m. in the Morning. The Topographic Contours (at intervals of 100 m) are also Shown. Length of Arrow Indicates the Wind Speed. Twenty Grid Numbers Correspond to 10 km.

Being a relatively massive piece of land, Lantau Island is a classic case of the land-sea breeze effect. The heated elevated topography especially in the southwestern part of the Island causes air to flow from the north and northwest along the northwestern shore and from the southeast along the southeastern shore. As a result, strong convergence exists near the two peaks. Of particular importance in this flow pattern is the northerly to northwesterly flow over Tung Chung and the Hong Kong International Airport. Pollutants generated from taxiing airplanes or those waiting to take off are likely to be trapped in the Tung Chung valley, resulting in the often-hazy conditions observed there.

Other than some minor discrepancies, these simulation results and actual observations match to a large extent (Liu et al. 2001a). Of course, the airflow patterns depend on the dynamic and thermodynamic structures of the atmosphere. Only under the “right” conditions will these circulations be observed. Nevertheless, these results highlight the importance of understanding the land-sea breeze effect in determining where pollutants are likely to be

transported under different meteorological conditions.

Topographically-induced Circulations

Causeway Bay is an area notorious for its poor air quality (location d in Figure 16.8). While in-situ production of pollutants due to heavy traffic is certainly an important factor, our study has shown that the topography surrounding Causeway Bay also prevents the dispersion of pollutants as well as allows the transport of pollutants into the area.

The study (Liu et al. 2001b) uses a water tank in which a physical model of Hong Kong Island is immersed. The model is then dragged along the tank, which thereby simulates an airflow from the opposite direction. The layered structure of the atmosphere is simulated using brine solution of various concentrations. Dyes are injected at several locations. As the model is pulled, the dispersion of the dyes is videotaped. Two examples, corresponding to the two prevailing wind directions in Hong Kong, will be shown to illustrate this trapping effect.

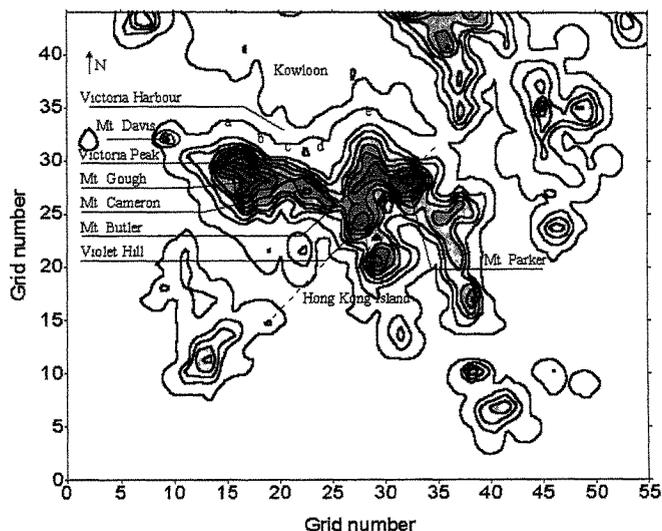


Figure 16.8 Map of Hong Kong Island Showing Height Contours (at Intervals of 50 m) and Name of Place Referred to in the Text. (a) Sai Ying Pun, (b) Central District, (c) Wan Chai, (d) Causeway Bay, (e) North Point. 1 grid number = 500 m.

During many months of the year, especially the winter and springtime, winds are generally from the northeast. If the wind speed is small, the plume that originates from North Point (e) does not have enough energy to climb over Mt. Parker and Mt. Butler so that it flows around North Point and arrives in Causeway Bay (d) (Figure 16.9). The pollutants from North Point or other upstream points from Causeway Bay therefore accumulate there to produce a high concentration. In addition, some of the pollutants could be transported to the south side of the Island through dispersion path P4 between Mt. Butler and Mt. Cameron. Note also that the plumes are also trapped in Central District (b) and Wan Chai (c). Parts of the plumes can be transported upslope via dispersion paths P1, P2 and P3. This example clearly illustrates the effects that the complicated topography of Hong Kong can have on the transport of pollutants. Even if the local source of pollutants at Causeway Bay is eliminated, dispersion of the pollutants from other locations can easily bring about heavy pollution.

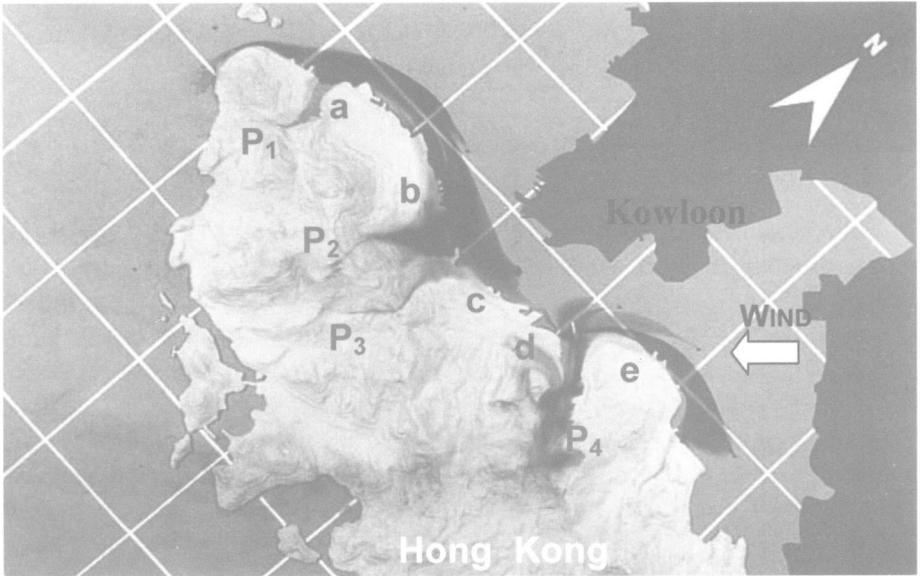


Figure 16.9 Plume Dispersion in a Water Tank Experiment. The Shadings Indicate the Plume Dispersion. The Physical Model is Towed Towards the Right Side of the Figure to Simulate a Northeasterly Flow. The Letters Indicate Different Locations Mentioned in the Text.

Similarly, in the summertime when southwesterly flow is dominant, in which case the northern shore of Hong Kong Island is on the leeward side. And it might be expected that pollutants generated in the north will be transported downstream. However, the situation is not so simple. In fact, vortices form on the leeward (i.e. northeastern) side of the Island especially along Causeway Bay, Wan Chai and Central District areas (Figure 16.10), with southwesterly flow at the mountain top level and northeasterly wind at the street level. A vertical circulation develops and the pollutants originally at the street level are transported upward first and then re-circulated back into the area by the vortex.

These two examples clearly explain why Causeway Bay is one of the most polluted areas in Hong Kong. Not only is the traffic heavy in the region (the pollutants being trapped by the tall buildings — see next section on street canyons for further discussion), the pollutants generated cannot be dispersed easily by the surrounding circulation due to the complicated topography. Under the right conditions, pollutants from other regions can also be transported into this area and get trapped.

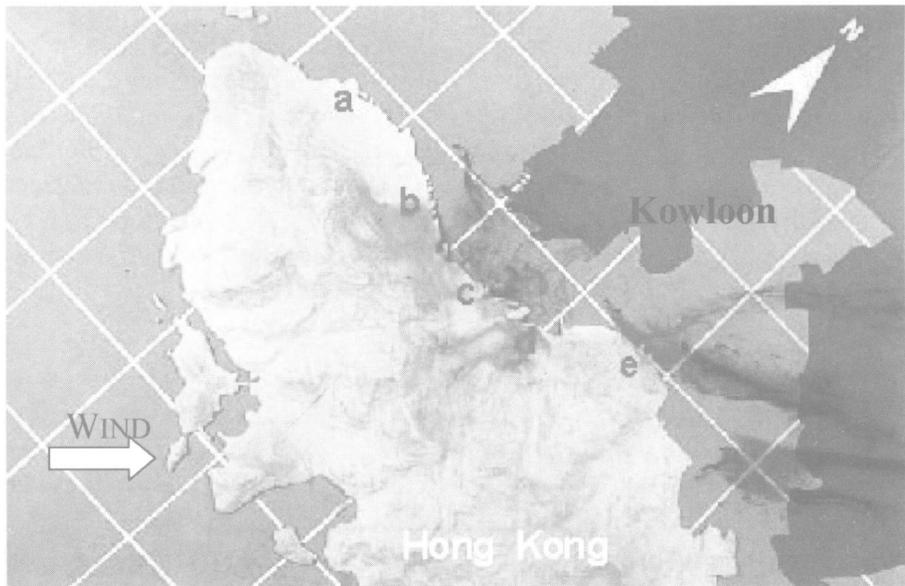


Figure 16.10 As in Figure 16.9 except that the Physical Model is Towed Towards the Left Side of the Figure to Simulate a Southwesterly Flow.

Street Canyon Effect

The high buildings in Hong Kong create flow blockage and impaired ventilation at street-level. Frequently, buildings are arranged in essentially continuous rows with only occasional breaks for intersections. This constitutes the urban street canyon. With a major source of pollution being located within these canyons, namely motor vehicles, it is not surprising that air quality is significantly poorer than the ambient air aloft. This is exemplified with the daily dissemination of the air pollution index by the media. Now that the Environmental Protection Department has roadside monitoring stations in addition to their general stations, elevated pollution levels at street-level are very apparent to all.

Walton et al. (2001) and Walton and Cheng (2001) performed simulations and measurements of the mean flow and turbulence structure within urban street canyons. As the ambient air at roof-level traverses a canyon, a re-circulation or vortex is formed within the canyon region (Figure 16.11).

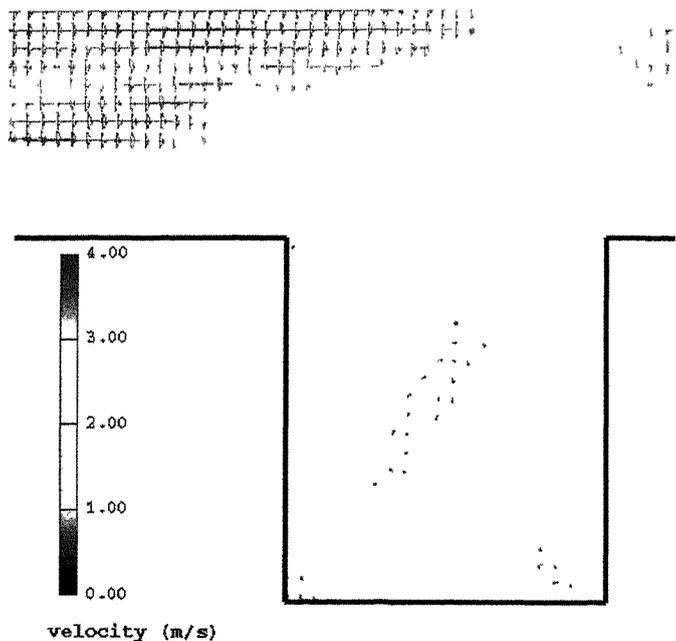


Figure 16.11 Vortex Formation in a Street Canyon Simulation Arrows Indicate the Direction of Airflow Different Shadings and the Length of the Arrow Indicate the Wind Speed The Thick Lines Indicate the Shape of the Canyon

Pollution released at street-level is trapped in this vortex, being transported up the leeward face only to be swept back down the windward face. As the pollutants move, they gradually mix with air resulting in higher concentrations on the leeward face compared to the windward face (Figure 16.12). At roof-level, the flow within the canyon is almost detached from the ambient air aloft. In other words, the exchange of air at roof-level is actually quite poor and the removal of pollutants relies entirely on turbulent diffusion processes. This gives rise to pollution concentrations being significantly higher within the canyon compared to the air aloft, with a strong gradient in the vicinity of the roof (Figure 16.12).

Simulations (Walton and Cheng 2001) show that the removal of pollutants is actually an intermittent process rather than a steady, continuous one. Puffs of pollution periodically acquire sufficient momentum up the leeward face to push through the barrier at roof-level and into the airflow above where they are convected away (Figure 16.13). The time scale associated with this process is of the order of a minute.

Although the exchange of pollution at roof-level is fairly weak, the turbulence and re-circulation are such that pollution is reasonably well mixed within canyons. By way of example, for a moderately large street such as Nathan Road, with flanking buildings of about eight stories, average concentrations on the windward wall are typically only a factor of two smaller than the leeward face. Also, as pollution travels up the leeward face, the concentration drops by a mere 30 percent at roof-level compared to street-level. This implies that someone living on the eighth floor is receiving nearly the same pollution as someone walking on the street.

An understanding of these physical dispersion mechanisms is important for urban planning. In general, the wind speed at street-level decreases as the aspect ratio (ratio of height to width) of an urban canyon increases. Therefore, as the density and height of buildings increase to accommodate Hong Kong's rising population, a corresponding deterioration in the air quality at street-level will result.

STRATEGIES IN TOWN PLANNING

The previous sections clearly point out that air pollution has no boundaries. Even if a place does not produce any pollution *in situ*, pollutants can be transported into the area by the various processes described. Therefore, the

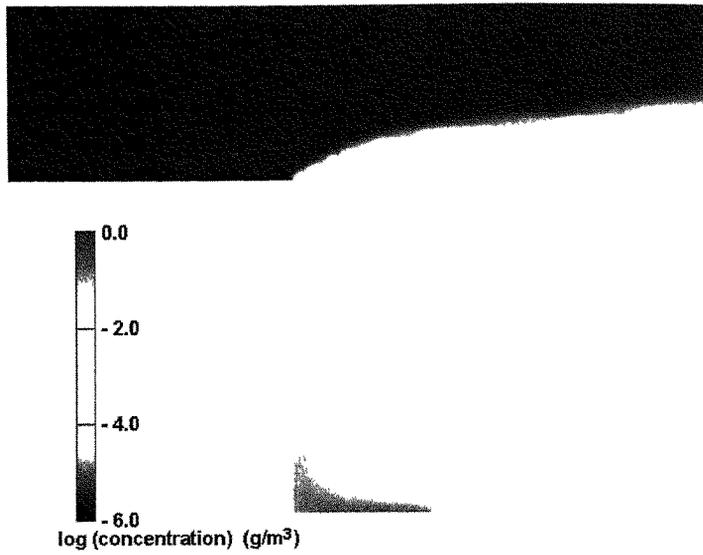


Figure 16.12 Pollutant Concentrations in a Street Canyon Simulation. Different Shadings Indicate Different Concentrations. The Area Without Shading Indicates the Area Around the Canyon.

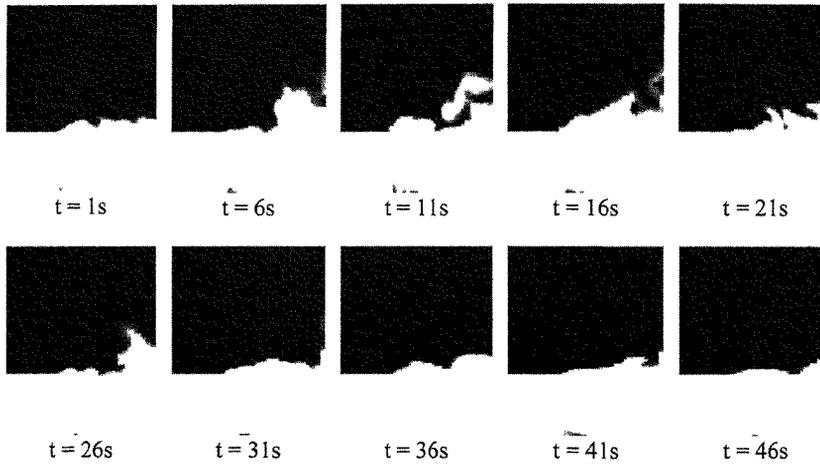


Figure 16.13 Intermittent Nature of Pollution Emissions. The Time (in Seconds) is Indicated in Each Figure. Different Shadings Indicate Different Concentrations. The Area Without Shading Indicates the Area Around the Canyon.

proposal to develop a "pollution-free" town is completely unrealistic. Rather, in future town planning exercises (whether it is the development of new towns or the redevelopment of existing urban areas), a set of strategies should be in place to minimize air pollution in the area to be developed.

First, a comprehensive study should be performed to determine the meteorological conditions under which pollution episodes are likely to occur at which location. Results of such a study would have significant impact on where new towns should be planned. For example, Tung Chung may not be a good choice. Once an area is chosen, planning and zoning decisions should be based on an optimal design of the orientations of buildings, highways, roads etc. that would minimize pollutant trapping and accumulation. For specific sites such as power plants, incinerators and factories that emit large amount of pollutants, the airflow characteristics can then help determine where such plants should be built and what types of emission control measures (e.g., heights of chimneys) are necessary to reduce the overall pollution effects, not only in the local region but in locales downstream.

Such planning strategies obviously require the coordination among various policy branches within the government, each of which is likely to protect its own turf. Therefore, to make such strategies effective, a "super-agency" should be established that could cut across the bureaucracy among different policy bureaux.

In implementing such strategies, extensive research is necessary. In the former colonial era in which local universities did not have much research, such work was almost exclusively contracted out to overseas consultants. However, in the last decade, universities in Hong Kong have grown substantially in their ability to do research. It is time that the Hong Kong Special Administrative Region government recognizes this fact and makes use of local expertise in performing such research. Not only would the cost be substantially lower, local academics are much more knowledgeable about the local situation and would therefore have more insights in determining what needs to be done.

CONCLUSION

Although town planning in Hong Kong has been more systematic during the past decade, the primary driver has been the need to accommodate more and more people. Considerations have therefore mostly been on whether the

infrastructure of a location can support the population of that locale. Scant attention has been paid to the problem of air pollution in that area. With our increased knowledge about the causes of air pollution, it is high time that future town planning takes the problem of air pollution into consideration. Only through systematic and extensive studies could this problem be tackled. It is hoped that this article would serve as an impetus for further deliberations on what needs to be done.

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Chapter 17

Sustainable Development in the Pearl River Delta Region: Assumptions and Parameters for Public Policy¹

Christine LOH

In his chapter on environmental protection in the Pearl River Delta region in the context of sustainable development (Chapter 18), Mr. Salkeld highlighted the importance of having a mechanism whereby environmental data can be shared. This is an important and yet sensitive issue. Some people are willing to provide a considerable amount of information whilst others are not. It depends on how you view the importance of information. Perhaps before we discuss sharing information, we should first determine how important information is to policy formation. My experience is that the Hong Kong government does not always base policy on data that are objectively generated. The government collects a lot of useful information. However, the information is often not properly collated and analyzed, which is an indication that policy-makers do not always use data to help develop policies.

Public projects are often committed to without opportunity costs being calculated. This was not done when the government committed billions of taxpayers' dollars to Hong Kong Disneyland, for example. Another example is the proposed Route 7, a highway that will skirt around the coast of the western side of Hong Kong Island. It is clear that building a railway will result in much greater benefits all round and yet the Transport Bureau does not appear to want to take environmental, public health, urban planning and even more equitable transport gains into account. There is a longstanding suspicion that policies are made in government first by identifying the preferred result and then fitting data to suit the result. Scientific enquiry to assist in the solving of policy-relevant questions is not a popular way for policy formation in Hong Kong.

Another problem is the lack of collaboration between the public sector decision-makers and the academic community. The government seldom uses the universities to help with policy research because academics are less malleable than commercial consultants. Officials like to use the excuse that

academics lack realism and they cannot meet deadlines as excuses. The truth is that academics are potentially independent because they do not depend on government consultancies for their next meal ticket. Many are also unwilling to meet unrealistic deadlines. It is an open secret that commercial consultants are often pressured by the government on the results of studies. The government sets the terms of reference and can even guide the research in a certain direction. If a consultant does not go along with it, he or she fears that the government will not use them again.

The saga on electronic road pricing (ERP) provides a useful example. In the early 1980s, the government first flirted with ERP and spent HK\$30 million on tests in 1985 but the plan was shelved. In 1997, the government set aside HK\$75 million for another consultancy study on ERP. In April 2001, the government said that it would not consider putting an ERP scheme in place for a decade because the annual vehicle growth rate was steady at 3 percent and traffic speed had remained at around 20 km/h during peak hours. The truth is ERP is a useful traffic management tool but that senior officials do not want to push it through because they fear political opposition.

In the realm of information and data, Hong Kong suffers another problem. Apart from the government, there is hardly anyone else funding research. The work of the universities may or may not have policy relevance. Even if the subject relates to policy, the approach may be more academic than policy relevant, which can then be easily dismissed by officials. Hong Kong has no tradition in supporting independent think tanks, which can produce credible work to counter government's choices. Thus, in public debates, there is often only the government's plan and no real counterpoint for the public to assess alternatives. The lack of well thought out options make it easier for the government to ram their plans through the political process. The one exception is over harbour reclamation, where non-governmental organizations were successful in turning back all the government's plans because they were able to put forward alternative plans. Once the public saw that there was a better option, it became a focus for support.

Furthermore, it may not be easy for the public to have access to it even though there is an increasing amount of information provided. If we contrast Hong Kong's situation with that of the United States, you can see that the US government websites contain a lot more information and data about all sorts of things. The US has a strong tradition of freedom to information. Hong Kong's

tradition is considerably weaker. On the Mainland, the situation is different yet again. Some of the data, which the US and Hong Kong authorities provide as a matter of course, are regarded as state secrets on the Mainland. Therefore, the provision of information in a society very much depends on its values and political culture.

There are useful efforts being made though. The Hong Kong and Guangdong authorities have conducted a joint air-monitoring project from late 1999 to early 2001 and they will release the findings soon. The data will be published and will provide a useful base for further cooperation. With the information, scientists and policy-makers can hopefully propose better solutions to regional air quality management that stems from a stronger scientific base. It is hoped that air quality management will provide a good platform for the intensification of cross-border dialogue and collaboration between the public and private sectors in Hong Kong and South China. In issues such as air and water quality management where impacts are regional in nature, only cooperation among the authorities together with the business and the scientific communities can help manage problems. It is going to require vision to set up the kind of broadly inclusive steering network across the border that will make a difference both scientifically and politically.

Another important issue that was brought up in the debate on how environmental management and environmental policy-making could be improved was public participation — another term that depends on the political culture of a place. What is the level of public participation in Hong Kong? Unfortunately, it is still not very high as participation was never recognized as politically important. The government has always emphasized consensus building but does not regard it as the precondition of building participation. People are not used to participation, as supposed to protest, and the government is unsure how to involve people in a meaningful way. The participation culture has to be built and both the government and community leaders have the duty to provide opportunities to create this culture.

The public also has to accept that it is their responsibility to hold the government accountable. That means citizens have to form watchdog groups and be prepared to join and/or fund them. The private sector also has to fund independent research so that it can be sure that policies are the best ones that can be devised. The public should no longer expect the government to solve all the problems and be prepared to shoulder a part of the responsibility by

getting actively involved.

Moreover, the government has yet to find effective ways to communicate politically with the public. For example, the government is not using public advertising well. Many government advertisements and notices are not well designed and therefore fail to communicate. The government also is not using communication tools, such as exhibitions, seminars, charettes, facilitated workshops, town hall meetings as much and as well as it should. Some departments are trying but most are not. For example, the Planning Department has conducted a number of useful public forums on urban planning and design over the last couple of years. The public responded positively and offered many suggestions on planning for the Central and Wanchai Reclamation as well as the South East Kowloon Reclamation.

The government does not use these communication tools because they are not convinced of the benefits. There is no uniformity in the recognition of using these tools. I wish to emphasize that these are political tools. They are important because it helps people to communicate within a society and to communicate with their government. They can be used by the government to collect feedback and also to persuade acceptance of new policies. They can also be used by members of the public to play their role as responsible citizens. Having a better understanding of how to use these “tools” will enhance public participation.

I have already highlighted the potential of using regional air quality management as a platform to actively build cross-border cooperation. Let me elaborate a bit more. Ms. Ma Xiaoling of the South China Institute of Environmental Sciences suggested that some cross-border laws and regulations would be needed for Hong Kong and Guangdong Province to work together (Chapter 19). Even before we discuss legislation, perhaps the first area is to see if we can adopt the same regional standards on such things as air and water. In order to agree to a set of common standards, we first need to define a process for discussion to take place. Process is very important as it reflects how we wish to work together. Of course, before the process can be put in place, we need to first discuss how to put one in place. There is just no substitute for open and effective communication conducted in good faith. There is insufficient dialogue focused on collaboration between Hong Kong and Guangdong at the moment. Perhaps as a start, we need Hong Kong’s Chief Executive and the Provincial Governor of Guangdong Province to be seen

sitting down together to devise the process for dialogue and collaboration. They could also call for an annual Southern Governors' conference involving other provincial governors in South China to start high level discussion about how this part of China would promote sustainable development.

Another issue is the importance of "thinking." We need to think about what we are doing, how to do it, how many options there are, what are the interests and concerns of the various stakeholders and how to implement solutions. We are often not good at thinking through complexity. We must do better at integrating different disciplines. Indeed, we can encourage "thinking" a lot more. Hong Kong also needs to accept that "thinking" is a real activity that needs to be properly funded. This is where the government and bodies like the University Grants Committee and Research Grants Council have an important role to play. The private sector also can play a role by funding think tanks. Hong Kong needs a diversity of options to help us see things from many different perspectives. It is through seeing alternatives to the present way of doing things and explaining things that progress and breakthroughs will be made.

NOTE

- 1 This chapter was adapted from Ms. Christine Loh's speech that was delivered at the Panel 1(a) on "Environment - Sustainable Development" in the seminar entitled "Building a Competitive Pearl River Delta Region: Cooperation, Coordination and Planning", which was organized jointly by the Centre of Urban Planning and Environmental Management at the University of Hong Kong and the Hong Kong Institute of Planners on 4 August 2000.

Chapter 18

Thoughts on the Environment and Sustainable Development for the Pearl River Delta Region

Kim A. SALKELD

INTRODUCTION

It is important that in this region we can care not just for ourselves but also for those who follow us. I find that the more I think about sustainable development, the more difficult it becomes to define. Others have the same problem. I have even heard of one person saying that sustainable development was where one was forced to turn off mobile phones and pagers! We could spend a long time in argument about its meaning. It would be however more constructive to engage in civil discourse with each other about the practical issues that confront us: such civil debate is at the heart of building any sustainable system.

I was troubled by some references to conflict between Hong Kong and Guangdong. Over the last twenty to thirty years Hong Kong and the Pearl Delta region have been engaged in the most spectacular piece of cooperation. Quite breathtaking greenfield industrial development has taken place that has lifted millions out of poverty. It has given hope and prospects by increasing investment in education and environmental facilities.

If discussion focuses on the idea of conflict, it will tend to promote conflict. I think it is more constructive to keep our eyes on the tremendous potential for cooperation and on the question on how, together over the coming twenty to thirty years, we can move on from the stage of greenfield development into sustaining patterns of economic and social development that will give continued prospects of education, employment and quality of life to everyone in the region, and not just within the region. The economic activity going on here helps give hope and prospects to many outside the region as well. We should keep that in mind.

REGIONAL ENVIRONMENTAL COOPERATION: DESIRABLE OUTCOMES AND POTENTIALS

I would like to set out some thoughts on desirable outcomes for the regional

environment and what are the issues that need to be tackled to achieve those outcomes. The first issue is air pollution. It is created by activities in each of the localities within the region but adds up to create problems for the entire region. The desirable outcome is to manage the quantum of different emissions so that, first of all, they do not pose any significant health hazard to the community. There is a very practical reason for this. By doing so, you can avoid substantial health costs and ensure a healthy, productive workforce, which is good for the economy. In the transition from greenfield industrial development based on low land and labour costs to sustainable economic development, maintaining comparative advantages is crucial. In this respect, education of workers, scientists, technicians and politicians is central: not just as individuals but in the qualities needed to work effectively as teams to deliver quality economic activity. If we invest a lot in that kind of education, it is worth investing in protecting the health of those being trained. The second aspect of air pollution is that through ozone and acid rain it has significant effect on agricultural productivity. It is desirable to reduce the level of air pollution in the region so that it does not have these disbenefits for agriculture and the economy.

The second issue is that of maintaining a safe and secure water supply. The region is blessed in terms of the volume of fresh water available overall, but demand is concentrated and the mismanagement of water resources by allowing pollution of water courses can lead to shortages, health problems, huge costs of treatment and huge costs of transporting water longer distances from safer sources. Projections from the Mainland are that urban growth over the next ten years will double demand for fresh water. Meeting that demand will require huge investment in infrastructure. The more that pollution loads can be lowered the lower the investment cost is going to be to deliver safe water.

The third area for attention is effective land management. There has been a pattern within the Pearl River Delta similar to that seen in many other countries in the early stages of road development. Along the roads, huge amounts of land have been taken out of productive agricultural use and put to urban or industrial uses with little careful thought as to the efficiency with which the land could then be used. We have faced the same problem in parts of Hong Kong. Given the growing population in the region, the effective management of land is crucial. We need to establish a pattern for our cities so that surrounding areas can serve as an effective resource and can absorb or mitigate some of the

wastes and pollution that populations produce.

WHAT ARE THE SPECIFIC PROBLEMS TO BE DEALT WITH?

For air pollution, there are three. The fuels and technology being used in power generation; the fuels and technology being used by industry; and the transport systems. Each of these three has specific local impacts — there are issues with traffic density in Hong Kong that create problems not yet encountered elsewhere in the region — which require local solutions, but they all contribute together to the wider regional problems with ozone, acid rain and smog.

For water pollution, inadequate urban sewage treatment is a key issue. Large amounts of urban sewage are being discharged without effective treatment both in Hong Kong and elsewhere in the region. Control of industrial processes is also crucial. But it is very important too for us to pay attention to pollution from agriculture by controlling the run-off from pesticides, fertilizers and concentrated livestock rearing. More and more intensive agriculture on less and less land to feed more and more people is vastly increasing pollution of fresh water courses and affecting sea water and marine resources as well.

For land management, the key issue is being able to assert effective planning control outside the city areas.

In all three areas, while there is continued need for research on the regional level problems, there has to be recognition that the regional problems are arising because of action or inaction at local government level. Each local government within the region needs to be addressing the problems of air pollution, water pollution and land control, and putting in place the mechanisms to redress existing problems.

Given the different interests involved (especially when dealing with land rights), and given the importance of ensuring continued economic activity (the creation of jobs and revenues) while reducing pollution and environmental problems, local governments cannot act alone. They need the information that academic researchers can provide. They need to involve the business community and motivate them to support changes. There is also a great value in engaging with local communities to use their aspirations for improving our quality of life, and to help set targets and secure support for the measures needed to meet those targets.

To expect a new piece of legislation or a new technology to clear up environmental problems by themselves is unrealistic. Neither community pressure, government actions, business activity nor academic research by itself will bring about improvement. Only a structure that enables all these sectors to articulate some common purposes, and to accept responsibility for action in their own areas will produce extensive results. Building such a structure of mutual understanding and cooperation may be one of the most important progress we have to make in protecting the environment, and safeguarding sustainable development, of the PRD region.

At the regional level, the means for assessing whether the actions being taken at local level are going to be sufficient to meet regional requirements need to be established, together with means for forward assessment to identify new pressures that will arise from increasing population, changing education patterns and changing economic circumstances. This will need increased research on trends in regional development and environmental conditions, and a constant scrutiny by the governments of various jurisdictions in the region on whether the policies and legislation already in place are going to be sufficient to cope with the environmental pressures and public expectations that will develop in the years ahead.

Chapter 19

Guangdong-Hong Kong Environmental Cooperation: Problem, Solution and Urgency

MA Xiaoling

INSTITUTIONAL CONSTRAINTS ON REGIONAL ENVIRONMENTAL MANAGEMENT BETWEEN GUANGDONG AND HONG KONG

The Guangdong-Hong Kong region is often viewed, in the geographical sense, as a geopolitical region comprising of the Hong Kong Special Administrative Region (HKSAR) and the Special Economic Zones (SEZs) of the Pearl River Delta region in Guangdong Province. Resolving the problems in regional environmental management within this geographical region, however, requires an alternative perspective — a perspective that can enable a closer and more in-depth examination of the questions such as (a) how, and to what extent, the different environmental laws of Guangdong and Hong Kong are applicable to defining and solving the regional environmental problems, and (b) how the issue of applicability of environmental laws between these two areas could and should be better understood in the wider context of establishing interregional legal framework for the region.

Historically speaking, the present law and legal system in effect in Hong Kong originates from the common law tradition of the British and American jurisprudence, while that in effect in the Mainland China is a socialist legal system with the characteristics of the continental legal system. Therefore, legal systems operating in the two areas bear different juridical backgrounds and features. After Hong Kong's reunification with the People's Republic of China (hereafter China), the central government exercises its sovereignty over Hong Kong according to the principle of "One Country, Two Systems." Hong Kong's Basic Law stipulates distinctly that the National People's Congress of China authorizes the HKSAR Government to exercise a high degree of autonomy and enjoy executive, legislative, and an independent judicial and final adjudication power. Entrusted by law, the HKSAR enjoys the legislative, judicial and final adjudication powers, which render Hong Kong equal juridical status with regard to the Mainland's legal system. Under the "One Country,

Two Systems” framework, the differences in the nature and scope of the legal systems between the two jurisdictions await resolution. Owing to the differences between the legal systems between Hong Kong and China, a conflict of inter-regional environmental laws obviously exists in their applicability when environmental prevention and management issues are dealt with between Hong Kong and the Guangdong region. Conflict of law exists between different national or regional legal systems. Such a phenomenon becomes more acute in practice when an issue of common significance to two or more nations and regions, such as regional environmental management and pollution control, is treated differently in the respective legal systems. This chapter therefore aims to analyze briefly the nature and characteristics of the conflict of inter-regional environmental laws between Hong Kong and the Guangdong region’s environmental management and prevention matters.

Conflict of Laws in the Norm and Standard of Environmental Laws

Hong Kong and the Pearl River Delta region apply their environmental laws and standards within their own separate jurisdictions, which have often given rise to a conflict of laws in applying the norms and standards in these two different bodies of environmental laws. This apparently hinders an effective coordination between Hong Kong and the Guangdong region in tackling regional environmental pollution. Let us consider a practical issue of coordinating the overall reduction in the level of regional air pollutants: even strict legal standards on emissions of air pollutants are enforced in both Hong Kong and the Guangdong region, satisfactory levels of reduction in region-wide air pollutant emission may not be met given the different standards between the two areas. The solution to such a problem needs an equitable way of allocating the responsibility of air-pollution reduction among the different administrative areas within the region even before further technical issues of pollution reduction are to be considered. However, such a mechanism for systematically resolving the inter-regional conflict of law in the environmental norms and standards as mentioned above has not been established into either local environmental laws or any of the other national laws.

Inter-regional Conflict of Laws of a Higher Order

The inter-regional environmental conflict of laws currently existing in the coordination of pollution control within the Guangdong-Hong Kong regional environmental legal framework is not only observable at the level of local administration, but also at the higher level involving the legal-constitutional relationship between national authority and local governments. In Hong Kong,

the legislative and judiciary powers concerning environmental laws (as with the cases of other laws) are mutually independent; judiciary interpretation of laws is the norm in Hong Kong's legal tradition and system. The situation in the Guangdong region differs from that in Hong Kong fundamentally, in that legislative interpretation of laws is the norm in Guangdong, while its environmental protection administration is the principal agency mandated with the authority to exercise its legislative and judiciary powers. Without well-defined legal guidelines and mechanism, cooperation between Hong Kong and Guangdong in regional environmental administration lacks legitimacy and stability it most certainly needs.

In addition to this pragmatic shortcoming, the handling of regional pollution control between the Pearl River Delta region and Hong Kong also involves the need to clarify and interpret the "constitutional" relationship between Hong Kong and Guangdong within the context of "One Country, Two Systems" — an act of interpretation that may justifiably require the legislative explanation and interpretation, as well as central administrative directives, at the national level. While one may suggest that Hong Kong and Guangdong enjoy more or less the same kind of local executive power, we have to pinpoint the fact that Guangdong, one of many legal jurisdictions put directly under the umbrella of national framework of jurisdiction, does not enjoy the same kind of equality of status and flexibility as does the Hong Kong Special Administration Region under the protection of the SAR's mini-constitution, the "Basic Law", and the nation's "Constitution". Again, this basic fact helps explain the rationale that effective regional cooperation in environmental management between Hong Kong and Guangdong cannot be expected at the local level alone, but that the central government has to play a significant role in facilitating the whole process.

A Conflict in Legal Culture and Tradition

Legal culture of any contemporary society is said to be capable of exhibiting a "crystallized" gaze of a society's socio-legalistic characters, and its civilization at large, through a manifestation of how laws have been practiced as well as values and attitudes on the legal system have been formed through hundreds of years. The two separate sets of legal culture existing in Hong Kong (those of the common law tradition) and Guangdong (a continental legal tradition) respectively not only reflect dynamic differences in their values and attitudes on the ways laws should be practiced, but also pose practical problems in how regional environmental issues can be handled legally.

For instance, Guangdong and Hong Kong differ widely in defining the nature of the conflict of environmental laws. In the Mainland, conflicts of environmental laws are viewed as those conflicts within “environmental laws”, and are generally handled as public legal issues. In Hong Kong, however, environmental legislations are defined as “administrative laws”, but there is no corresponding “administrative court” system for the hearing of cases of conflicts in environmental laws. Such issues are usually brought to the judicial system through existing criminal and appeal procedures.

Given the wide scope of differences and the degree of complexity between the legislative, law enforcement and judicial systems between the Mainland and the HKSAR, the prospect for resolving regional environmental legal conflicts in the PRD region effectively within the present legal systems is therefore limited.

METHODS TO TACKLE INTERNATIONAL CONFLICT OF ENVIRONMENTAL LAWS

Under the principle of “One Country, Two Systems”, the conflict of environmental laws between Guangdong and Hong Kong is domestic or “inter-regional”, rather than “international”, in nature. The key to resolving such conflict of environmental laws between inter-regional jurisdictions is how effective such conflict can be resolved, and whether harmony between these jurisdictions can be ultimately achieved as a result. Indeed, resolving “conflict of environmental laws” between the two jurisdictions means resolving “conflicts of interests” in regional environmental management. In the context of such a theory of “conflict of laws” and relevant findings on the applicability of Chinese inter-regional environmental laws, three approaches for tackling the “conflict of environmental laws” are recommended as follows:

The Use of a Unified Legislative Approach (The Legalistic Approach)

The resolution of inter-regional environmental legal conflicts demands more than a piecemeal procedural improvement within legal jurisdictions at the local level; environmental laws should be applied with the objectives of facilitating the harmonization of inter-regional system of environmental laws, which shall prove conducive to China’s legal development in a unified fashion.

Traditionally, the “conflict of laws” approach has been adopted in a form of “preference rules” in resolving conflicts of environmental laws among

jurisdictions. However, it has been observed that “preference rules” are limited in its ability of tackling “conflict of laws” and “conflict of interests” effectively and thoroughly in two ways: (a) the legal consequence of applying “preference rules” is highly unpredictable, and (b) there even exists a conflict among different sets of “preference rules” among the legal systems of different inter-regional jurisdictions, and this further complicates the existing “conflict of laws”. In view of the limitations of the “preference rules” approach, the attention is now turned to a new, unified legislative approach. “Unified legislative approach” refers to a mechanism of resolving conflict of environmental laws through establishment of the ultra-jurisdiction inter-regional environmental agreements or the concerted efforts made by jurisdictions in formulating and passing a new set of environmental laws and regulations. Such approach particularly aims at tackling regional environmental nuisances that have severely affected inter-regional environmental interests and require an urgent solution. Given the high degree of complexity, a variety of environmental conflicts as well as the respective environmental legal systems of inter-regional jurisdictions have exhibited, a number of obstacles and issues have to be addressed in those areas such as how different legal principles can be reconciled, and also how the tools of “unified legislative” approach like regional environmental agreements can be operationalized. In other words, the “unified legislative” approach is an innovative concept in the field of inter-regional environmental management, and is to be proceeded incrementally. For example, pilot schemes in policy areas such as regional air pollution control can be initially implemented for building consensus and experience, as well as for finding the unified mechanism between the jurisdictions, before such experiences can be extended to other policy areas.

The Establishment and Normalization of a Market for Environmental Protection (The “Interventionist” Approach)

The Guangdong-Hong Kong region has been experiencing rapid industrialization and urbanization on an enormous scale in the past two decades, and this has led to massive pollution to the environment and impact on the natural habitat. Such a phenomenon of growth-led environmental degradation has two major implications: (a) it has illustrated just how serious an environmental dilemma will be when, on one hand, the development of urban environmental infrastructure has lagged behind the level of economic growth, and on the other hand, various resources (natural, environmental and economic) cannot be optimally allocated by the market mechanism in the economic

development process; (b) when markets fail to achieve an optimal allocation of economic and environmental resources so as to arrive at a desirable outcome in pollution control. Instead of turning away from the market mechanism, we should further facilitate the necessary conditions upon which a perfectly competitive market for environmental pollution control can be built up. A rational allocation of legal rights should aim at balancing the collective pattern of stakeholders' strategic behaviour toward the goals of environmental protection and social responsibility, which should help create a favourable market environment for optimally allocating the scarce resources. In a perfectly competitive market for scarce environmental resources, the resources can be allocated most equitably and rationally until a perfect balance of inter-regional environmental interests is achieved. This can also fundamentally resolve the conflict of inter-regional environmental interests.

Factors influencing the resource allocation mechanism of environmental protection in the Guangdong-Hong Kong region are multi-faceted, among which the lack of a well-established property rights system for natural resources ownership and management is the most significant factor that hampers the development of a market mechanism for environmental protection, and thereby a sensible way of utilizing and protecting the natural resources in the region. The "Property Rights" school of modern economics, with its emphasis on the foundational role of property rights in the making of a perfectly competitive market, implies that for an effective and rational management of natural resources as well as of pollution control to be set up, a principal market mechanism of defining and allocating the "rights" as well as "responsibility" for environmental protection should be initially in place such that a variety of agents for protecting the environment (the governments, businesses and the communities) can be motivated by the right kind of "incentives" (such as the well-defined rights for various agents in using and profiting from the use of natural resources).

Further economic integration of the Guangdong-Hong Kong will predictably set the basic tone of the regional development in the Guangdong-Hong Kong region in the foreseeable future. Such a change at the economic base of the societies will necessarily impact the basic structure of legal systems. In October 1994, the provincial government of Guangdong proposed that the Special Economic Zones in Guangdong and the Pear River Delta should set the basic realization of modernization in the region by 2010 as their strategic goal of development. The severity of regional pollution problems in the

Guangdong-Hong Kong region today has posed, as mentioned earlier, a serious environmental dilemma due to the underdevelopment in urban environmental infrastructure that lags behind the level of the growth of the regional economy. Reforms of the legal framework, and necessary institutional arrangements, for the purpose of facilitating a market mechanism for environmental protection have become increasingly unavoidable.

The Coordination of Inter-regional Environmental Laws Based on the Principles of Environmental Equity

Environmental equity forms the core of sustainability, and is applicable to issues ranging from natural resource allocation, the assignment of responsibility for natural resource preservation and pollution control, and the commitment in paying for pollution prevention and damage control. The governments of Guangdong and Hong Kong are confronted with challenging tasks of not only preventing and reducing regional pollution and coping the associated regulatory responsibilities, but also of finding a way of resolving the legal and institutional conflicts involved. A legal mechanism based on the principle of environmental equity is capable of compensating for legal differences, providing a basis for explaining justice and for the occurrence of just exceptions. Setting up such a regional mechanism of pollution prevention in the region should be viewed as a lengthy and ongoing process of negotiation, making compromises at times, and most importantly, pursuing the long-term interests of the region in the form of reduced transaction costs in regional environmental cooperation, enhanced efficiency and efficacy in environmental protection, and eventually sustainable development of the region.

INSTITUTIONAL INNOVATIONS NECESSARY FOR ENVIRONMENTAL MANAGEMENT IN THE GUANGDONG-HONG KONG REGION

Resolving properly the conflict of inter-regional environmental laws is only one of the many aspects of effective regional environmental management in the Guangdong-Hong Kong region. Fundamental to such a success lies the question of whether, and to what extent, we are able to formulate a new kind of institutional system for environmental protection in the region. Economic integration means prosperity across the border; but equally, it can also imply a "borderless" form of pollution that is beyond the reach of the traditional, comparatively "bounded" system of environmental management in the region. Ecological environmental management, which is designed to integrate an

understanding of the complexity and principles of natural ecology into the system of regional environmental management, can provide a critical approach of adding greater stability and better coherence to the system.

With the issue of sovereignty over Hong Kong and Macao having been successfully tackled within the framework of "One Country, Two Systems," the continued regional economic integration in the Guangdong-Hong Kong region, and economic globalization, people in this region are sharing a common interest in seeing the further development of the region being in line with the socio-economic system and the way of life of their choice. For people of Hong Kong, it means the "rule of law" should continue to be upheld. And for the people of the whole region, the common interest is translated as a quest for a safer and more stable ecological environment for future development. As far as the regional environmental legal framework is concerned, the unification and convergence, rather than the homogenization, of regional efforts in pollution prevention and control is fundamental to the institutional improvement for such a goal. Unifying and converging efforts in regional environmental protection is manifested in a growing and irreversible trend, in which the authorities and communities of Guangdong and Hong Kong increasingly share a common concern for, and engage in, a variety of regional environmental issues like natural resources conservation, the tackling of cross-boundary pollution, and the facilitation of market mechanism for the provision of environmental "public goods".

SUSTAINED ENVIRONMENTAL COOPERATION BETWEEN GUANGDONG AND HONG KONG BY MEANS OF INSTITUTIONALIZATION

The Need for Institutionalization of the Mechanisms for Regional Environmental Cooperation between Guangdong and Hong Kong

It is apparent that there will be increased government intervention in cross-border regional environmental protection. Since the 1980s, the governments of Guangdong and Hong Kong have started a series of discussions and joint efforts in tackling regional environmental protection issues such as cross-border pollution via multiple channels. Such cooperation in environmental protection, however, remained far too conceptual or technical, and was never substantially adequate in providing the real solutions. This has been indicative of the extent of how such kind of regional environmental cooperation has been lagging behind regional economic development, with subsequent deterioration in

ecological and environmental quality.

On October 6, 1999, The Chief Executive of the HKSAR, Mr. Tung Chee-Hwa, together with the Governor of Guangdong Provincial Government, Mr. Lu Ruihua, announced that Guangdong and Hong Kong would foster regional cooperation in environmental protection in six major areas. And both sides also agreed to set up a “Joint Working Group on Sustainable Development and Environmental Protection” (Joint Working Group) under the Hong Kong/Guangdong Cooperation Joint Conference to coordinate such cooperation, which can be regarded as an institutional arrangement for maximizing the two governments’ capability in deploying necessary resources for environmental protection. In addition to this arrangement, it is the right time to ask for further institutional reform that aims at safeguarding the legitimacy, as well as enhancing the authority, of the inter-regional governmental efforts in environmental protection.

One example of such institutional reforms may include the establishment of a regional “Consultative Council on the Environment”, in which professionals with relevant expertise such as ecologists, economists and legal scholars can join force and exchange views with other social groups with a concern on the environment for making innovative, informed and pragmatic suggestions for the Joint Working Group. The members of this council could be either appointed or recruited by the governments of Guangdong and Hong Kong, and should be expected to bring different voices of the society in order to build as broad a social base as possible for the support of environmental protection.

Formulating a Regional Environmental Agreement between Guangdong and Hong Kong

Again, institutional arrangement by the two governments that is responsive to the reality of regional environmental protection is the key to settling the difficult task of regional pollution control. It is suggested here that the two governments’ respective and joint responsibility and commitment in this policy area can be much better defined and specified, through negotiation, within the institutional framework of a “regional environmental agreement”. Such an agreement could outline a framework of regional environmental management for effectively and institutionally resolving the conflicts and discrepancies of inter-regional environmental laws between the two jurisdictions. It would provide an advantage in generating a quasi-legislative power applicable in the region for

better regional environmental management, without compromising the integrity and legal principles that prevail in each jurisdiction. While the operational practicability of such a regional environmental agreement, founded upon a voluntary basis by Guangdong and Hong Kong, still needs to be assessed within the context of the legal system of China. A few recommendations for such a “regional environmental agreement” could be given priority as follows:

1. We should ensure the mechanism and the “rules of the game” for environmental cooperation between Guangdong and Hong Kong does operate with great efficacy;
2. The relevant authorities of both Guangdong and Hong Kong should be empowered with a mandate for participating in such a kind of inter-regional cooperation;
3. A set of regional environmental laws should be designated;
4. The widely divergent regional environmental standards between the two systems of environmental laws need to be reconciled;
5. A mechanism for exchanging environment-related information between the two regions should be put in place; and finally
6. A framework should be established for the resolution of inter-regional conflict of environmental laws and associated legal assistance.

Formulating Public Policymaking Procedures on a Regional Scale

The exchange and disclosure of inter-regional environmental information plays a very significant role in improved environmental policy-making, enhanced public participation and the avoidance of environmental disputes. The disparity in the standard and quality of the environmental data collected between the Pearl River Delta and Hong Kong should be bridged, while the reliability of such data should be improved. And these tasks require timely action since they form the very basis for the overall upgrading of the level as well as the capability of regional management decision-making. In order to command the ever-changing trends in the ecological systems, and those of the dynamics between natural resources, pollution and socio-economic variables, it is essential for the region to standardize inter-regional environmental data, set up a system of “indicators of sustainability” for the region’ sustainable development, strengthen and harmonize the works on regional environmental

impact assessment, and to facilitate the collection, storage, evaluation and utilization of environmental data. Moreover, inter-regional environmental management between Guangdong and Hong Kong is about “public choice”—various interests of the society are to be addressed and the collective interest be rationally assessed in order to make sound public policies. In a nutshell, for an amelioration in regional environmental management, the public policy-making process should be based on scientific research and participation, and supported by an institutionalized expert system.

CONCLUSION

A study on inter-regional conflict of environmental laws offers a form of theoretical guidance for resolving institutional constraints due to the “Two Systems” aspect of the “One Country, Two Systems” framework in tackling inter-regional environmental problems. People living in the Guangdong-Hong Kong region can no longer escape from a region-wide deterioration in water and air quality and marine ecology due to vehicular emission and discharge of untreated sewage. These problems not only threaten our lives, our economy, but also undermine a concerted sustainable development of our social, economic and ecological environment. We have already embarked on the right path of preparing ourselves to embrace the challenge of regional sustainable development. To succeed in these tasks, however, requires not only our willingness to cooperate, but most essentially our capacity and innovation in designing new institutions, mechanisms and procedures for a breakthrough in regional environmental cooperation between Guangdong and Hong Kong.

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Chapter 20

Towards Effective Regional Environmental Governance for the Hong Kong-Pearl River Delta Border Zone: The Relevance of Some International Experiences

Yok-shiu F LEE

INTRODUCTION

In the early 1980s, when Hong Kong's gradual deindustrialization process began producing adverse consequences for the environment of the receiving regions — primarily the rural counties and towns in the Pearl River Delta — the public and the government in Hong Kong were oblivious about such localized pollution problems in their neighbouring jurisdictions. In fact, the relocation of some of the highly polluting factories away from the then colony has helped improve the water quality and air quality in some pockets of Hong Kong's landscape. The scale and scope of these supplanted manufacturing activities, coupled with the local infrastructure created to support these activities (e.g., small-scale coal-fired power generation plants), however, have rapidly intensified in the last two decades in the Pearl River Delta region. By the early 1990s, Hong Kong, geographically located downstream and downwind (during the winter months in particular) from these factories and facilities, began to feel the impacts of their attendant pollution problems.

In the first half of the 1990s decade, the most visible signs of cross-border environmental problems affecting Hong Kong pertained to that of water pollution. Deep Bay, a water body that lies between the Hong Kong Special Administrative Region (HKSAR) and Shenzhen Special Economic Zone (SEZ), was regarded as the second most polluted body of water in Hong Kong after Victoria Harbour (Hills and Barron, 1990). Towards the end of the 1990s decade, however, air pollution became the leading emblematic cross-border environmental issue that stood out in the dispute, albeit mild and constrained, between Hong Kong and the Mainland jurisdictions. Despite the lack of systematic scientific data on the specifics of the environmental pathways at the regional level, the small community of environmental researchers and managers in Hong Kong have early on reached a consensus that the HKSAR's environmental agenda, to be realistic and successful, would have to be placed in a larger regional context (Man, 1993; Hung, 1994; Liu and Hills, 1997; Morton, 1996; Ng and Ng, 1997).

Despite the fact that the Hong Kong government has publicized the gains made by several cross-border cooperative environmental projects, critics in Hong Kong have maintained that the current official cross-border links are insufficient and progress limited. No agreement, however, has been reached by the critics on what is the best alternative to help resolve the institutional issues confounding the cross-border environmental problems. For instance, there is agreement among environmental researchers on both sides of the border on the need to unify cross-border environmental protection legislations and policies as well as to harmonize environmental management objectives by adopting common standards on environmental quality. The question that is now being often debated is whether such tasks could be accomplished within the existing framework or they would have to be resolved by some newly created institutions.

This chapter argues that some useful lessons could be identified through research on international experiences in cross-border cooperation in environmental management and that they are highly relevant to the long-term task of shaping an effective regional environmental governance structure for Hong Kong and its neighbouring jurisdictions. Drawing upon the experiences of cross-border cooperative environmental management activities on the United States-Canada border and the United States-Mexico border, we contend that one of the most important criteria in evaluating the real and potential effectiveness of the existing and any proposed regional environmental governance framework pertains to its capacity in mobilizing resources to nurturing and building-up “social capital” in this region (Nickum, 2001, p. 39). Social capital — understood essentially as trust, norms and networks among the principal stakeholders — is a key factor underlying effective cooperative governance but is glaringly lacking in the broader Hong Kong-Pearl River Delta border zone.¹

To provide a backdrop for a discussion of the relevance of international experiences, the existing regional environmental cooperation mechanism and alternatives being proposed are delineated in the next section. The institutional constraints standing in the way toward effective intra-regional environmental management within the Pearl River Delta are then examined to help reveal the degree of complexities in establishing a multi-unit coordinating and cooperative mechanism in China’s reformed, decentralized local polity. The paper concludes by highlighting the relevance and applicability of some specific measures proven successful in international experiences to building an effective regional

environmental governance structure for the rapidly converging Hong Kong-Pearl River Delta region.

EXISTING AND ALTERNATIVE REGIONAL ENVIRONMENTAL GOVERNANCE STRUCTURES

As far back as the early 1980s, the Hong Kong government admitted the need to fashion some kind of contact with the Guangdong authorities to consider cross-border environmental problems and quietly worked towards a formal mechanism to facilitate cross-border cooperation in this regard. Then, in July 1990, in the midst of intensive and extensive Sino-British negotiations concerning the handover of Hong Kong, the Hong Kong-Guangdong Environmental Protection Liaison Group (EPLG) was established and given a clearly defined objective: “to enhance the cooperation and coordination on environmental management and pollution control efforts in areas of mutual concern” (Panel on Environmental Affairs, 1997). Since its formation, this body has served as the focal point for several major cooperation projects on cross-border environmental issues. These included the Deep Bay Water Quality Regional Control Strategy Study; the Mirs Bay Environmental Management Strategy and Action Plan; Joint Study on Air Quality in the Region; and technical studies on red tides and Chinese White Dolphins. In October 1999, the EPLG was replaced by the Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection (JWG). Given that, in the case of Hong Kong, the JWG is headed by the Secretary of a policy bureau — the newly formed Bureau on Environment and Food — and that the notion of sustainable development is given such a prominent position in its title, it is apparent that the JWG will assume an increasingly broader agenda in the future than its predecessor.

It is instructive to understand that, in addition to the EPLG and the JWG, there are four other cross-boundary coordinating committees that have an indirect mandate to help coordinate and resolve cross-border environmental issues affecting Hong Kong and her Mainland counterparts. They are the Sino-British Joint Liaison Group (1985-2000); the Sino-British Infrastructure Coordination Committee (1994-1997); The Hong Kong-Mainland Cross Boundary Major Infrastructure Coordinating Committee (1997-present); and the Hong Kong-Guangdong Cooperation Joint Conference (1998-present). Unlike the EPLG and JWG, whose ambit was strictly confined to environmental issues only, these other committees were charged with a mandate with varying

degrees of implications for the environment and were therefore also asked to consider the ensuing environmental issues, but only as a secondary or residual concern.

Some critics have argued that the current cross-border cooperative mechanism has been limited to information exchange and joint research. It has been, nevertheless, considered by some advocates as quite successful in implementing some cross-border environmental improvement schemes such as the Shenzhen River regulation project (Box 20.1). These advocates also highlight the fact that the existing framework provides an excellent basis to help build and reinforce mutual trust required for any intensification of cross-border cooperation. They therefore see the strengthening of the existing institutional framework as the first and most obvious option (Lam, 2000, p. 20; Hills et al. 1998, p. 391; Stern, 2001). They argued that the scope of cooperation of these existing structures could be enlarged and broadened, along with a significant increase in resources, so that government-to-government coordination could move towards true joint management on specific programmes and not a mere consultation on broad policies. For instance, in addition to conducting joint studies on air pollutants affecting the SAR and the Delta region, the Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection could implement a joint management programme by creating a cross-border air quality management district (Stern, 2001).

A number of green groups and academics in Hong Kong, on the other hand, have argued for the establishment of a *new* regional environmental governance structure. The underlying premise for this proposal is the recognition that while the urban settlements in the Pearl River Delta, including Hong Kong, are developing and congregating into one of the world's largest city regions, there is currently little integrated or effective planning that pulls all the relevant stakeholders' concerns and interests into one overall strategic planning framework (Hills, 1997, pp. 205-6; Chu et al. 2000, p. 10). A regionally-based planning framework and related institutions to address region-wide concerns, including the environment, is therefore warranted and is considered essential by some quarters in strengthening the integration between Hong Kong and Pearl River Delta's jurisdictions. An early version of this idea was first floated in 1997 when one environmental NGO — Friends of the Earth — urged the Hong Kong government to follow international practices and establish a regional convention on cross-border environmental problems

Box 20.1 Shenzhen River Regulation Project

The 27-kilometre long Shenzhen River, which straddles the boundary between the Hong Kong Special Administrative Region (HKSAR) and the Shenzhen Special Economic Zone (SEZ) and runs from Shataukok to Deep Bay, serves as the catchment for most streams in the northern New Territories and Shenzhen. Since the establishment of the Shenzhen SEZ in 1980, increasing volume of sewage and solid waste were discharged into Shenzhen River from factories and livestock farms newly built along its meandering course. Large amount of livestock, industrial and residential wastes were also dumped into the river from sources originating in the New Territories. As a result, the levels of pollution, as measured by biochemical oxygen demand and the concentrations of toxic heavy metals such as cadmium, chromium, copper, lead and mercury, were exceedingly high in the river and its tributaries (Friends of the Earth, 1996, p. 21).

In the early 1980s, as the river was becoming badly silted by pollution and was starting to cause severe flooding damages in both Hong Kong and Shenzhen, a flood-control scheme was proposed by the Shenzhen authority in 1982 (*South China Morning Post*, hereafter *SCMP*, October 3, 1993). Intended as a project to be jointly administered by the Shenzhen and Hong Kong governments, the former complained that it had been repeatedly delayed, ostensibly by the latter. For instance, officials with Hong Kong's Planning, Environment and Lands Branch had reportedly said, in 1988, that a project to improve defences against flooding along the Shenzhen River was not cost-effective (*SCMP*, October 3, 1993). But some Hong Kong officials added that the project's delay was also partly caused by the Chinese when they stopped all contact for political reasons in 1988 and the negotiation only resumed, four years later, in 1992 (*SCMP*, July 23, 1994).

It took some damaging flooding occurrences in 1993, which affected both Shenzhen and Hong Kong's northern New Territories, to help propel the project forward from years of slow progress. In September, a serious flood triggered by a typhoon destroyed an estimated HK\$80 million worth of crops and fish stocks in the New Territories and brought cross-border trading and travelling to a standstill.² In response to widespread public outcry, then Governor Chris Patten promised to give top priority for flood-

Box 20.1 (Cont'd)

control measures in the northern New Territories, particularly in areas along the Shenzhen River (*SCMP*, October 3, 1993). And, accordingly, the Hong Kong government changed its stance on the Shenzhen River project and committed itself to accelerate the planning process for the scheme.³

By 1996, interestingly enough, the table was turned against Shenzhen, with the HKSAR government officials accusing Shenzhen of undermining Hong Kong's efforts to clean up the river and Deep Bay. Rural communities in the New Territories claimed that many oyster farmers were driven out of business because of increasing pollution in Deep Bay and they accused Shenzhen as the major source of such pollution. Shenzhen officials openly admitted that the city's rapid population growth had overloaded its waste disposal facilities. For instance, in 1996, the volume of waste water, marked by an annual increase of about 10 percent, surged to 46 million tonnes.

With only two treatment plants, however, only 10 percent of the household waste water were treated before they were discharged into Deep Bay via the Shenzhen River (*SCMP*, July 8, 1996).

In the latter half of 1996, there were some signs of hope of cleaning up the Shenzhen River and Deep Bay when the Guangdong provincial authority announced plans to spend up to HK\$13.39 billion on a five-year environmental clean-up plan for the Pearl River Delta. However, sceptics quickly pointed out that the fast-growing rural industry sector was the major source of pollution and that many local officials, concerned with tax revenue and employment provision, had resisted orders to close down polluting rural factories within their jurisdictions (*SCMP*, August 6, 1996). In 1997, with an increasing level of pollution detected, Deep Bay was declared by some environmental groups as the second most polluted body of water in Hong Kong, after Victoria Harbour (*SCMP*, July 14, 1997). They further claimed that the Shenzhen River regulation project was designed primarily as a flood-control programme, and the straightening and widening of its river banks would actually help increase the rate of drainage of pollutants from Shenzhen River into Deep Bay, with adverse impacts on the ecology of the Mai Po Marshes Nature Reserve (on the Hong Kong side) and the Futian Mangrove Nature Reserve (on the

Box 20.1 (Cont'd)

Shenzhen side) (Friends of the Earth, 1996, p. 21). To be sure, this project, built upon a rather lengthy period of protracted negotiations and is still ongoing, will take several more years before its full impact could be determined. It is, nevertheless, has been regarded as an exemplary scheme of inter-jurisdictional cooperation in tackling some major cross-border environmental problems, such as flooding and water pollution, that concern both Hong Kong and mainland Chinese authorities.

to help establish common environmental objectives between the Mainland and the HKSAR (*SCMP*, August 4, 1997). This idea was, however, never actively pursued by the SAR government.

In 2000, another environmental NGO — the Conservancy Association — put forward a variant of the idea of a regional planning institution. They proposed that “a council of mayors of major Pearl River Delta cities” should be formed to tackle cross-border pollution problems, with the HKSAR government providing the principal source of funding for local authorities in Guangdong to clean up the environment (*SCMP*, August 28, 2000). This proposal, however, was criticized by a Hong Kong deputy to the National People’s Congress as “impractical” because it was politically inappropriate, within the terms of China’s administrative hierarchical structure, for the HKSAR government to make such demands on its neighbouring jurisdictions.

In addition to proposing the establishment of a regional environmental governance structure, whether it be built on the existing framework or be a newly created institution, critics have also argued for the setting up of an environmental improvement fund specifically dedicated to clean up efforts in the Pearl River Delta region (American Chamber of Commerce, 2000). This environment fund could be used to provide low-interest loans for local authorities to implement improvement programmes and projects. Major sources of this fund could include Hong Kong-based companies operating and polluting in the Delta region, as well as the Hong Kong and Guangdong governments. Some even suggest that Hong Kong, in collaboration with local jurisdictions in the region, could either apply for a loan from international lending agencies such as the Asian Development Bank or petition the Central Government to help fund environmental improvement projects in the Delta.

Asides from asking Hong Kong-based companies to contribute to an environmental fund, some critics argued that the governments in Hong Kong and Guangdong could cooperate and introduce incentives to encourage Hong Kong-based companies operating in Guangdong to adopt certain corporate standards for environmental management, such as seeking ISO14001 certification. For instance, these companies could be encouraged to help reduce pollution in the Delta region through the introduction of and participation in a voluntary “Green Bauhinia” certification program (American Chamber of Commerce, 2000). Products manufactured by companies that comply with the programme requirements would be certified to be environmentally friendly, allowing them the advantage to tap into the West’s emerging green consumption market.

Currently, cross-border cooperative activities on environmental matters are undertaken almost exclusively between the HKSAR government and the Guangdong provincial authorities, first through the Hong Kong-Guangdong Environmental Protection Liaison Group in the pre-1997 years and the Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection in the post-1997 period (Figure 20.1(a)). The Shenzhen government was only involved in a limited number of projects such as the Shenzhen River regulation project; and the Central Government’s involvement was limited to macro policy planning issues.

The significance of the various proposals to create a new regional environmental governance framework thus lies in the fact that it is an argument to shift the locus of decision-making away from the Guangdong provincial authorities to a regional-level body whose jurisdiction would coincide with the boundary of a natural ecosystem such as the Pearl River Delta river basin (Figure 20.1(b)). One of the major preconditions for such an alternative institutional set-up to be viable and effective is that local jurisdictions within the Pearl River Delta region have the capacity and the political will to cooperate and coordinate their respective environmental improvement activities. In other words, an important and indispensable prerequisite for an effective region-wide cross-border cooperative mechanism between the HKSAR and its neighbouring jurisdictions is a well-functioning environmental management structure governing the latter. Research, however, has identified some entrenched institutional constraints that are hindering the effective implementation and enforcement of environmental rules and regulations even among the local authorities themselves in the Delta. Before we discuss the

specifics of international experiences on cross-border cooperation, it is therefore instructive for us to examine in detail the nature of such institutional constraints within the context of China's rapidly changing political economy of local environmental governance in the reform era.

<i>Tasks</i> \ <i>Spatial scale</i>	<i>Local^a</i>	<i>Regional^b</i>	<i>Provincial^c</i>	<i>Central</i>	<i>International</i>
Planning	***		***	***	
Management	***		***		
Research			***		
Funding	***		***		

Figure 20.1(a) Current Cross-border Cooperation Institutional Set-up

Notes:

- a Cooperation between Hong Kong and Shenzhen
- b Cooperation between and among Hong Kong and jurisdictions within the Pearl River Delta
- c Cooperation between Hong Kong and Guangdong Province
- *** Primary agencies

<i>Tasks</i> \ <i>Spatial scale</i>	<i>Local^a</i>	<i>Regional^b</i>	<i>Provincial^c</i>	<i>Central</i>	<i>International</i>
Planning	***				
Management		***			
Research	***				***
Funding	***			***	***

Figure 20.1(b) Proposed Cross-border Cooperation Institutional Set-up

Notes:

- a Cooperation between Hong Kong and Shenzhen
- b Cooperation between and among Hong Kong and jurisdictions within the Pearl River Delta
- c Cooperation between Hong Kong and Guangdong Province
- *** Primary agencies

**INSTITUTIONAL CONSTRAINTS ON EFFECTIVE
INTRA-REGIONAL ENVIRONMENTAL GOVERNANCE WITHIN
THE PEARL RIVER DELTA^{4,5}**

Many researchers have repeatedly emphasized the point that China has in fact promulgated a whole series of environmental laws and regulations at the national and local levels and therefore the pervasive problem of environmental decline is not the result of a lack of detailed environmental legislations and standards (Bachner, 1996; Neller and Lam, 1998; Wong and Chan, 1994). But government efforts, which necessarily need to be focused and delivered at the local level, in implementing and enforcing such regulatory measures as “environmental impact assessment”, “three synchronizations”, and the “pollutants discharge fees” have largely proven ineffective in combating pollution and preventing the environment from further deterioration (Lo and Cheung, 1998, p. 380). Policy-makers in China have also concurred with this observation made by many researchers (Bachner, 1996). In the words of a Chinese critic, “the main barrier to solving China’s environmental problems is not necessarily technical, but rather the often loose management of pollution” (Chan, 1998, p. 65).

For example, although the preparation of an Environmental Impact Assessment (EIA) report has been made mandatory in China, only “large” development projects with an investment exceeding *RMB* 200 million are required to submit an EIA report to the State Environmental Protection Agency (SEPA) for approval. A majority of development projects, which are categorized as medium-scale and small-scale, are allowed to bypass the stringent EIA requirement (Wong and Chan, 1994). In fact, many government infrastructure projects, despite considerable adverse environmental consequences, are given permission to proceed without undergoing any formal EIA procedure (Lo and Cheung, 1998).

Before we examine the underlying factors that cause local officials to fail to enforce and implement environmental rules and regulations, it is instructive to have an understanding of the significant role played by local-level environmental protection authorities. Given that most environmental problems are by nature regional and local in character, the Central Government has given some latitude to local officials to determine their own environmental standards and objectives to reflect and match local conditions (Neller and Lam, 1998).⁶ Generally speaking, in order to help local administrations to establish “attainable goals,” local standards are allowed to be set at a level lower than

those specified at the national level. This could of course lead to a situation where local standards were set at a level not conducive to environmental improvements. It also means that the successful implementation of any environmental protection measure would, to a great extent, depend on the environmental consciousness and commitment of local administrators (Wong and Chan, 1994). This is particularly true for the case of rural township enterprises, which have developed largely outside of the Central Government's environmental management system, and their activities are only regulated to the extent that local officials wish to exercise such authority (Maurer et al. 1998).

Given China's decentralized governance structure, local-level environmental protection offices are thus the most critical link in the enforcement of environmental laws. But, ironically, they have turned out to be the weakest part of the system. The lack of sufficient financial and human resources directed at the local level has commonly been offered by some analysts and local government officials as one of the foremost causes accounting for the problem of weak or ineffectual enforcement of existing environmental rules and regulations (Citizens Party, 1999). For instance, SEPA does not have sufficient operational funds to oversee and regulate local environmental protection bureaux (EPBs).⁷ The latter, which are nominally funded by local governments but, in some instances, have to rely on effluent charges that they collect from polluting factories, complain that they hardly receive enough funds to run their offices (Neller and Lam, 1998). One of the consequences of insufficient funding for local environmental protection bureaux is that "few waste-water treatment plants are in operation in China, and few that are in operation fully comply with EPB or SEPA water quality standards" (Citizens Party, 1999, p. 17).

While not meant to downplay the significance of the problems of under-funding and under-staffing at the local EPBs, a detailed analysis of the underlying dynamics of the mechanism for local-level implementation would show that insufficient resources, financial and otherwise, is only a symptom of two principal institutional constraints that are preventing the effective enforcement of environmental laws. These two structural constraints are: a decentralized, fragmented environmental governance structure and a pro-growth culture that permeates the entire state hierarchical apparatus.

Fragmented Governance Structure

To be sure, China's state environmental management apparatus suffers from

some institutional problems that are commonly found in many other parts of the world: a fragmented bureaucracy where the environmental agency has no overall coordinating power over other government offices to bring about environmental improvements. The organization of the environmental protection system in Guangzhou would best illustrate this problem. In that city, the highest policy-making body responsible for environmental protection is the Environmental Protection Committee. This Committee, however, has limited power. In order to formulate and enforce city-wide environmental projects, it needs to coordinate with and requires cooperation and support from more than twenty other agencies such as the City Planning Commission, the City Economic Commission, and the City Industrial Commercial Department. Unfortunately, most, if not all, of these agencies "are known to be reluctant to endorse and enforce stringent environmental measures for the fear such measures might slow down economic growth" (Lo and Cheung, 1998, p. 385).

In the Delta, the multi-level, multi-agency water quality monitoring and control system helps illustrate yet another dimension of the fragmentation problem. The Guangdong provincial EPB is only responsible for monitoring the upstream and inland sections of the Pearl River, whereas the task of monitoring the water quality of the Pearl River to the south of Guangzhou falls in the hands of the Pearl River Water Resources Management Committee, and that of examining the marine water quality of the South China Sea, including the Pearl River estuary, the South China Sea sub-bureau of the State Oceanic Administration and the South China Sea Institute of Oceanography (Citizens Party, 1999). Attached to this primary group of agencies is, in fact, another string of several secondary players involved in the monitoring and control of water quality of the Pearl River system: the Guangdong Coastal Area Investigation Department, the Pearl River Basin Water Resources Protection Bureau (under the auspices of the Ministry of Water Resources and National Environmental Protection Agency), the Guangdong Provincial Waterway Bureau and a number of other hydrologic, navigation and research agencies. The functions and responsibilities of this multitude of agencies are, however, poorly defined and a lack of coordination has led to conflicting demands for scarce resources (Neller and Lam, 1998).

In China, such conventional fragmented governance problems in environmental management practices are compounded by a highly decentralized administrative system. One of the most prominent features of the reform measures introduced since the late 1970s has been the decentralization of decision-making power to local administrations.

Consequently, territorial governments at all levels were given much greater autonomy and authority vis-à-vis the central ministries (Lieberthal, 1995). The primary intention of the decentralization strategy was to maximize local flexibility in the pursuit of rapid economic growth. Such an approach has, however, helped reinforce the fragmented governance structure and deepen the disjuncture between China's promise and her performance on environmental protection issues. Specifically, such a structure has introduced some inherent conflicts among environmental agencies at different territorial levels, effectively weakening the successful implementation of national environmental policies at the localities.

Under the decentralized administrative system, it is up to the provincial authority to appoint the chief administrators of the local EPBs and to fund EPB operations.⁸ As such, local EPBs are often found to be "neither fully educated to SEPA's policies nor are fully dedicated to their implementation due to conflicting local politics" (Citizens Party, 1999). Such a decentralized system, and its drawbacks, is repeated at the municipal level. For instance, the environmental administrative system in Guangzhou operates through a three-tiered structure: the city, the district and the street/county levels. With their operating budgets coming directly from the district and street/county governments, environmental protection offices (EPOs) at these lower territorial levels are therefore financially independent of the provincial and city EPBs. It is only natural that their loyalty lies more with the local governments and people's congresses at the corresponding levels than with their nominal supervisors within the environmental administrative hierarchy.

Indeed the local EPOs are serving primarily as the local authorities' executive arms for implementing environmental policies and enforcing environmental rules and regulations. Without direct authority over local EPOs under its jurisdiction at lower levels, the city EPB could only attempt to coordinate activities, and not impose its will, in implementing environmental protection measures. Thus, when confronted with difficult cases which involve conflicts of interests or major differences over policy preferences between the local governments and the EPB, local EPOs would invariably turn their back against the latter (Lo and Cheung, 1998).

Dominant Pro-Growth Culture

Some researchers have asserted that a post-reform institutional culture that values economic growth above all else as a leading factor that, through its enormous impact in shaping the state's structure of incentives for local officials,

inhibits the effective implementation of environmental policies and programmes throughout almost every administrative stratum in China (Lieberthal, 1995; Lo and Cheung, 1998; Neller and Lam, 1998). The most significant aspect of this institutionally entrenched pro-growth culture, which is also the most damaging to the environmental agenda, is the fact that rapid economic growth is made the foremost criterion in evaluating the performance of officials at all levels. As a consequence, particularly at the local levels, bureaucrats consider themselves as both government administrators and entrepreneurs, leading to “massive official involvement in the economy at all levels” and “pervasive incentives to produce rapid economic growth” (Lieberthal, 1995, p. 4). The merging of China’s hierarchical configuration with the reform-induced incentive structure then produces a rather bizarre condition where “the entrepreneurs [local territorial officials] typically control the regulators [local environmental officials]” (Lieberthal, 1995, p. 5).

To be sure, the Chinese authorities, even in the pre-reform period, were not immune from dealing with the classic tension between the needs for economic development and the demands of environmental improvements and have generally given in to the former at the expense of the latter (Smil, 1993). But a reform-induced reverence for rapid economic growth has intensified that tension and further tipped the balance toward growth to the detriment of the environment. In the words of one leading Chinese environmental official: “the primary threat to the environment is the irrational economic development that sacrifices China’s natural resources for commercial advancement” (Bachner, 1996, p. 267). Given the strong incentives to expand the local economy and generate new revenue and new jobs, local officials have reportedly conspired to dampen the impact of disciplinary actions imposed by their own environmental units (Lieberthal, 1995).⁹

Nowadays, researchers are quick, and rightly so, to argue that local administrators, in their rush to attract the highest possible level of investment, are willingly compromising environmental standards and bypassing environmental regulations prescribed by higher authorities (Chan, 1998). In Guangdong, at the provincial level, for instance, environmental improvement efforts are frustrated by, among other factors, “an ethos that puts economy and development ahead of environmental quality” (Neller and Lam, 1998, p. 457). These efforts are further dampened by the fact that the level of environmental awareness in the province is rather low and that “there is no genuine desire by environmental protection bureaucrats to involve the public in decision-making” (Neller and Lam, 1998, P.457).

At the municipal level, in Guangzhou, environmental efforts are also hindered by the same notion that economic growth must not be hindered by environmental programmes. Given that the city's environmental protection bureau is a subordinate unit of the municipal government which oversees its budget allocation, its ability to implement and enforce environmental regulations is reportedly "heavily circumscribed by the mayor's pro-growth attitude" (Lo and Cheung, 1998, p. 394). In fact, a strong development-oriented norm is found to be commonly accepted by "top government leaders, bureau officials and local people" in Guangzhou, which consequently renders most regulatory institutions — including but not limited to the environmentally-related ones — much less effective than expected (Lo and Cheung, 1998).

This rather dismal depiction of environmental management in Guangzhou is made more bleak by a somewhat surprising research finding that reveals that most of the officials in the city's environmental protection bureau "are not pro-environment" and that the Environmental Protection Committee, the city's top agency in charge of environmental policy formulation, has been "dominated by a strong pro-growth sentiment" (Lo and Cheung, 1998, pp. 385-6). Using a standardized method in measuring the level of environmental consciousness, a survey conducted in 1990 discovered that an overwhelming majority of Guangzhou's environmental officials, including senior, middle- and street-level bureaucrats, embraced predominantly pro-growth attitudes. Moreover, "[n]early all of them expressed a strong consensus on the need to maintain a high level of economic development as the most important task for China in general and Guangzhou in particular" (Lo and Cheung, 1998, p. 398).

As we move our attention from the city to the county level, it is apparent that the institutional culture that places economy ahead of environmental protection becomes even more entrenched down the administrative and geographical hierarchy. In the post-reform era, counties are striving to be self-sufficient and are competing against each other for the fastest possible economic growth and they are not willing to relegate any of their decision-making power — relating to environmental matters and otherwise — to authorities further up the hierarchy (Neller and Lam, 1998, p. 445). Moreover, the further the counties are geographically remote from the growth centres, the greater the degree of growth-oriented development paths have been adopted.

INTERNATIONAL EXPERIENCES IN CROSS-BORDER COOPERATION ON ENVIRONMENTAL MANAGEMENT

Regardless of whether one should opt for the strengthening of the existing

framework or for the creation of a new governance structure, the idea of a regional environmental governance system (i.e., an ecosystem approach) would necessarily demand a fundamental paradigmatic shift in the thinking of political leaders and environmental managers in the region. The basic tenet of an ecosystem approach — “multiple jurisdictions, one system” — would seemingly run into a direct contradiction of the principle of the “One Country, Two Systems” framework that is governing Hong Kong’s relationship with the Mainland. Further research is therefore needed to help identify the least resistant and the most promising avenue for a breakthrough in establishing a regional environmental governance system that is acceptable to all the stakeholders concerned. And this is an area, as well as some of the technical issues such as collaborative tasks in data generation and collection, where international experiences on cross-border cooperation on environmental management could help throw some light at.

For instance, the experience of Canada and the United States in governing the Great Lakes ecosystem has often been cited as a model for international governance of a shared natural resource system. Under a 1978 agreement, both governments committed themselves to an “ecosystem approach” — “an approach that views the entire Great Lakes basin as an integrated ecosystem, thus requiring cooperative efforts not just on water quality, but also on sediments, air pollution, and land-based activities” (Valiante et al., 1997, p. 202).¹⁰ The formal organizational elements of the regime include an International Joint Commission (IJC) comprising members from both countries and a set of sub-committees responsible for data gathering and analysis, policy formulation and programme assessment, and the dissemination of information to the public. Three characteristics of this regime have been identified by researchers as essential to its effectiveness: “(a) common fact finding; (b) progressive and flexible substantive objectives; and (c) a process that has allowed for broad participation and has fostered the development of a strong Great Lakes community” (Valiante et al., 1997, p. 205). The most significant aspect of these attributes lies in the fact that they have led to a balance of power between the United States and Canada, allowing progress to be made in cross-border cooperation.

For instance, the practice of “common fact finding” by members of the binational IJC has helped depoliticize many sensitive or controversial bilateral issues. Through the process of “common fact finding,” experts from both countries are insulated from narrow political and other non-scientific interests

in their pursuit of technical data to help understand and define the nature and scope of the problem. Given the highly politically sensitive nature pertaining to cross-border environmental data affecting the HKSAR, and given that Hong Kong and its neighbouring jurisdictions actually share and lie within one major natural ecosystem (i.e., the Pearl River Delta river basin), it is worthwhile to conduct further research on the feasibility of applying this “ecosystem approach” and specifically its joint data collecting method to either the larger Delta region or, as a pilot scheme, the border area zone between the HKSAR and the Shenzhen SEZ.

Interestingly, unlike other statutory international bodies, the IJC does not have any authority to enforce the agreement, design policies and implement action programmes. It was, however, given the power to collect, verify, analyze and disseminate information on all aspects of both the Great Lakes ecosystem and public-sector activities. The IJC is therefore regarded as an important source of sound and independent information that helps empower environmental groups to press for further progress. Although its recommendations are not legally binding on the two participating governments, its ability to identify problems through cooperative scientific research and to make research-based policy recommendations has played a crucial role in consolidating the basis of Great Lakes governance (Valiante et al., 1997, p. 206). Given these successful experiences of the IJC in generating the elementary building blocks for a regional governance structure, repeated calls in recent years from researchers on both side of the Shenzhen River border to establish a region-wide, policy-oriented research organization, either based at universities or operating as an independent body, should warrant serious consideration and support from local, provincial and national authorities (Ng, 2000).

Moreover, in the case of the Great Lakes Commission, the adoption of the “ecosystem approach” has produced three general impacts on its governance regime. First, the scope of the regime was expanded beyond the Great Lakes to include the entire drainage basin and all interconnecting biophysical, social, economic, cultural and ecological components in both the United States and Canada. Secondly, the ecosystem concept introduces a multi-media perspective that requires the consideration of cross-media effects resulting from the interactions among water, air and land elements. Thirdly, through the adoption of an ecosystem approach, the Great Lakes basin has become an identifiable region for both governmental and non-governmental stakeholders alike. And this recognition has helped highlight the common

problem of the mismatch between the need to tackle environmental problems at the larger natural spatial scale and the limits of artificial man-made political boundaries.

Asides from the experiences of the Great Lakes Commission, the cooperative efforts between the United States and Mexico in governing their extensive border area zone present another important source of ideas for tackling cross-border environmental issues in the Delta region. There are some striking similarities between the United States-Mexico border zone and the Hong Kong-Shenzhen border region. In both cases, the border region is characterized by common physical landforms and ecosystems, as well as long-standing kinship and cultural ties. In both instances, the disparities between the two pair of localities have led to predictable economic divisions: industrial plants have been established in the latter to take advantage of low-cost labour, inexpensive land, energy and water resources, and the unevenly enforced environmental regulations. In the border area between the United States and Mexico, the most troublesome environmental problem relates to that of intense competition for water in two major rivers — the Rio Grande and the Colorado. In a somewhat similar way, one of the major cross-border contentions between Hong Kong and its neighbour to the north, aside from air pollution, pertains to water pollution, in particular the quality of the water supplied by the latter to the former.

In order to address cross-border and trans-boundary environmental issues, the United States and Mexico signed a special agreement in 1994 to establish two binational organizations that operate solely within the border zone; namely, the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADBank) (Milich and Varady, 1998). A particularly interesting aspect of this special agreement, which is highly relevant to the Pearl River Delta region, is the fact that it is deliberately designed to link environmental sustainability with economic development. It is recognized early on by environmentalists that the development of Mexico's border region will require sizable investment in environmental infrastructure (such as water supply and waste-water treatment plants) to assure residents a clean and safe living environment. Thus, the twin organizations of BECC and NADBank were created to ensure that resources were specifically channelled for environmental infrastructure projects in the border zone to keep up with the demands and pressure brought on by development. In brief, whereas BECC is responsible for certifying proposed environmental infrastructure projects

according to some explicit criteria such as community participation, public health and the environment, technical feasibility and sustainable development, NADBank is created to help provide the finances to fund the approved projects through public-private partnership loan programmes.¹¹

It is worth noting that several highly innovative features were deliberately introduced in formulating the twin organizations of BECC and NADBank's administrative structures and operational procedures to distinguish them from other binational arrangements. First, both are administered binationally at all levels — policies made by a single board with, and programmes managed and staffed by, members drawn from both countries. Secondly, preference is given to disadvantaged communities in the allocation of project loans and grants. Thirdly, public participation at all levels of the operation of the two organizations is made mandatory and feasible by conducting the processes in an open and transparent fashion (Liverman et al., 1999). Recent research has concluded that this organizational framework, which denotes a significant departure from the norm, "has shown great promise in focusing on the needs and ambitions of border residents" (Liverman et al., 1999, p. 625).

As alluded to in earlier discussion, in the Hong Kong-Pearl River Delta region, proposals to setting up a regional environmental clean-up fund similar to the NADBank have been recently put forth by both the private sector and the NGO community in the HKSAR.¹² Given the similarities in the geographical and economic dimensions between the United States-Mexico border and the Hong Kong-Shenzhen border, it is instructive to conduct further research on how the twin organizations of BECC and NADBank operate in tandem and explore the question of the extent to which their experiences could be applied to the SAR's linkages with its counterparts to the north of the boundary.

CONCLUSION

Much of the ongoing debate taking place in Hong Kong on how to proceed to strengthen cross-border cooperation in environmental management tend to focus on the technicalities and configurations of the formal organizational structure pertaining to that of the existing committees or proposed alternative bodies. This debate, and much of the discourse on this matter as well, has thus far failed to realize that some important social and institutional elements — such as "social capital" — are missing from the larger picture of building cross-border cooperation, not only in the area of environmental management but in other matters of mutual concern to authorities on both sides of the

Shenzhen River. Such principal ingredients of social capital as “trust, norms, and networks” between and among all the relevant stakeholders are central to consolidating and strengthening the institutional basis toward successful cross-border cooperation. Environmental managers and policy-makers at the local, provincial and national levels need to be educated about the need to move beyond the technical studies and to accept the need to nurture and develop the social capital required to tackle the increasingly complex problem of managing cross-border environmental conflicts. This argument is particularly pertinent for the HKSAR government which, impeded by a set of institutional constraints, has been repeatedly chided by critics for not taking more bold initiatives to discuss and implement cross-boundary cooperation projects with its counterparts to the north of the border (Lee, forthcoming).

With regard to the formation and importance of social capital, two major lessons could be gleaned from the above discussion of the two international examples of cross-border cooperation on environmental resource management. First, participating local governments would have to be mutually recognized and accepted as equal partners entering into an agreement, with each contributing an equal share to and receiving some benefits from the process. That is, cross-border cooperative projects and programs, in order to be effective and sustainable, would have to be conceived, designed and implemented by bilateral or multilateral teams that have equal representation from the participating jurisdictions. Secondly, the cooperative process should be opened up to as many relevant and legitimate stakeholders as possible, which include the governments, non-governmental groups, scientific and research groups, the business sector and the local communities. That is, in order to garner the contributions, feedback and full support of its multiple stakeholders, the operational aspects of this cooperative process should be made as open and transparent as possible to help mobilize the immense amount of resources in society and, more importantly, to help establish clear lines of accountability.

From the experiences of the Great Lake Commission and other international cooperative bodies as well, it is apparent that social capital pertaining to cross-border issues could not have been created overnight but would need to be gradually developed over many years or even decades. However, if one were to accept the nurturing and building-up of social capital as a primary long-term goal in cross-border cooperation, then local authorities in the Pearl River Delta region would need to re-prioritize their actions and re-direct their resources toward the following two tasks.

First, at the moment, some of the regional environmental governance proposals put forward implicitly resemble an “ecosystem approach” but such an idea has not yet been explicitly articulated and formally entertained by any jurisdiction in the Pearl River Delta region. A formal adoption of such an approach will help provide the catalyst and the foundation for the development of an ecosystem ethic that is needed to bring all the concerned stakeholders in the region together to accept that more specific region-wide laws and programmes are necessary. In this regard, local governments should provide support to the scientific and research communities in both Hong Kong and its neighbouring jurisdictions to *work together* to help identify the basic parameters in applying the “ecosystem approach” to managing the Pearl River Delta river basin. That is, in order to help depoliticize the cross-border environmental issues which are bilateral and often times multilateral in nature, studies undertaken by scientists and researchers in the region could consider following the International Joint Commission’s method of conducting “common fact finding” projects.¹³ In addition to identifying, assembling and disseminating relevant and useful scientific data at the regional scale, this process will also help build mutual trust and respect and consolidate the institutional base for further cross-border cooperation.

Secondly, some quarters in the private sector and some non-governmental organizations in Hong Kong have recently advocated the creation of a clean-up fund, based in Hong Kong but would be used to help finance environmental management projects in the Pearl River Delta. Their principal arguments for setting up this fund are two-fold: (a) most local authorities in the Delta do not have the financial means to address environmental problems within their jurisdictions but such problems often impose considerable costs of externality on Hong Kong, and it is in the latter’s interests to help pay for a part of the clean-up costs; and (b) it is far more cost-effective, and environmentally more benign, to control and minimize the pollution problems at their sources within the Delta than to deal with the “end-of-the-pipe” effects in Hong Kong. In effect, they are advocating the creation of a regional environmental fund akin to that embodied by the NADBank.

At the moment, however, these proposals have only centred on the creation of a clean-up fund. This has aroused concerns among some quarters in Hong Kong, particularly government officials, that such a fund could be misused or abused because there is no mechanism suggested on how to select, monitor and evaluate projects sponsored by such a fund. In this regard, one can draw

upon the experience of the United States-Mexico cooperation in establishing the twin organizations of BECC and NADBank. To allay the skeptics' concerns of misuse and abuse of clean-up fund, an organization akin to the functions of the BECC could be created to ensure that projects proposed for and awarded funding in the Delta region would meet some explicit criteria and be continuously monitored through its completion. However, even if a consensus could be reached on establishing such twin organizations in this region with functions akin to that of the BECC and NADBank, one particularly challenging question would still need to be resolved. Whereas the BECC is basically a bilateral body, establishing an organization with similar functions in the Pearl River Delta region would need to take into full consideration the complexities that are imposed by the Delta's multi-layer and multi-jurisdictional milieu.

Ideally, the adoption of the Great Lake Commission's "ecosystem" framework, combined with the Border Environment Cooperation Commission's "twin organizations" approach, would help provide the basis for generating the much needed social capital in the Pearl River Delta to address cross-border environmental problems. However, as indicated by the discussion on the institutional constraints on intra-regional environmental management in the Pearl River Delta, it is going to be one of the most challenging tasks to try to bring together a multitude of local governments — whose interests and concerns do not always coincide — to agree to a "one-ecosystem, multi-jurisdictions" governance structure in which all of them would need and be willing to compromise their own autonomy.

Given the substantial variations in the levels of economic development and the often competing aspirations between and among the local jurisdictions in the Pearl River Delta, one of the most likely outcomes, as far as cross-border environmental management is concerned, is that most jurisdictions, including the HKSAR authority, would only be interested in forming *ad hoc* bilateral working groups with their immediate neighbours to address any major environmental problems of mutual concerns, provided that the solutions to such problems would also lead to mutual gains. Such an *ad hoc*, piecemeal, and bilateral approach, as exemplified by the Shenzhen River regulation project, will probably continue to be the dominant mode of cross-border cooperation into the near future. It will take an enormous amount of political will, mostly at the provincial and national levels, to mobilize resources and to modify the rules of game before the local jurisdictions would break with the *status quo* and be either enticed or coerced into adopting a region-wide, multi-lateral "ecosystem" governance structure.

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NOTES

- 1 The concept of “social capital” was first raised by Robert Putnam, a political scientist who studied the effectiveness of local government institutions in northern and southern Italy. He defined social capital as “features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions” (quoted in Nickum 1999, p. 147). For the purposes of our discussion, social capital could be considered as analogous to other forms of capital that, when combined, at any spatial scale, constitute the necessary — but not sufficient — condition for formulating and implementing effective actions — at both policy and grassroots levels — on cooperative environmental management activities across jurisdictional boundaries.
- 2 Two of the most severe floods occurring in June and September 1993 have caused damages amounting to 1.4 billion yuan in Shenzhen and HK\$5 billion in Hong Kong. See *One Earth*, Winter (1995-96), p. 21.
- 3 The Shenzhen River regulation project contained three phases and cost an estimated HK\$976 million. Regarded by authorities on both sides of the border as a collaborative scheme, the cost of the project was split equally between the Hong Kong and Shenzhen governments. *South China Morning Post*, October 5, 1995.
- 4 This section is an expanded version of an earlier article, prepared by the author, which appeared in *China Environment Report: Ecological Lessons of the Pearl River Delta*, Hong Kong: Greenpeace China, 2001, pp. 23-35.
- 5 In addition to the institutional constraints on effective intra-regional environmental cooperation among jurisdictions inside the Pearl River Delta, there are three major institutional constraints within the Hong Kong Special Administrative Region that are impeding the application of more effective and persuasive efforts to resolve cross-boundary problems. These institutional barriers—which stem from the worries and weaknesses of the

Hong Kong SAR government itself-pertain to the pitfalls of the “one-country, two systems” scheme; the Hong Kong government’s expressed fear of compromising its own autonomy; and the lack of a coherent policy on cross-border coordination. These constraints, and their implications for research and policy, are discussed in detail in Yok-shiu F. Lee (forthcoming), “Tackling Cross-Border Environmental Problems in Hong Kong: Initial Responses and Institutional Constraints”, *The China Quarterly*.

- 6 This approach has unfortunately led to a lack of uniformity in standards and implementation procedures, which is exploited by polluting industries who would seek out and re-locate to localities with the least requirements. See Neller, R.J. and K.C. Lam. 1998. “The Enviroment”, in *Guangdong: Survey of a Province Undergoing Rapid Change*, edited Y.M. Yeung & David K.Y. Chu, Hong Kong: The Chinese University Press, p. 445.
- 7 SEPA has only 250 employees and they are all stationed in Beijing. As such, to implement and enforce environmental codes and regulations, SEPA must rely on and work through the Environmental Protection Bureaus (EPBs) established at the provincial and local levels. See Citizens Party, “Improving Water Quality in the Pearl River Delta,” Position Paper (1999), p. 10.
- 8 This arrangement has led to a wide disparity in how environmental policies and programmes are implemented between provinces. For example, whereas Shanghai’s EPB is considered the country’s leader in environmental enforcement, Guangdong’s EPB enjoys a lesser favorable reputation and receives relatively less financial support from the provincial authority. See Citizens Party, “Improving Water Quality in the Pearl River Delta,” Position paper (1999), p. 10.
- 9 Here is a documented case of such conspiracy: A local environmental protection bureau (EPB) imposed a fine on a large local enterprise and then passed along the amount collected to the local government; the government then provided a tax break to the enterprise more or less equivalent to the amount of the fine that had been levied. “In this way, the (EPB) met its responsibilities by imposing the fine and the government met its responsibilities by maintaining the financial health of an important source of local jobs and income. Only the environment lost out in this scenario.” See Lieberthal, Kenneth, “China’s Governing System And Its

Impact on Environmental Policy Implementation,” *China Environment Series*, Issue No. 1, The Woodrow Wilson Center, 1995, p. 6.

- 10 This agreement, formally known as the Great Lakes Water Quality Agreement, was first proposed in 1972, renegotiated in 1978 and amended in 1987. For an interesting in-depth discussion on the historical and political economy contexts of the negotiation conducted between the United States and Canada over this agreement, read Don Munton and Geoffrey Castle, “the Continental Dimension: Canada and the United States,” in Robert Boardman, (ed.), 1992, *Canadian Environmental Policy: Ecosystems, Politics, and Process*, Toronto: Oxford University Press, Chapter 11, pp. 203-223, and Terence, 1997, *Cleaning Up the Great Lakes: From Cooperation to Confrontation*, DeKlab, Ill.: North Illinois University Press.
- 11 For a detailed description of the structure, institutional design, functions and powers of the Border Environment Cooperation Commission and the North American Development Bank, see Helen Ingram, Nancy K. Laney, and David M. Gillilan, 1995, *Divided Waters: Bridging the U.S.-Mexico Border*, Tucson, The University of Arizona Press, Appendix B, pp. 234-242.
- 12 For instance, the American Chamber of Commerce in Hong Kong, in their position paper entitled “Supplement on Regional Pollution Abatement Initiatives (2000)”, has proposed the “creation of a fund to use technology to raise environmental standards of Hong Kong companies operating in Guangdong”.
- 13 With regard to enhancing the research capacity on cross-border environmental issues, there is an apparent need for new institutions to be created and new research projects to be undertaken at existing institutions. Ideally, in the long run, think tanks that operate at the regional level and across jurisdictional boundaries should be developed. In the short run, inter-university research programmes that bring together academics from both sides of the border-funded by both the government and the private sector-would help address the shortfall in our understanding of the dynamics of cross-border environmental problems.

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Urban and Regional Planning

Chapter 21

Towards a Shared Prosperity Through Cross-Border Cooperation

SUN Huasheng

INTRODUCTION

The major challenge confronting us in the fast-growing new millennium is how to understand the nature and meanings of the ever-changing conditions and what we should do to keep pace with such changes and prepare ourselves to adapt to these fast-changing situations. From the beginning of the year 2000, we have already found out that the new Century would be propelled by a new economy comprised of high-tech information-based and knowledge-based industries, but its future growth would be determined by factors that facilitate and constrain sustainable local development. For the purposes of promoting a shared prosperity in the Pearl River Delta region through cross-border cooperation, much attention should therefore be given to these aspects as a starting point to expand our imagination and attain our aspirations.

KEY FACTORS CONTRIBUTING TO SUCCESSFUL CROSS-BORDER COOPERATION

Undoubtedly, the ultimate aim of cross-border cooperation is for the people of both Shenzhen and Hong Kong to gain substantial benefits from a common and coordinated development process. However, at the same time, we also need to remember that economic growth should not be achieved at the expense of sacrificing environmental quality, ecological balance and social equity.

1. There are Differences between Shenzhen's and Hong Kong's Economies

The first difference between Shenzhen and Hong Kong relates to the sectoral composition of these two economies. While the annual growth rate of Shenzhen's GDP has been recorded at an average of 29.7 percent during the 1981-1999 period, which was much higher than that of Hong Kong, this growth was derived mainly from secondary industry, which accounted for 50.6 percent of Shenzhen's GDP, defined primarily in terms of manufacturing and high-tech production. On the other hand, Hong Kong's

economy has derived most of its growth from the development of tertiary industry, which accounted for 83.5 percent of its GDP.

Secondly, Shenzhen's prosperity depends to a great extent upon domestic market within the Mainland, while Hong Kong's more on international market except for a large percentage of transshipment of cargo from the Mainland. These distinctions must be taken into account when thinking about regional planning and cross-border cooperation.

2. Shenzhen and Hong Kong should utilize their existing strengths and promote further cooperation and coordination

The strengths of Hong Kong reflect her role in both the domestic and world economies in the following ways. They are:

1. A financial centre attracting international capital, with local capital seeking investment opportunities in the international market;
2. A transportation hub connecting with major countries and cities by various transport modes;
3. A thriving local market in terms of real estate, commercial and trading activities;
4. A tourist destination and a shoppers' paradise;
5. A clearing centre for the processing industry in dealing with international orders and a centre of producer services in terms of transferring commission payment as well as management skills and technology into the Mainland; and
6. An information centre for different industries and sectors, as well as a multi-disciplinary knowledge base.

The strengths of Shenzhen are the results of the economic reform programme that have given it a dynamic economic and social structure. The average annual growth rate of GDP was 29.7 percent for the 1981-1999 period, whereas the per capita GDP growth rate was 13.6 percent during the same period. The total volume of cargoes handled at the port was 46.6 million tonnes in 1999 and the total value of imports and exports reached US\$50.4 billion in 1999. Shenzhen is a communication hub served

by a network of highways that links with Hong Kong and neighbouring cities; railways to North China and other major provinces; airline services with capital cities in other provinces; and seaports that connect with some of the world's major ports. High-tech industry is another strength of Shenzhen. The total volume of electronic production has been increasing rapidly. For example, during the 1998-1999 period, the growth rate of the semiconductor and integrated circuit industry was recorded at 168 percent. The figures for the microcomputer sector and the liquid crystal display sector were 79.6 percent and 155 percent respectively. In the near future, Shenzhen and Hong Kong can utilize their respective strengths and develop further cooperation and coordination in the fields of logistics and transportation, high-tech industries, tourism and environmental engineering.

- 3. Shenzhen and Hong Kong should explore some new possibilities that will be beneficial for mutual prosperity. The focus must be placed upon developing a new strategy and identifying a new market. Then, the two cities need to define their respective future role within a framework of cross-border cooperation and understand how to adapt themselves to a new era of cross-border cooperation.**

Cross-border cooperation cannot be sustained without understanding the major current concerns in world development - the growth of the "New Economy" and the rules of WTO. In the United States, one of the major reasons why the high-tech sector has become a newly-emerging industry was due to the dynamics between new technology-based firms and venture capital.

With regard to the rules of the WTO, the impact of China's accession will be much more critical than that of Hong Kong. The possible impacts are related to the following aspects :

1. Increasing speed of internet and capital entering China;
2. Various industries in China would be reorganized and incorporated within the international system of division of labour; and
3. China's overall industrial structure would need to undergo readjustment and optimization.

All these activities will bring forth some strong impacts on China's urbanization process. There will be no exception for Shenzhen and the Pearl River Delta (PRD) region. While Hong Kong has already been fully integrated with the world market, Shenzhen and the PRD region have just started their journey. One major challenge to planners is how to deal with the disparity between Shenzhen and Hong Kong in drafting a regional development strategy.

- 4. One of the major concerns among researchers and officials relates to the real and imagined competition between the integrated economy of Shenzhen-Hong Kong and other Chinese cities. Another concern relates to the competition between the Pearl River Delta (including Shenzhen and Hong Kong) and the Yangtze River Delta (YRD).**

There is no need for us to list out all the major development indices of these two regions. However, we can compare Hong Kong and Shanghai, the two leading cities of the PRD and YRD regions respectively. Table 21.1 highlights some major comparisons between these two metropolises.

Table 21.1 A Comparison on Competitive Capacity between Hong Kong and Shanghai

Item	Rate of Change	
	Hong Kong	Shanghai
Average rate of increase of GDP (1990-1999) (%)	4.5	10.1
Average rate of increase of per capita GDP (1990-1999) (%)	2.7	9.7
Average rate of increase of fixed assets (1990-1999) (%)	5.3	9.0
Average rate of increase of local deposit (1990-1999) (%)	6.9	25.0
Share of fixed assets investment in GDP (%)	29.2	46.0
Share of manufacturing investment in GDP (%)	6.2	43.6
Share of service industry in GDP (%)	84.7	49.6
Value of GDP in 1999 (US\$ billion)	157.7	49.4
Number of university teachers (person)	5,605	20,092
Number of post-graduate students (person)	1,173	48,534
Number of university students (person)	59,865	186,300
Population size in 1999 (million)	6.8	13.1
Total land area (km ²)	1,098	6,341
Import value in 1999 (US\$ million)	1,789	198
Export value in 1999 (US\$ million)	1,729	188

Source: Faculty of Business Administration, The Chinese University of Hong Kong (2001), "A Comparison on Competitive Capacity between Hong Kong and Shanghai," *Hong Kong Commercial Daily*, 15 May 2001.

As shown in Table 21.1, Shanghai performed better than Hong Kong in some development aspects and it was projected that Shanghai's per capita GDP will be higher than that of Hong Kong in about ten years. Nevertheless, Hong Kong is still ahead of Shanghai in quite a number of competitive indicators. What Hong Kong has to do is to focus on her existing strengths and enhance her competitive capacity.

A REGIONAL PLAN FOR CROSS-BORDER COOPERATION

There have been many good examples of cooperation in various aspects and in different fields between Shenzhen and Hong Kong, as well as between Guangdong Province and Hong Kong, in the past two decades. These examples include environmental protection measures taken by Guangdong authorities to ensure the water quality supplied to Hong Kong. Moreover, Hong Kong and Shenzhen share the water bodies in the eastern and western sides. There are also close cooperation relating to handling huge volume of passenger and container truck traffic, which has been resulted from (a) the relocation of manufacturing activities from Hong Kong to Shenzhen and other cities within the Pearl River Delta (PRD) region; (b) the increasing volume of import and export trade between Shenzhen and Hong Kong; (c) the increasing volume of foreign and Hong Kong investment into projects located in Shenzhen and the PRD area; and (d) increasing flow of energy and non-staple food supplies from Shenzhen to Hong Kong.

Although there are always close interactions between the two sides of the border, yet no cross-border regional plan has been formulated so far. There is an obvious need to develop such as a cross-border regional plan to facilitate the development of both Hong Kong's economy and its counterparts across the border to turn the PRD region into a competitive regional economy.

It is worth noting that a border exists not only between Shenzhen and Hong Kong, but also between and among the various cities in the Pearl River Delta region. There are also problems of cross-border cooperation between local jurisdictions with the PRD region, for examples, in areas such as water supply and communications. Therefore, a solution to cross-border cooperation should extend beyond the border between Shenzhen and Hong Kong, and should extend to borders between and among other local jurisdictions inside the PRD region.

Moreover, we need to recognize the following issues in considering a

cross-border regional plan for the Shenzhen-Hong Kong border zone:

1. What should be the future roles of Shenzhen and Hong Kong if these two cities were to develop into a twin-city model?
2. What are the possibilities of developing a Shenzhen-Hong Kong Bay Area, which would include Guangzhou and Huizhou, and turning this part of the PRD region into a megalopolis along the eastern bank of the Pearl River estuary?
3. What kind of development strategy should be developed to address issues of cross-border cooperation at the regional level, taking into consideration the local concerns in the PRD area and the global factors such as those linked with the development of the “new economy”?
4. What are the requirements for investment in communication and infrastructure projects to facilitate various cross-border flows in terms of passengers, freight, information, capital, water and electricity?
5. What kind of cross-border environmental protection measures should be adopted?
6. What kind of cross-border ecological protection measures should be adopted to help preserve biodiversity, particularly wetland and other ecosystems?
7. What kind of cross-border coordination is needed to help smooth the operation of facilities such as air terminals, subways, power plants, water treatment plants, and deep-sea drainage projects?
8. What are the most effective institutional and managerial mechanisms that should be developed to help strengthen cross-border coordination and cooperation?

A new regional development plan for the PRD region that addresses cross-border cooperation arrangements could probably be readily formulated based on an earlier PRD regional plan formulated by the Guangdong Province. But it should be noted that further exploration of the above issues is needed to ensure that an overall development strategy will be in place to help the region to face the forthcoming challenges as a result of the fast-growing regional economy in the new millennium. A series of conceptual plans could be proposed at the initial stage. Through close dialogue among the concerned authorities

in the region, a new PRD regional plan that takes complex cross-border issues into full consideration would emerge.

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Chapter 22

A Study on Developing the Hong Kong-Shenzhen Border Zone

SHIU Sin-por and YANG Chun

INTRODUCTION

Shenzhen is the only city in the Mainland connected to Hong Kong by land. The Hong Kong-Shenzhen Border, which is 34 kilometres long, stretches from Da Peng Wan in the east to Deep Bay (Shenzhen Wan) in the west. The Shenzhen River is the boundary river of the Hong Kong-Shenzhen Border. According to Order No. 121 of the State Council issued on 1 July 1997, after the Shenzhen River course harness, the new Hong Kong-Shenzhen border will use the central line of the new waterway as boundary. Shenzhen is to the north whereas Hong Kong is to the south of the boundary.

This chapter aims at exploring the feasibility of developing the 32 square kilometres of land named the Hong Kong-Shenzhen Border Zone which covers the area south of the Shenzhen River and the narrow strip of land along the river which stretches from Sha Tau Kok in the east, to the Mai Po Nature Reserve in the west and the Closed Area in the south.

The Status Quo of the Hong Kong-Shenzhen Border

Shenzhen and Hong Kong severed all ties and communication for almost 30 years during 1949-1978. After China adopted the Open Door Policy in the seventies, economic and social ties between the two cities began to flourish. On the other hand, the strip of land that belongs to Hong Kong on the Hong Kong side of the Hong Kong-Shenzhen Border still remains a virgin land awaiting development and its potential economic value to be explored. As a result, social, economic and cultural communications between the two cities are seriously hampered.

The Hong Kong side along the Border: Before 1997, the British-Hong Kong government sealed the border to prevent illegal immigration. An area south of the Shenzhen River that is more than 20 kilometres long, 0.5-2.0 kilometres deep is declared a Closed Area. Development is highly restricted out of concerns for security. All people and vehicles have to obtain permissions

from the authorities to enter the Closed Area. As of the present, most of the land in the Closed Area are either farmland or fish ponds.

The Shenzhen side along the Border: after the establishment of the Special Economic Zone in 1980, the economic development of Shenzhen is dependent on Hong Kong. Its pattern of development and urbanization reveals an obvious "Shenzhen-Hong Kong orientation," which implies that urbanization develops from east to west towards the Hong Kong-Shenzhen Border. The Lo Wu District in mid-Shenzhen has developed into a commercial district while the Futian District in the east emerges to become a new city centre according to plan.

Historical Changes between Shenzhen and Hong Kong, 1949-1978

The Hong Kong-Shenzhen Border is the gateway through which Hong Kong is connected to Shenzhen and its economic hinterland: the Pearl River Delta Region and further inland. Following increasing links with the Mainland economically, socially and culturally, it is necessary for Hong Kong to develop the Hong Kong-Shenzhen Border.

The "Closed Door" policy adopted by China between the years 1949-1978, coupled with the fact that the socio-economic systems of Shenzhen and Hong Kong were diametrically different from each other, led to a lack of communication between people of Shenzhen and Hong Kong. There was almost no exchange of material, capital, information and personnel, which sometimes resulted in confrontation. Before the Chinese Central Government abandoned central planning for the "Open Door" policy, Shenzhen, Guangdong Province and the Pearl River Delta region, being situated near the coastline and considered strategically important, did not belong to the category of pivotal investment and development area, thus its economic and urban development had for a long time lagged behind that of national average level. As a politically, economically and culturally marginal city, Shenzhen remained a typically underdeveloped rural border city.

Despite the fact that there are close ties between Shenzhen and Hong Kong in terms of territorial proximity, culture, genealogy of their inhabitants and historical background, as well as economic complementarity, basically the economies of the two regions were independent of each other in the past, save for a negligible amount of re-export trade and trade of agricultural products. Due to political confrontation between Hong Kong and China, economic exchanges were artificially blocked and economic complementarity suffocated. Until 1978, Shenzhen was only a small town by the border with an

area of three square kilometres and a population of thirty thousand, which supplied agricultural products and water from the Pearl River to Hong Kong.

By the end of 1978, the Third Plenary session of the eleventh Central Committee of the CCP heralded the introduction of the “Open Door” and Reform policy. In February 1979, Baoan changed its status from county to city and became the municipality directly governed by the Guangdong Province. In August 1980, Shenzhen, thanks to its geographical proximity to Hong Kong, was declared the first Special Economic Zone of China, thus becoming the laboratory of the “Open Door” and Reform policy as well as a ‘window’ to attract foreign investments and internal links. In October 1988, Shenzhen was classified as a separately planned city. In February 1994, Shenzhen was recognized by the State Council as one of the vice-provincial level cities and acquired the vice-provincial level of power of economic independence.

After being made a separately planned city, Shenzhen developed at an astonishing rate. The years 1979-1999 saw its resident population (including Baoan) grow by 13.6 percent annually from 310,000 to 4.05 million. Its residency expanded from 310,000 to 1.2 million with an average yearly growth of 7 percent. Temporary population also increased from 1,500 to 2.85 million with an annual growth rate of 45.9 percent. Built-up areas of the city increased dramatically from three square kilometres in 1979 to 320.3 square kilometres in 1999, which represents an increase of 107 times, of which the Special Economic Zone built-up areas expanded from 48 square kilometres in 1985 to 132.3 square kilometres in 1999, a threefold increase.

The GDP of Shenzhen surged from RMB196 million in 1979 to RMB143.65 billion in 1999 and ranked the sixth among large and medium cities within the whole country. This means a yearly increase of 31.2 percent for the past two decades, which is 20.5 percent higher than the national average yearly growth of 9.7 percent and 16.2 percent higher than the average yearly growth of 14 percent enjoyed by Guangdong Province during the same period. The per capita GDP of Shenzhen rocketed from RMB606 in 1979 to RMB35,908 in 1999, 5.5 times higher than the per capita GDP of the whole country (RMB6,517) and 3.1 times higher than the per capita GDP of Guangdong Province (RMB11,722) during the same period which propelled Shenzhen to be the champion among large and medium cities within the whole country. In 1999, Shenzhen recorded total import and export trade of US\$50.428 billion, of which US\$28.208 billion are exports, thus rendering it the best among large and medium cities for the seventh consecutive year. Other

economic indices also recorded high and fast growth that makes Shenzhen one of the rare high growth cities in the world (Table 22.1).

Table 22.1 *Economic Development in Shenzhen, 1979-1999.*

Major indicators	1979	1999	Annual Average Growth Rate (percent)
Permanent residents ('000 persons)	314.0	4,051.3	13.6
residents with household('000 persons)	312.6	1,198.5	7.0
Temporary residents('000 persons)	1.5	2,852.9	45.9
GDP† (RMB bn)	0.2	143.7	31.2
Per capita GDP (RMB)	606	35,908	15.7
Fixed asset Investment† (RMB bn)	0.06	56.8	40.9
Actualized Foreign Investment (US\$ bn)	0.02	2.8	27.9
Export*(US\$ bn)	0.01	28.2	42.0
Import*(US\$ bn)	0.01	22.2	41.1
Local Financial Revenue(RMB bn)	0.02	18.5	41.9

† Absolute values are based on instant value while the increase rates are calculated on constant value,

* Data for 1979 are provided by Trade Development Bureau, while data for 1999 are customs statistics

Source: *Shenzhen Statistics and Information Yearbook 2000*

Close Economic Ties

The eighties witnessed a large scale relocation of Hong Kong's manufacturing industries to Shenzhen and the neighbouring Pearl River Delta Region which brought about the forging of close ties and cooperation between these two areas. Between the years 1979-1999, Shenzhen's use of foreign investments totalled US\$29.84 billion, actualized foreign investments US\$20.05 billion. This represented an annual growth rate of 24.1 percent and 29.6 percent respectively. Accumulative investments of Hong Kong merchants in Shenzhen reached US\$12.02 billion, that is 63 percent of all Shenzhen's actualized foreign investments during the same period. Shenzhen's practical use of Hong Kong investments between 1997-99 amounted to 70 percent of the total of Hong Kong investments between 1978-1996 (Table 22.2).

Hong Kong is the largest source of investments for Shenzhen. Besides project capital, Hong Kong investors cover a large range of investments in areas and ways allowed by the Central Government and the Shenzhen Municipal Government. These investments concentrate mainly in direct investment, next in inward material processing, lastly in financial loans like issuing H stocks, B stocks and claims, etc. in industries such as agriculture, construction, manufacture, harbour, restaurants and entertainment. Industrial

Table 22.2 Hong Kong's Role in Shenzhen's Foreign Investment, 1986-1999

	Actualized Foreign Investment (US\$ '000)	Among which: from Hong Kong (US\$ '000)	Hong Kong's Share (percent)
1986	48,933	38,587	78.9
1990	51,857	26,291	50.7
1995	173,545	105,172	60.6
1996	242,242	150,126	62.0
1997	287,168	203,035	70.7
1998	255,200	128,200	50.2
1999	275,422	172,000	62.4
Cumulated Value (1986-99):	1,910,757	1,202,824	63.0

Source: Shenzhen Statistics and Information Yearbook 2000

investments occupy by far the greatest proportion. By the end of 1999, Hong Kong merchants have invested in Shenzhen 525 projects of value over US\$10 million, which accounts for 82.4 percent of all such projects. Hong Kong merchants own 1,037 high-tech enterprises (82.3 percent of the total).

As for trade, in 1999, Shenzhen's exports to Hong Kong amounted to US\$22 billion, which represented 83.4 percent of total annual exports, whereas imports from Hong Kong reached US\$13 billion, 68.8 percent of total annual imports. Guangdong Province is the major area of Hong Kong's processing trade in the Mainland. According to the statistics published by the Hong Kong Census and Statistics Department concerning Hong Kong's processing trade in the Mainland between 1990-1999, 97 percent of all Hong Kong's processing trade were in Guangdong Province when values of imports concerning processing trade from the Mainland to Hong Kong are used as the measure. Within Guangdong Province, even though Shenzhen's proportion of Hong Kong's processing trade fell from 44 percent to 35 percent between 1990-1999, it still occupies a central position where Hong Kong's processing trade is most concentrated.

Busy Cross-Border Transportation of Goods

The four land border checkpoints between Shenzhen and Hong Kong are, from east to west, Sha Tau Kok, Man Kam To, Lo Wu and Lok Ma Chau/Huang Gang. Lo Wu is the checkpoint for cross-border traffic by rail, while the other three are checkpoints for other forms of land transportations. The Hong Kong-Shenzhen Border is the busiest border in the whole country. Lo Wu is the

busiest passenger checkpoint whereas Huang Gang is the busiest goods checkpoint in the whole country. According to the statistics from Shenzhen, in 1999, the number of passenger arrivals and exits from Shenzhen totalled 99.74 million, the number of vehicles was 10.09 million which represented 57 percent and 76 percent of total arrivals and exits for the whole country.

The number of vehicles using the Hong Kong-Shenzhen Border increases at a tremendous rate since the eighties. In 1981, the number of vehicles crossing the border was only 445,000, but this figure has reached 10.03 million in 1999. The daily average number of vehicles crossing the border has increased from 1,220 in 1981 to 27,503 in 1999, an increase of 22.5 times with a yearly growth rate of 18.9 percent. From 1992 onward, there is a significant drop of growth for such vehicles with the yearly growth rate falling from 12.6 percent in 1992 to 2.8 percent in 1999. The number of goods lorries crossing the border grew from 419,000 in 1981 to 88.74 million in 1999, but its proportion to the total number of vehicles crossing the border fell from 94 percent to 88.4 percent. This is due to the increase of the number of private cars and passenger vehicles crossing the border (Figure 22.1). Among the three land checkpoints, the Lok Ma Chau/Huang Gang checkpoint has witnessed the fastest growth in the volume of cross-border traffic. From its opening in 1990 up to 1999, the average yearly growth rate of the number of vehicles crossing the border is 31.7 percent, with 6.47 million vehicles using the Lok Ma Chau/Huang Gang checkpoint in 1999, which represents 72.9 percent of all vehicles crossing the Hong Kong-Shenzhen Border, with an average of 17,727 vehicles crossing this checkpoint daily- this makes the Lok Ma Chau/Huang Gang checkpoint one of the busiest land checkpoints in Asia.

Busy Cross-Border Passengers

Following the increase of economic and cultural exchanges between Shenzhen and Hong Kong in the eighties, the number of passengers crossing the Hong Kong-Shenzhen Border grows at a tremendous rate. The number of passengers who travelled between the Mainland and Hong Kong has risen from 24.26 million in 1987 to 53.09 million in 1999, with an annual growth rate of 10 percent except for 1988 which reached 19.4 percent (Figure 22.2).

With the resumption of sovereignty over Hong Kong by the People's Republic of China since July 1997, the rate of growth in the number of passengers making cross-border trips has surpassed that of the previous decade. The number of passengers who travelled between the Mainland and Hong Kong were 63.36 million in 1997 and 75.58 million in 1998. In 1999, it broke

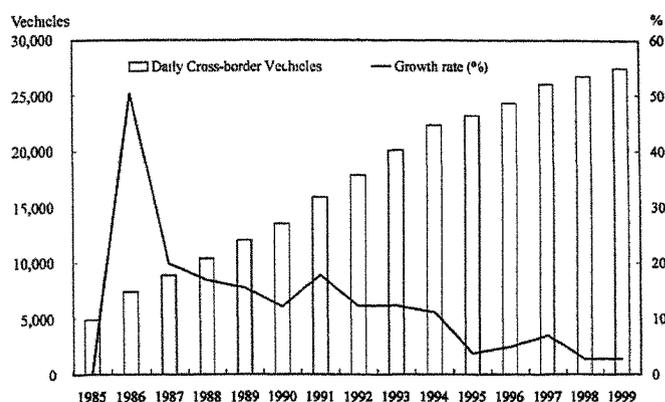


Figure 22 1 Growth of Hong Kong-Shenzhen Cross-Border Traffic, 1985-1999

the record of 80 million to reach 88.49 million with an annual growth rate of 19.4 percent, 19.3 percent and 17.1 percent respectively. The average number of daily passengers grew from 66,000 in 1987 to 243,000 in 1999. In April 2000, such figure reached 302,000.

Between 1987 and 1999, the number of passengers who took the train to Lo Wu and travelled to and back from the Mainland had dropped from 94.3 percent of all cross-border passengers to 87.2 percent. Checkpoints at Sha Tau Kok and Man Kam To also experienced a decrease of passengers whereas those using the Lok Ma Chau/Huang Gang checkpoint were on the rise. Between 1993 and 1999, the annual growth rate reached 39.8 percent with its share of total passenger volume rising from 3.0 percent in 1993 to 10.4 percent in 1999.

Cross-Border Consumption

Due to the vast differences in labour cost, rent and other costs as well as improvements in transportation, more and more people from Hong Kong cross the border and travel to Shenzhen and the Pearl River Delta region for shopping, tourism, entertainment, vacation, purchase of property and even residence.

This trend has caused great concern to Shenzhen and Hong Kong. In order to learn more about the consumption behavior of Hong Kong people, Shenzhen and Hong Kong have undertaken random sampling researches. The Planning Department of the HKSAR government employed a consultant firm to do for the first time a study entitled "Cross-Border Travel Poll" in August 1999. This study, published in July 2000, showed that Hong Kong people travel to the

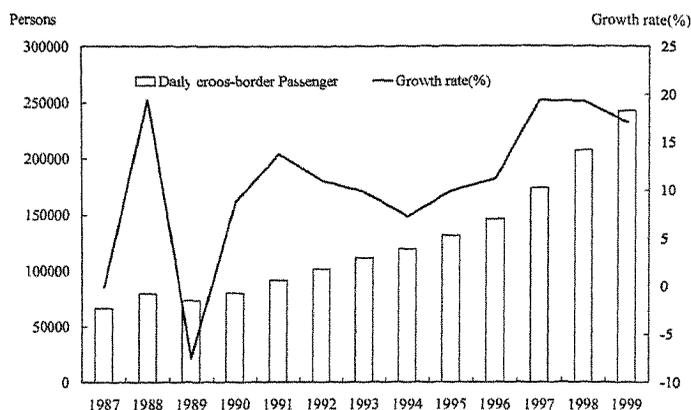


Figure 22.2 Growth of Hong Kong-Shenzhen Cross-Border Passengers, 1987-1999

Mainland for a variety of reasons, namely business (40 percent of all passengers), shopping and entertainment (17 percent), and visiting spouses and children (12 percent). Shenzhen was the major destination. Among passengers crossing the border, those who went to Shenzhen on business comprise of 38 percent, while those for shopping and entertainment 91 percent, and those visiting spouses and children 59 percent. Other than these purposes, 45 percent of all Hong Kong people travelling to the Mainland on vacation went to their own properties in Shenzhen

By the end of the nineties, more and more people from Hong Kong buy properties in Shenzhen. By the end of the year 1999, Hong Kong people have, in aggregate, bought a total of 1.92 million square metres of flats in Shenzhen and 700,700 square metres of pre-sale units, of which 167,400 square metres of flats (9 percent of total aggregate in the past 20 years) and 392,200 square metres of pre-sale units (60 percent of total aggregate in the past 20 years) are bought in 1999. To people from Hong Kong, flats in Shenzhen are cheap, roughly 10 percent of what it would cost in Hong Kong. Flats in boundary between Special Economic Zone and beyond areas are one-fifth or one-sixth of what it would cost in Hong Kong. In the past two years, not only low income groups but also middle class people of Hong Kong buy properties in Shenzhen. More and more 3-room flats of floor area between 1,000 & 1,200 square feet are in demand rather than twin-room flats of floor area from 600-700 square feet in the past. Fifty percent of Hong Kong people who buy flats in Shenzhen claim they use it for their own private residence, over 30 percent for vacation,

10 percent for retirement and the rest are for investment, rent and for relatives' residence.

The Shenzhen Silixin Consultant Co. Ltd. had spent one week in August 2000 on a poll at the Lo Wu checkpoint, where more than 200 Hong Kong visitors were asked the same questions as the Hong Kong poll. The results were similar. Nearly 38.4 percent of visitors went to Shenzhen to visit their relatives and friends, 28.8 percent for the purpose of tourism and vacation, 24.7 percent for shopping and 14.6 percent on business and attending conventions. They concluded that Hong Kong visitors came frequently, stayed for a short time and spent thriftily. As to the frequency of visits per month during the past year, 28.4 percent of Hong Kong visitors went to Shenzhen five times or more, while 10.4 percent of them were in Shenzhen four times a year. Only 3.5 percent were first time visitors. On average, Hong Kong visitors rarely stayed in Shenzhen for more than three days per visit, with 85.4 percent stayed for one to three days, while 51.8 percent of these visitors stayed in Shenzhen for only one day. There is evidence that, on average, each person being polled spent *RMB*1,077 per visit, of which 71.2 percent were on entertainment, shopping, eating and drinking. Shopping constitutes the greater part of their expenditure (47.6 percent or *RMB*512.8 in monetary terms.) It can be concluded that the main reason for Hong Kong people to go to Shenzhen is shopping.

At present, there is still a huge economic disparity between Hong Kong and the two economic centres of Guangdong Province, namely Shenzhen and Guangzhou, as well as the whole of the Pearl River Delta region and Guangdong Province. The economic complementarity, which exists between Hong Kong and Shenzhen, Guangzhou as well as the whole of the Pearl River Delta region and Guangdong Province, constitutes the base of more economic cooperation. Let us take 1999 as an example. Shenzhen's selected socio-economic indicators for 1999, such as its GDP (10.9 percent), per capita GDP (18.6 percent), values of exports (16.3 percent) and of imports (12.4 percent), consumption sales (24.3 percent), fiscal income (8 percent) and bank savings by residents (13.8 percent) were on average 10 to 20 percent of those corresponding figures of Hong Kong, with possible exceptions that Shenzhen's city population and its land area were 56.6 percent and 1.8 times those of Hong Kong respectively. Since 1998, the Central Government had adopted a positive fiscal policy and increased investments in Shenzhen. Yet fixed capital investment in Shenzhen in 1999 is still only 16.8 percent of that of Hong Kong. Manufacturing industries of Hong Kong have withered due to massive relocation of factories into

Shenzhen, the Pearl River Delta region and other areas in the Mainland, which can be reflected by the fact that the total industrial output in Shenzhen is 1.1 times that of Hong Kong in 1988.

As Hong Kong people's investments, consumption, buying of properties, vacationing and residence in Shenzhen increase, the governments of Hong Kong, Macao, Guangdong Province, Guangzhou, Shenzhen and Zhuhai recognize the need to follow economic laws to allow free flow and combinations of capital, vehicles, manpower within the area. After the return of Hong Kong and Macao to China, there are thirty million people living in an area of 43,000 square kilometres, which is known as the "Greater Pearl River Delta," which geographically comprises of Hong Kong, Macao and the Pearl River Delta region, with major cities like Guangzhou, Shenzhen and Zhuhai and other towns and villages forming a vast pattern of rapid urbanization (Table 22.3). This area has evolved into a more tightly knitted regional economy. Hong Kong, a regional world city within the global hierarchy of world cities, is the nucleus whereas a group of medium and small cities, including Macao, Zhuhai, Nanhai, Shunde, with Guangzhou and Shenzhen as their centre, are on the rise in the Pearl River Estuary.

SHENZHEN'S AND HONG KONG'S POLICY TOWARDS THE BORDER AND THE LIMITING FACTORS

Since there is a "Closed Area" in the Hong Kong-Shenzhen Border, there are major obstacles in the development of the Border Zone. Until now, there is no systematic planning concerning the Hong Kong border which is not included in the Sphere of Outline Zoning Plan. There are even worries and reservations about developing this zone. The overall Hong Kong Development Plan has never reviewed the limitations to development nor ever discussed future development of the Border Zone.

Restrictions in Closed Area: The Hong Kong Police has promulgated that only special people and vehicles are allowed to enter the Border Closed Area. All who enter the Border Closed Area must apply for a permit and all vehicles must possess a Pass for Border Closed Highway. These are undoubtedly the major obstacles to the development of the Border Zone.

Environmental protection: To the west of the Hong Kong-Shenzhen Border, within Hong Kong, there are the Mai Po Nature Reserve and Inner Deep Bay wetlands. In Shenzhen there is the national class Noi Lingding-

Table 22.3 Major Indicators in the "Greater Pearl River Delta," in 1999

Major Indicators	HK	Macao	PRD	GZ	SZ	Greater PRD
Population (mn)	6.7	0.4	22.6	4.1	4.0	37.8
Census Population (mn)	-	-	41.0	9.9	7	48.2
Land Area (sq. km)	1,095	23.8	4,169.8	1,444	1,949	46,209.8
GDP (US\$ bn)	159.6	6.2	77.8	17.5	17.4	278.4
GDP/per capita (US\$)	23,743.3	14,145.0	3,437.9	4,355.6	4,337.0	73,683.3
Exports (US\$ bn)	174.5	2.2	67.4	9.9	28.2	282.2

Note: "Greater Pearl River Delta" includes the Pearl River Delta (PRD) in Guangdong Province, and Hong Kong & Macao as well.
GZ refers to Guangzhou, SZ refers to Shenzhen.
Exchange rate: US\$1=HK\$7.73=RMB 8.2795 = Macao\$7.99.

Source: *Guangdong Statistical Yearbook 2000, Hong Kong Annual Digest 2000*, The website of Macao Statistical Bureau.

Futian Preserved Area. Since 1992, the Planning Department of Hong Kong has issued guidelines on the Deep Bay buffer zone and the Deep Bay fish ponds. All of the border zones at Inner Deep Bay from Lo Wu to Mai Po are classified as wetland protection area and buffer zone, which implies that all future development must be subjected to strict environmental control.

Shenzhen is eager to develop the Border Zone and has laid down development plans that include:

- a) In April 1996, the Shenzhen Special Economic Zone for the Economic Development of Shenzhen and Hong Kong Fund issued a report named "A Study of the Development of Shenzhen River-Futian-Lok Ma Chau River Bend Area." This report proposed to divide the River Bend Area into three sections: The southeastern section is the residential area, the northwestern section the commercial area and sandwiched between these two sections a technology communication and servicing accessory area. It also proposed to allow free trade in the River Bend Area and adopt the policy of "Open the Hong Kong Side, Simplify the Shenzhen Side" (香港一則放開，深圳一則簡化);
- b) In the beginning of 1998, the Shenzhen Subsidiary Industries of New and High-Tech Industries Leading Group, in its report named "Concerning the Establishment of a Hong Kong-Shenzhen New and High-Tech Industries Region," proposed to take advantage of Hong Kong and Shenzhen's forte to establish a New and High-Tech Industries Region in

the Hong Kong-Shenzhen Border Zone. This will be initiated first in the area along the Shenzhen River where Lok Ma Chau and Huang Gang meet, then spread to cover the whole Hong Kong-Shenzhen Border Zone, a total of 7.74 square kilometres of land where information technology, biotechnology and new material technology industries can develop.

Demonstration Effect of Border Development Cases in the Mainland and Other Countries

After the introduction of the "Open Door and Reform" Policy in 1978, China has opened many coastal, riverside and border cities to the outside world. Since March 1992, fourteen border cities or towns including Heihe and Suifenhe of Heilongjiang Province, Hunchun of Jilin Province, Manzhouli and Erlianghaote of Inner Mongolia Autonomous Region, Yinin, Tacheng and Bole of Xinjiang Autonomous Region, Ruili, Wanting and Hekou of Yunnan Province, Pingxiang and Dongxing of Guangxi Autonomous Region. These border towns receive the same preferential treatments as coastal cities. The Central Government also grants them special preferential treatments when these towns collaborate with neighbouring countries to develop the Border Zones.

Case 1: The Heilongjiang Province Heihe China-Russia Economic Co-operation Border Zone

In March 1992, Heihe of Heilongjiang province was declared by the State Council to be one of the border cities to adopt the Open Door Policy and enjoy preferential treatments. Heihe is connected to Amuar in Russia by the river Heilongjiang. The borderline is 184 kilometres long. The capital of Amuar, Blagovescensk and Heihe overlook each other across the river, the nearest distance between these two cities being 750 metres only. The piers of Heihe and Blagovescensk are just 3.5 kilometres from each other. In the summer, it only takes 7 minutes to cross from one city to the other by steamboat whereas in winter, it only takes 10 minutes by car across the ice. These two cities are the nearest, of the largest scale and highest level as well as the most functional pair of cities along the Chinese-Russian border, which make them most suitable to foster cross-border economic cooperation.

In March 1992, the Heihe municipal government first proposed the establishment of an International Economic Cooperation Development Zone between Heihe (China) and Amuar (Russia). It received support from the Russian Amuar state government and now the Chinese and Russian local

governments. The location and area of the Heihe International Economic Cooperation Development Zone, according to the aforementioned plan, cover both ends of the Chinese-Russian Heilongjiang Bridge then under construction. Each government will put aside an equal area of land to form a unified closed Development Zone, which, on condition of preserving national sovereignty, will be subjected to unified planning and coordinated development. Initially, each country contributes 10 square kilometres of land for such purpose.

The Strategic Aim of Development

The Development Zone will have as its basis both China and Russia so as to target northeastern Asia and the rest of the world. It will broaden its cooperation to multi-country and multi-sector so as to become a export processing base for the world market, an international free trade centre, an international financial centre, an international technology information centre and a logistics and passenger centre in northeastern Asia in order to promote the establishment and development of a northeastern Asia regional market.

The Nature and Function of the Development Zone

This Development Zone is a comprehensive and multi-functional International Economic Cooperation Development Zone, governed by both the Heihe and the Amuar municipal governments. Its main functions are to:

- Attract foreign capital, technology, equipment and state-of-the-art management skill;
- Establish an export processing area;
- Abolish non-trade control;
- Abolish tax on exports and imports;
- Develop re-export processing and re-export trade;
- Develop international financial business and allow free exchange and circulation of foreign currencies;
- Attract new and high-tech skills and talents;
- Produce new and high-tech products for the international market; and
- Build an information network concerning the international economic network and international commercial exchanges.

Principles of Management

Equal treatment, rights and system will be provided to all investments, finance, taxation, foreign exchange control, use of labour and rent for land so as to form a unified system of management among managing institutions within the Economic Cooperation Development Zone (including both the Chinese and the Russian territories).

A. Management of Investment

Law will protect all local and foreign investments within the Economic Cooperation Development Zone. All investors, legal bodies and citizens will enjoy equal property rights. The Economic Cooperation Development Zone will adopt an industrial policy to provide projects to attract investments.

B. Management of Land

According to international rule, all land within the Economic Cooperation Development Zone can be let, assigned and rented for a period of fifty to seventy years and beyond.

C. Customs and Excise Control

All personnel entering or exiting the Economic Cooperation Development Zone have to carry valid documents issued by relevant China and Russian authorities. Foreigners have to travel by valid passports. Long-term employees, personnel of economic and technological exchange as well as those who visit relatives, tourists and businessmen may obtain long-term or temporary residence documents.

Except for those prohibited for sale and import in international markets, all goods provided with a Quality Certificate or Certificate of Origin can be imported into the Economic Cooperation Development Zone without examination by the Chinese and Russian Customs Authorities. All imported goods can be disjuncted, stored, classified, categorized, remade or repackaged. All export goods must be subjected to examination by a unified Chinese and Russian Customs Authority before transportation outside the Economic Cooperation Development Zone.

D. Management of Taxation

All goods, raw material and means of production necessary for construction are tax-free. All export goods will be taxed or receive preferential relief

of tax according to the origin of raw materials, the degree of processing and the destination of export.

E. Financial Management

Within the Economic Cooperation Development Zone, Chinese, Russian and international currencies are valid currencies and allowed free exchange. Foreign capital can be injected and withdrawn with no restrictions. There are also no restrictions on the handling of legal funds and assets when an enterprise is closed down or withdrawn. Financial institutions are encouraged to do business in borrowing or lending of capital.

Case 2: Border Development between the USA and Mexico

The USA-Mexican border is typical of that between a developed country and a developing country. It starts with San Diego on the Pacific coast of California and Tijuana in Mexico and stretches along the southeast to Brownsville in Texas and its corresponding city of Matamoros in Mexico in Mexico Bay. The border is more than 2,000 kilometres long. On both sides of the 100 kilometres wide Border Zone, there are thirteen cross-boundary twin cities.

There are huge differences in economic development, social and political institutions between the USA and Mexico. In 1942, the US and Mexican governments agreed to allow Mexican labourers to work as seasonal farm labour in the southern states of the USA. This agreement was later cancelled in 1964. In 1961, the Mexican government initiated the “National Boundary Plan” by which infrastructural construction was undertaken in the Border zone to promote tourism, service and processing industries that brought prosperity to the Border Zone as well as prevent a loss of population and forestall illegal immigration. This project was further expanded to become the “Border Industrialization Policy” through which a series of new policies is introduced to attract foreign investments to build up Maquiladora (the Spanish word for “processing fee”, which in this case refers to a special export processing region) type of industries.

Under this policy, since the mid-1960s the Mexican government has established a free trade zone within 20 kilometres along the USA-Mexican Border, where foreign investors can have sole proprietorship of their factories and enjoy tax-free preferential treatment in imports and exports. Initially, all goods manufactured by these factories were for exports only, but from 1983, not more than 20 percent of goods manufactured could be imported into Mexico. In 1989, the proportion was raised to 50 percent. The number of foreign-owned

factories soared from 12 in 1965 to 1,396 in 1988 and the number of workers from 3,000 in 1965 to 1.369 million in 1988. Foreign exchange earned by these industries constituted the second largest source of foreign exchange of Mexico. Its rapid growth owed much to the abolition of custom duties levied by the USA government on such goods since 1975 and the popularity of Just-In-Time (JIT) mode of production in the USA in the 1980s. Mexico has the enviable advantage of having a good highway network and situated at a distance within one day by car to the USA. Its cheap labour therefore draws many US enterprises to undertake JIT production of spare parts and assembly of products.

From 1972 onward, the limit of situating a special export-processing zone within 20 kilometres from the border was abolished, yet big cities were still off limits to such industries. At present, over 70 percent of these factories were grounded in free-trade zones and free ports along the USA-Mexican Border.

This case is a good example of the point under discussion: should an economically developed country in the pursuit of its own self-interest be supportive and cooperative and should a developing country's government adopt the appropriate policy and planning to attract capital from its neighbouring country and the international market, both countries can enjoy the comparative advantages and promote rapid economic development of their Border Zones.

Case 3: Singapore, Malaysia and Indonesia Cooperate to Develop the Growth Triangle

Singapore, Johor of Malaysia and the Batam Island of Riau islands of Sumatra, Indonesia are geographically close to one another and are therefore friendly neighbouring states. Despite the attractive potential of economic development of this area, for a long period of time, their local governments neglect its development due to its proximity to national boundaries. Its economy, though self-sufficient is mainly agricultural and underdeveloped. From the nineties onwards, governments of these three Southeast Asian countries joined together to form the Growth Triangle with Singapore as its centre. Due to its proximity to Singapore, Johor had developed into an overseas processing and tourism zone by Singapore capital. The Batam Island suffered from having a smaller population, less infrastructure and conditions of development. The Singapore government and private capital propelled its development once it was declared a tax-free zone in 1978. By 1991, it has become an important overseas processing, warehouse and tourism zone.

Johor and the Batam Island are separated from Singapore by sea. Their boundaries are markedly different from land boundaries. Since these 3 cities are within one hour by ferry from each other (Singapore and Johor are connected by a highway overpass), in practice their boundaries are no different from land boundaries. From a geographical point of view, Johor is the cross-border development zone between Singapore and Malaysia whereas the Batam Island is that between Singapore and Indonesia within the Growth Triangle. They provide cheap land and labour for Singapore in return for capital, technology, management and market. They all enjoy their comparative advantages and common development. Their relationship can be compared to the "Front Shop, Back Factory" relationship between Hong Kong, Shenzhen and the Pearl River Delta Region.

The Demonstration Effect for the Development of Hong Kong-Shenzhen Border

The success of the above cases has a demonstration effect for the development of Hong Kong-Shenzhen Border which can be summarized as: only through cooperation and high-level policy adjustments can the governments make full use of the comparative advantages of the countries across the border. To cooperate in the development of the Border Zone means to utilize the relative advantages of their elements of production of neighboring countries. It can be characterized as common investment, common management, common risk-taking and common development. During this process, both countries should provide for each other exemption from custom duties and the simplification of entry and exit procedures. These preferential treatments will initially be restricted to both countries and later extended to other countries.

In Case 1, the Mainland has opened coastal cities to establish border Cooperation Development Zone like the Heilongjiang Province Heihe China-Russia Economic Cooperation Border Zone. Both countries have contributed an equal amount of land for common investment and management. In Case 2 where the Mexican government develops the USA-Mexican Border Zone, and in Case 3 where Malaysia and Indonesia develop the area adjacent to Singapore, the economically underdeveloped country contributes land and preferential treatments to attract capital (mainly from the economically developed country, but also includes multinational capital) to develop into a planned, clear cut Development Zone. This kind of "Development Zone" usually has a second boundary to separate it from the rest of the country. Capital input and economic development usually occur at the economically underdeveloped country.

The Hong Kong-Shenzhen border has its own unique features different

from the above cases, namely, the economically underdeveloped side (Shenzhen) has developed most of its border (save for one square kilometres of land to be handed over to Hong Kong after the Shenzhen River course harness) compared to that of Hong Kong. The border of the economically developed side (Hong Kong) is relatively undeveloped. Meanwhile, the economically underdeveloped side (Shenzhen) is eager to develop the Border Zone whereas the economically developed side (Hong Kong) is hesitant and reluctant due to existence of the Border Closed Area, environmental protection and other reasons.

The Hong Kong-Shenzhen Border awaits development at present. One side of the border is obviously less economically developed than the other side but their comparative advantages can provide opportunities for economic cooperation. There are huge differences in their political and economic systems, therefore creating limitations in entry and exit of people and goods. They belong to different custom duty's areas and other non-custom duties related limitations such as the quota for imports and exports, international technological spreading agreement etc. Following the gradual integration of the economy of Hong Kong, Shenzhen and the Pearl River Delta Region, the Hong Kong-Shenzhen Border will gradually become a free border, resembling the USA-Canadian border or the borders between the European Union (EU) countries. Since these countries are on more or less the same political and economic level, there are few checks in visa and customs by the relevant governments. Moreover, efficient transportation and their geographical conditions make it easy for people and vehicles to transmute across borders easily whereas capital, labour and goods can flow freely.

PROPOSAL FOR THE DEVELOPMENT OF THE HONG KONG-SHENZHEN BORDER ZONE

We propose to develop the Hong Kong-Shenzhen Border Zone (Figure 22.3) into a Border Free Economy Zone, a high-tech, tourism, convention, exhibition, trade and commerce as well as export processing zone so as to attract investments from Hong Kong, foreign and Mainland investors. Preferential treatments will be granted by the Central Government and the Hong Kong Government to allow personnel from both sides, especially those from the Mainland, raw materials, goods and production equipment to enter and exit the zone freely, exempt from tax and duties.

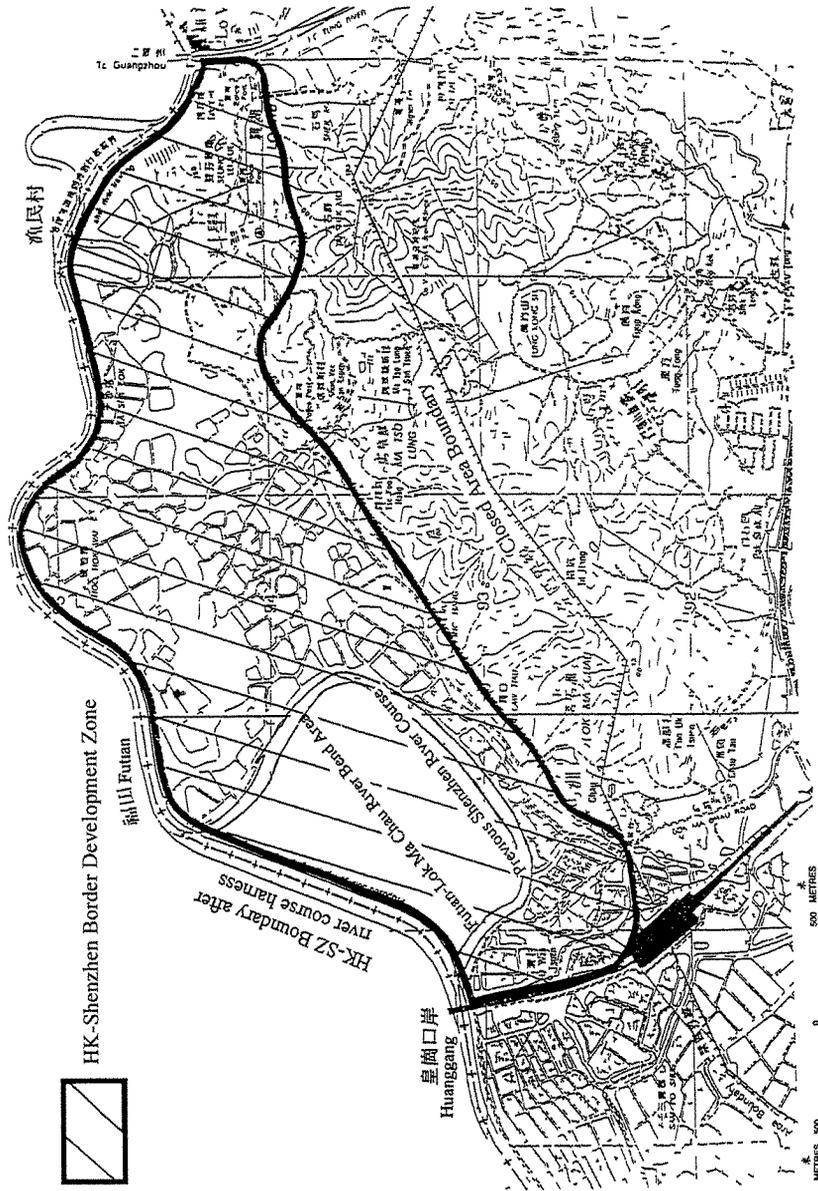


Figure 22.3 Proposed Hong Kong-Shenzhen Border Development Zone

Since most of the land along the Shenzhen side of the Hong Kong-Shenzhen Border has been developed, it will be difficult to develop that region into a closed free economy zone. On the other hand, most of the land on the Hong Kong side of the Hong Kong-Shenzhen Border has yet to be developed. On the west is the Nature Protection Area while the eastern parts of the border are quite hilly. Since most of the social and economic connections between Shenzhen and Hong Kong centres on the middle of the Border Zone, it is advisable to draw the boundary of the Hong Kong-Shenzhen Border Zone as follows: from the Lok Ma Chau port running eastwards to the Lo Wu railway station, to the north the new Shenzhen River course, to the south the lowlands at the foot of the hilly terrain along the Hong Kong-Shenzhen Border in the middle of the Border Zone. The Hong Kong-Shenzhen Border Development Zone that we propose to establish is at present still listed as a Closed Area, covering an area of 7.5 square kilometres approximately and comprising mainly of fish ponds and farmlands.

It is advisable to develop in the Hong Kong-Shenzhen Border Free Economy Development Zone for the following enterprises: those that can promote the economic development of Shenzhen and Hong Kong; those that can promote a higher level of cooperation between Shenzhen and Hong Kong, especially in high-tech development and cooperation; those that can make full use of the comparative advantages of the market, product and trade of Shenzhen and Hong Kong; those that can exploit the high-tech talents and inventions as well as tourism in Shenzhen and the Mainland; lastly, environment-friendly, clean and non-polluting industries. Details of planning are as follows:

1. High- and New-Tech Industry Zone

The High- and New-Tech Industry Zone will take advantage of the fact that Hong Kong is a free port to import state-of-the art high-tech products and equipment whereas Shenzhen will provide the services of Mainland high-tech talents and research. Major industries to be developed are high-tech industries oriented towards environment-friendly information and communication industries.

2. Export Processing Zone

Cheap labour from Shenzhen and the Mainland will form the major working force within the Export Processing Zone. These workers will live in Shenzhen, go to work in the Export Processing Zone and return home to Shenzhen daily, leaving a handful of personnel who must stay in the Export Processing Zone. Since this zone is situated within the Hong

Kong territory, this arrangement will relieve Hong Kong workers of the need to frequently travel to and fro the Border. Meanwhile, enterprises are able to use the Hong Kong quota to export their goods without giving excuses to import countries to impose limitations on imports on the pretext of “diving goods.”

3. Tourism Zone

To attract tourists, we propose to build internationally famous theme parks, amusement parks and shopping areas, especially shopping centres for designer products resembling factory outlets in the UK and the USA. A special and lax entry and exit policy will be introduced to attract Mainlanders to visit and consume in the zone. Hong Kong residents holding their ID cards and foreigners holding their passports can visit the zone at will. The Shenzhen and Hong Kong Customs Authorities will cooperate to let Mainland visitors to the zone enjoy the benefits of lax and simple entry and exit procedures.

4. Development Centre for Chinese Medicine and Herbal Drugs

A development centre for Chinese medicine and herbal drugs will be established with investments from Hong Kong. Outstanding Chinese medical practitioners and Chinese drug talents will be responsible for research, development, coordination and promotion of Chinese medicine and drug products as well as support and guidance. The results of research will be helpful in enriching Hong Kong industries as well as standardizing Hong Kong and the Mainland Chinese medicine and drug products and health food to meet international requirements so as to enter international markets. Chinese medicine and drug products should not be produced or manufactured in the zone.

5. Trade and Commerce, Exhibition and Convention Centre

To bypass the difficulty for Mainlanders to enter Hong Kong, we propose to take advantage of the lax entry and exit policy of the zone to establish a Trade and Commerce, Exhibition and Convention Centre with high-class hotels and offices to hold commercial, academic and industrial exhibitions and conventions.

6. Higher Education, Science and Technology Research Centre

To bypass the difficulty of attracting Mainland talents to work in Hong Kong, we propose to make full use of the special status of the Border Development Zone to attract Hong Kong, Mainland and foreign

universities, scientific and technological research institutes to establish scientific and technological research centres, research centres and laboratories in the zone. Lax and simple entry and exit procedures will enable scientific and technological researchers from the Mainland to work there with unbridled freedom.

7. Residence Zone

To save their time and energy, we propose to build a residence zone for long-term workers like technological staff, managers and specialists who have to travel back and forth the Border Development Zone. For management purposes, long-term and temporary residence permits would be issued to long-term working staff and those who visit the Border Development Zone for short-term economic exchanges, visiting relatives, tourism and on business purposes.

Policies and Preferential Treatments

1. Relax Control of the Closed Area

The key to success of the Hong Kong-Shenzhen Border Free Economy Development Zone is relaxing control of people and vehicles entering and exiting the Closed Area as well as other prohibitions that may hinder development. With the development of the Border Zone, the Closed Area will act as a buffer zone for Shenzhen and Hong Kong so as to shield Hong Kong from bad influence.

2. Coordinated Development and Environmental Protection

Environmental protection is one of the limiting factors to the development of the Border Zone. The Nature Protection Area and wetlands are situated at the west of the Hong Kong side of the Hong Kong-Shenzhen Border. The area we propose to develop is the Lok Ma Chau-Futian River Bend Area and its eastern regions. Moreover, since industries involved in development are non-polluting like high-tech industries, tourism, etc., there should be no harmful effects on the environment.

3. Simplify Entry and Exit Procedures for People and Vehicles

It remains for the Central Government to delegate power to the Customs Authorities to simplify entry and exit procedures for people and vehicles from the Mainland to travel back and forth the Border Development Zone. Meanwhile, the Hong Kong Government needs to make necessary adjustments and revision of regulations concerning entry and exit procedures for people and vehicles into the Border Development Zone.

New regulations can firstly be applied at the Lok Ma Chau-Futian River Bend Area, then extended to the whole Zone corresponding to further development .

4. Entry and Exit Procedures for People

People of Hong Kong holding their ID cards or passports can freely enter and exit the Border Development Zone whereas Mainlanders, on entering and exiting the Border Development Zone to the Shenzhen side of the Hong Kong-Shenzhen Border, must first abide by the “Manage but not Limit” rule. Control should be relaxed by agreement between the Shenzhen and Hong Kong governments. People of Hong Kong can freely enter the Border Development Zone but must produce their ID cards or passports on departure to prove they are Hong Kong citizens or legal immigrants. People of Hong Kong or overseas tourists must hold legal documents issued by the Mainland government (such as the entry and exit permit for Hong Kong citizens or a visa for overseas tourists) before they can enter Shenzhen via the Border Development Zone. They will be checked according to normal procedures. Mainlanders, on entering and exiting the Border Development Zone, must hold documents proving that they are employed by enterprises or institutions in the Border Development Zone, or that they are invited to work, tour and on business purposes in the Border Development Zone. The Shenzhen and Hong Kong Customs Authorities should not pose any limitations or hindrances at will. Both sides must cooperate with each other to allow all visitors more simplified and lax rules of control. Mainlanders who, after entering the Border Development Zone, wish to visit Hong Kong must hold legal travel documents and follow the normal procedures.

5. Working and Living in the Border Development Zone

Hong Kong citizens are allowed to live and work in the Border Development Zone at will provided that they carry their ID cards. Foreigners can work and live freely in the Border Development Zone for no longer than their legal period of stay. The Border Development Zone should relax its control to allow Mainlanders to work there. Mainlanders who hold documents proving he or she is employed by enterprises or institutions in the Border development Zone should be able to work and live freely in the zone within the period of their employment without interference and prohibitions from the Customs Authorities of Shenzhen and Hong Kong. All Mainlanders who hold legal documents or invitation

letters from enterprises or institutions in the Border Development Zone which state clearly their legal period of stay should be allowed to travel, do business, scientific research and technological exchange, attend conventions and visit relatives in the Border Development Zone for a short period at will.

6. Vehicles Entering and Exiting the Border Development Zone

Vehicles registered in Hong Kong are allowed to enter the Border Development Zone freely without a Closed Area permit. On re-entering Hong Kong after leaving the Border Development Zone, the drivers of these vehicles must produce their driving licences and registration documents to prove that they have the right of legal entry as well as to record their entry to the Border Development Zone. Drivers of vehicles registered in Hong Kong, should they want to enter Shenzhen from the Border Development Zone, must follow the existing procedures and obtain a Mainland driving licence and registration documents before they are allowed to enter Shenzhen. For vehicles from Shenzhen to enter the Border Development Zone the following requirements must be met:

- Vehicles must obtain valid documents from companies and institutions in the Border Development Zone; and
- Drivers must hold a valid Hong Kong driving licence.

The relevant authorities and Customs Authorities on the Mainland and Hong Kong should relax the regulations concerning vehicles from the Mainland on entering and exiting Hong Kong so as to allow these vehicles to enter the Border Development Zone freely and to simplify entry and exit procedures for them. Vehicles from the Mainland, should they want to enter Hong Kong via the Border Development Zone, must follow the usual procedures for application, issuing of licence and entry.

Infrastructure

1. Make Use of Existing Infrastructure

Despite the fact that the Border Development Zone awaits development, entry and exit as well as transportation facilities nearby are functional and provide the conditions and framework for development. Initially, the Lok Ma Chau/Huang Gang River Bend Area can use the existing infrastructure. The Sheung Shui to Lok Ma Chau Spur Line will be completed in 2004, thus linking the Shenzhen underground railway due

to be completed in the same year to form a thorough rail should the port facilities prove to keep abreast of development. According to the planning done by the Transport Department of Hong Kong, the Border Development Zone will be situated at the junction of quite a few cross-border railway lines and will provide support to infrastructural construction in the region.

2. Open a Special Access for Passengers Crossing the Border

To facilitate people's entry into and exit from the Border Development Zone and to differentiate it from the normal entry and exit checkpoints, we propose that a special access for passengers' entry into and exit from the Border Development Zone should be built at the present Lok Ma Chau/Huang Gang port passageway where people from both sides now enter and exit. The new access will have more simple entry and exit procedures.

3. The Lok Ma Chau-Lo Wu Elevated Light Rail

Lok Ma Chau and Lo Wu will become two important railway passenger nexus. We propose to build an elevated light rail linking these cross-border accesses so that the Hong Kong MTR will be linked up with the Shenzhen Underground Rail to form a mass transit network across the border. The Lok Ma Chau-Lo Wu Elevated Light Rail will not only be the mass transit line running from east to west within the Border development Zone, it will also serve to disperse the cross-border passengers at Lok Ma Chau and Lo Wu as well as forestall car congestion within the Border Development Zone thus preventing pollution.

CONCLUSION

The future of Hong Kong lies in maintaining its status as an international metropolis while fostering its link with the Mainland, especially our neighbouring Shenzhen and its economic hinterland, the Pearl River Delta region. After China's accession to the WTO, economic, social and cultural interaction between Hong Kong and Shenzhen will definitely increase. After Hong Kong's return to the motherland, the political factors hindering the development of the Hong Kong-Shenzhen Border disappeared. Border development is a must and should be put on agenda by both governments. It is through the development of the Border Zone that Hong Kong and Shenzhen can break the stalemate existing between the governments and achieves a higher degree of cooperation.

Chapter 23

Cross-Boundary Planning: The Interface Between Hong Kong and the Mainland

Ava NG

BACKGROUND

Located at the southern tip of the Pearl River Delta (PRD), Hong Kong is geographically a part of the delta region (Figure 23.1). In the past, there were ebbs and flows in our association with the region of 41,600 square kilometres. Nevertheless, the strong economic ties and symbiotic relationship of the two sides have never discontinued throughout the British era of Hong Kong. Even during the turbulent years of the Cultural Revolution in the Mainland, the social ties of Hong Kong residents with their Mainland relatives have been maintained. Such strong bond and socio-economic relations have contributed significantly to the quick economic success of Hong Kong and the PRD region shortly after the Mainland's adoption of the Open Door Policy.

The return of sovereignty in 1997 has further augured a more intimate relationship which calls for a broader perspective in mapping out the development strategy of Hong Kong whilst moving into the 21st century. In this context, greater efforts will be required to enhance our integration with the Mainland in meeting future challenges.

The recognition of the close relationship between the Mainland and Hong Kong has been revealed in the government's previous strategic planning studies. In the "Territorial Development Strategy Review" completed in 1996, it was stated that in the long-term vision, Hong Kong would need to develop cross-boundary liaison with the Mainland in order to achieve a more rational pattern of regional development and better-coordinated provision of major cross-boundary infrastructure. As such, enhancing accessibility to the PRD and other parts of South China and providing new links to the axis stretching from Shenzhen to Guangzhou are mentioned in the 1996 Review (published in 1998).

In February 2000, the think-tank created by the Chief Executive, the Commission on Strategic Development, produced a report on "Bringing the Vision to Life — Hong Kong's Long-Term Development Needs and Goals." The report has outlined an overview on the long-term development needs and

goals of Hong Kong. One of the themes in the strategic framework is “strengthening links with the Mainland.”¹

The Chief Executive in his 2000 Policy Address further pointed to the need to strengthen our infrastructure to facilitate economic flows with a view to promoting economic cooperation amongst Guangzhou, Hong Kong, Macao, Shenzhen and Zhuhai.²

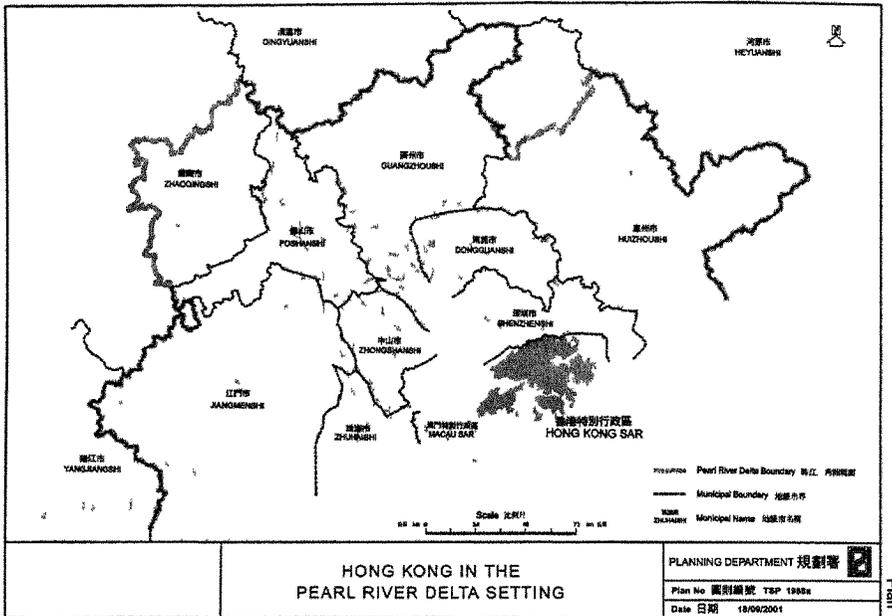


Figure 23 1 Hong Kong in the Pearl River Delta Setting

HONG KONG - MAINLAND LINKAGE

Facts and Figures

A quick review of cross-boundary activity statistics in the last two decades reminds us of the ever increasing economic relationship between Hong Kong and the PRD region.

In 1986, it was estimated that Hong Kong companies in the PRD region had employed 500,000 factory workers, while in 1998 the figure soared to five million.³ In 1999, the value of Hong Kong’s re-exports, either from or to

the Mainland, totalled HK\$1,119 billion, equivalent to 87 percent of Hong Kong's GDP.⁴ At the same time, our neighbouring PRD region has also enjoyed a rapid economic growth. For example, between 1995 and 1999, the GDP of the region has increased by 66 percent (from *RMB*389 billion to *RMB*644 billion) and the total value of exports increased by 46 percent (from US\$46 billion to US\$67 billion).⁵

The economic relationship between Hong Kong and the Mainland could also be assessed through an examination of investment and trade flows. In 1999, Hong Kong's imports from the Mainland involving outward processing amounted to US\$62.5 billion, or 81 percent of Hong Kong's total imports from the Mainland.⁶

Cross Boundary Vehicular Flow

According to the "Feasibility Study for Additional Cross-border Links, Stage I Study,"⁷ it is revealed that since 1991, traffic volumes at the three existing road crossings (Lok Ma Chau, Man Kam To and Sha Tau Kok) have grown at a rate of 9 percent per annum. The daily cross-boundary vehicles were about 30,721 in 2000, comprising of 84 percent freight traffic (i.e. goods and container vehicles), 12 percent private cars and 4 percent buses/coaches.⁸

The destinations of the majority of cross-boundary traffic on Hong Kong side include the port, container storage and industrial areas in Kowloon, Tsuen Wan-Kwai Tsing and the North-western New Territories. On the Mainland, almost 90 percent of the traffic travel to/from Shenzhen and Dongguan, the major manufacturing base in PRD. Only around 10 percent of traffic go beyond these two cities and currently very little traffic (less than 5 percent) moves to the western part of the PRD Region.

According to the "Cross Boundary Travel Survey"⁹ carried out in 1999 by the Planning Department, about 84 percent of goods vehicles (including container vehicles) from Mainland to Hong Kong are loaded, while only 31 percent of them from Hong Kong to the Mainland are loaded. The main reason of such high percentages of non-loaded container trucks going from Hong Kong to the Mainland is due to the Mainland's customs regulations which treat containers as dutiable items.

In the Feasibility Study mentioned above, based on the socio-economic development assumptions of the Mainland, in particular Guangdong and Hong Kong, e.g., population growth, GDP growth, and the relative economic growth

in east/west bank of PRD region, it is projected that the daily cross-boundary traffic volume would grow from 28,300 vehicles in 1999 to 153,920 vehicles by 2020. The cross-boundary traffic forecasts are shown in Table 23.1:

Table 23.1 Forecasts on the Cross-Boundary Traffic, 1999-2020

	1999	2006	2011	2016	2020
Daily traffic flow vehicles	28,000	66,000	90,000	120,000	154,000

Cross Boundary Passenger Flow

Other than the growth in cross boundary vehicular traffic, passenger trips have also increased remarkably over the past years. In 1992, arrival and departure passenger trips from and to the Mainland were 24,023,000 and 23,988,000 respectively whereas in 2000, arrival and departure trips have risen to 55,751,132 and 55,294,692 respectively. The rate of growth is projected to increase at a much faster rate. However, such growth rates are highly susceptible to policy change.

The “Cross Boundary Travel Survey” also provides very interesting data on the trip pattern and the passengers’ socio-economic characteristics. The survey was conducted through face-to-face interviews during a two-week period straddling October and November 1999. It was found that about 1,386,000 Hong Kong residents departed for the Mainland in which 627,300 are regular visitors (those who travel at least once a month) while there were only 110,200 Mainland residents coming to Hong Kong of which 22,600 were regular visitors. The significance of these figures is not just in the large number of people travelling between the two places but that a lot of them are making regular and frequent trips.

There are some major findings of the Survey related to Hong Kong residents living in Hong Kong :

1. Their most common trip purposes to the Mainland were business (29 percent), visiting friends/relatives (23 percent), shopping/leisure (20 percent), and sightseeing (17 percent).
2. The most common destinations were Shenzhen (59 percent) and the PRD region (35 percent).

3. The most common trip purposes to Shenzhen were shopping/leisure (31 percent), business (23 percent), visiting friend/relatives (22 percent) and sightseeing (14 percent).
4. The most common trip purposes to the PRD region (excluding Shenzhen) were business (41 percent), visiting friend/relatives (24 percent), sightseeing (18 percent) and vacation (inspecting property in the Mainland) (7 percent).

There are also some interesting findings on Hong Kong residents who were living in the Mainland :

1. About 51,000 of them travelled to Hong Kong during the survey period. Among them, 28,400 lived in Shenzhen, 15,400 in the PRD region (excluding Shenzhen).
2. Their purposes to come to Hong Kong were visiting friends/relatives (25 percent), work (24 percent), business (20 percent) and vacation (12 percent).
3. About 5,600 persons of this group were frequent travellers (coming to Hong Kong four or more times a week). It also estimated that there were about 900 children who were Hong Kong residents living in Shenzhen and were frequent commuters to Hong Kong.

For Mainland residents travelling to Hong Kong, their number was 110,200, which was much smaller than that of Hong Kong residents travelling across the boundary during the survey period. The Mainlanders' most common trip purposes were business (34 percent), sightseeing (26 percent), visiting friends/relatives (19 percent) and transit to other mode of transport (6 percent).

The community, in particular the business sector, is very keen and perhaps anxious to understand the impacts of an increasing number of Hong Kong residents who live, entertain, doing business or even work on the Mainland. In April 2000, a local survey suggested that about one million Hong Kong residents may consider moving to live in Shenzhen.¹⁰ Another local survey by a real estate agency suggested about 375,000 Hong Kong residents may consider acquiring properties in Shenzhen.¹¹ One point of caution is that these local surveys may not represent a complete picture of housing aspiration due to the sample size and their respective sampling methods. They, however, reflect a general trend of the market's preference.

STRATEGIC PLANNING IMPLICATIONS

The statistics tell us about the asymmetrical cross-boundary flow pattern of goods vehicles. Similarly, the passenger mobility also reveals an asymmetrical flow. Our survey reveals that there were 23,000 regular travellers from the Mainland to Hong Kong, while there were about 600,000 regular travellers from Hong Kong to the Mainland during the survey period.

This information sheds important light on land use planning in Hong Kong, e.g., planning of land for housing, employment, port back-up uses and schools. A thorough analysis of the current pattern and projection into the future should be undertaken. In the process, we have to analyze the reasons behind the asymmetrical flow and assess whether all the contributing factors to this phenomenon would change in future, and if they do change, in what direction?

The increasing trend of cross boundary commuters strongly suggests that more and more Hong Kong residents would choose to reside in Shenzhen and come to Hong Kong daily to work. Of course, the decision to reside in Shenzhen and come to work in Hong Kong depends on a number of factors, including taxation arrangement, education opportunities of the children, availability and quality of essential services, such as medical services and the time required to go through the boundary check-points at peak hours. For long-term planning, we may probably need to consider discounting certain percentage of Hong Kong people who are living in the Mainland when we formulate provision standards for certain facilities, and land for certain uses. However, the size of this sector may be difficult to estimate and the future system must be flexible enough in meeting the change. All these would have implications on the future location of employment, school and other government facilities in Hong Kong.

The “Cross Boundary Travel Survey” also indicates that there were about 19,260 Hong Kong residents who travelled frequently to the Mainland for work and/or on business dealings. With a relatively high unemployment rate in Hong Kong and an increasing economic integration between Hong Kong and Shenzhen, more and more Hong Kong residents may take up job opportunities in Shenzhen and other parts of the PRD region. Some may still live in Hong Kong but some may even decide to live across the boundary. In planning terms, we may probably have to consider adjusting the provision of land for employment and housing in Hong Kong. Hong Kong residents, though living across the boundary, may choose to use the facilities and services, such as hospital, school, welfare, in Hong Kong. A good monitoring mechanism

has to be devised to gauge the situation regularly to assist future planning to ensure our infrastructure could be developed in time and efficiently used.

THE BOUNDARY AREA

The centre of development in Hong Kong has been along the coastal areas of both sides of the Victoria Harbour, with our suburban and rural areas extended northward to the Shenzhen River. The economic activity level at the edge of the Territory is basically very minimal, mainly related to agriculture. However, for Shenzhen, it is a totally different story. Their city centre is located to the immediate north of Shenzhen River, with Lo Wu as the principal transport interchange and Futian as the future city centre. The entirely different development pattern on either side of Shenzhen River would make the connection of the two adjoining cities very different from other cities in the PRD, where the merging is usually at the city edges.

Along the western part of the boundary line, it is Mai Po Nature Reserve, a Ramsar site where conservation is the priority. On the other side of the boundary, there is Futian, Shenzhen's new government seat. In the middle section of the boundary line, there are "Village" zones and rural areas on Hong Kong side but the high-rise city centre and transport interchange at Lo Wu of Shenzhen. In the northeastern part of Hong Kong, it is Hong Kong's environmental and marine conservation areas whereas on the Shenzhen side, there is the continuously growing Yantian Port.

Such development differences make it all the more important for the two cities to take due regard of the planning intentions of the master plans of the respective cities in their long term planning. In the process, only enhanced cooperation and coordination could achieve a development option with mutual benefits.

Under the "One Country, Two Systems" principle, the differences in legislations, custom regulations, tax structure, boundary management and immigration rules between these two cities would continue though there would be changes in the long term. For example, a Frontier Closed Area (FCA) on Hong Kong side extending from Sha Tau Kok in the east to the mouth of Shenzhen River in the west, covering an area of about 2,600 ha, has to be maintained for security control.

There have been occasional calls from the community for relaxing or

even removing the boundary as well as the FCA. While we need to take a thorough study on the benefits of doing so, for all practical purposes, a total removal of all the institutional barriers is still some way to go. However, this does not mean that a better coordination between the two jurisdictions could not be achieved through the flexible implementation of administrative measures to make the boundary more porous and convenient for cross boundary activities.

COORDINATING EFFORTS

The cooperation and integration of organizations in the private sector of the two cities have been developing at a very fast pace in the last two decades. On the government side, though being criticized of not accelerating enough to strengthen the cooperation, we have the Hong Kong/Mainland Cross Boundary Major Infrastructure Coordination Committee (ICC). It was inaugurated in October 1997 to replace the former Sino-British Coordinating Committee on Major Cross Border Infrastructure between Hong Kong and the Mainland. ICC provides a forum to consider infrastructure projects; to exchange views; and to shorten the decision making process on such projects.

The Hong Kong-Guangdong Environmental Protection Liaison Group is another example. It was formed on July 10, 1990. The liaison group was formed to focus on environmental issues such as air quality, water quality and environmental assessment of major projects. High level officials from both sides were members of the liaison group. This Liaison Group has been replaced recently by the Joint Working Group on Sustainable Development and Environmental Protection, which comes under the Hong Kong-Guangdong Cooperation Joint Conference. A town planning special panel attended by the planning authorities of Guangdong and Hong Kong has been set up under the Joint Working Group to look into town planning issues of mutual interest.

Only a better coordinated development of PRD cities, each having its own development priorities and vision, could achieve their complementary role. The 1996 PRD Urban System Plan¹² would need to be reviewed to consider how best the system could take account of the development in Hong Kong and Macao. There are merits in having a coordinated development strategy for the region to address major planning issues including:

1. Coordination of major economic areas in the PRD Region and rationalization of their respective roles;

2. Rationalization of the development of transport infrastructure connecting major urban areas, ports and airports; and
3. Promotion of sustainability agenda of development in the PRD system.

To achieve the above, a more coherent set-up would be required which could overcome administrative and jurisdiction barriers of local governments, to consider long-term cross boundary planning issues, to develop ideas and seek ways to coordinate planning initiatives of the whole PRD region.

CONCLUSION

Cross-boundary planning involves a number of complicated issues. The existing land use of both cities could be a constraint. Existing cross-boundary facilities and the existing communication platform which have worked reasonably well in the past may not meet future demand. But what is the best way to improve and enhance the mutual cooperation to meet future needs? The Planning Department has just commissioned the “Hong Kong 2030 Study — Planning Vision and Strategy.” More specific issues relating to cross-boundary planning would need to be examined. There would be several public consultations organized during the course of the work. When relevant documents are published for public comments, community views and suggestions on all aspects of the cross-boundary planning will be obtained as an input to the study, which is to deliver a strategy for the next thirty years.

NOTES

- 1 “Bring the Vision to Life: Hong Kong’s Long-Term Development Needs and Goals”, Commission on Strategic Development, February 2000.
- 2 *Policy Address* by Chief Executive 2000.
- 3 Source: “HK: The Road to becoming a World City”, internet edition of *Hang Seng Economic Monthly*, Nov/Dec 1999.
- 4 *Hong Kong Annual Digest of Statistics* (2000), Census & Statistics Department.
- 5 *Guangdong Statistical Yearbook 2000*, Statistical Bureau of Guangdong.
- 6 *Hong Kong Annual Digest of Statistics* (2000), Census & Statistics Department.

- 7 *Feasibility Study for Additional Cross-border Links, Stage I Study*, Planning Department, March 2000.
- 8 *Monthly Traffic & Transport Digest*, Transport Department, December 2000.
- 9 *Cross Boundary Travel Survey*, Planning Department, July 2000.
- 10 Hong Kong-China Relations Strategic Development Research Fund (2000), *A Survey on Issues Relating to Cross-Border Traffic between Hong Kong and Shenzhen*, October 2000.
- 11 *Sing Tao Daily News*, 6 July 2000.
- 12 The Guangdong Provincial Government in 1995 completed a regional plan for the PRD region covering 9 municipal cities. The main aim of the regional plan is to enhance economic growth and ensure environmental sustainability through coordinated planning and development among local authorities.

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Chapter 24

The Pearl River Delta Region: “Our Economic Space, Our Life Space”¹

Mee-kam NG

MY ASPIRATION: PLANNING FOR A LIFE-NOURISHING REGION

“Regional plans are instruments of communal education; and without that education, they can look forward only to partial achievement. Failing intelligent participation and understanding, at every stage in the process, from the smallest unit up, regional plans must remain inert. Hence the need for positive organs of assimilation. Regional plans must provide in their very constitution the means of future adjustments. The plan that does not leave the way open to change is scarcely less disorderly than the aimless empiricism that rejects the plan. Renewal: flexibility: adjustment: these are essential attributes of all organic plans”

(Mumford, 1938, pp. 380-1, my emphasis).

Our economic space spans over the Pearl River Delta (PRD). According to some estimates, over 30,000 Hong Kong companies have registered in Guangdong and created over 5 million jobs (Cheung, 1998). The Delta also constitutes our life space. People in Hong Kong have all sorts of genealogical, historical, cultural and emotional ties with the PRD. For many post-WWII immigrants from the China Mainland, the Delta is their homeland, their root.

The PRD region should not be perceived as just a resource base for people to consume. It should not just be a competitive region for economic growth. *The Delta is also our home, for this and future generations.* If the PRD is our home, we would like to make sure that it is sustainable. According to Roberts (1998, p. 781), there are three major themes in sustainable regional development:

- The search for forms of economic organization that respect the environment and minimize the negative environmental consequences of development.
- The desirability of moving towards spatial forms and modes of social organization that minimize the excessive use of resources and maximize environmental benefits.

- The desirability of meshing together sectoral and spatial elements to ensure the environmentally responsible and balanced planning and development of regions.

How can we achieve these goals? Through the brilliant minds of urban planners? The politicians? The governments? The business interest? The inhabitants? Do all of us have roles to play in creating a sustainable region that nourishes our lives?

Only when we know how to appreciate our life world, the space that we inhabit, our relationships with other people living in the region, and the environmental context, can we map out a sustainable regional development strategy and an organic plan. To do that,

"[w]e must create in every region people who will be accustomed, from school onward, to humanist attitudes, cooperative methods, rational controls. These people will know in detail where they live: they will be united by a common feeling for their landscape, their literature and language, their local ways, and out of their own self-respect they will have a sympathetic understanding with other regions and different local peculiarities. They will be actively interested in the form and culture of their locality, which means their community and their own personalities. Such people will contribute to our land planning, our industry planning, and our community planning the authority of their own understanding, and the pressure of their own desires. Without them, planning is a barren externalism"

(Mumford, 1938, p. 386).

THE PRD REGION: "A GEOGRAPHICAL NET OF ISSUES, ACTORS & RELATIONSHIPS"

The realization of a need to treat the Pearl River Delta as a region, and the urge to develop this region into a competitive entity did not exist until perhaps the end of the 20th century, after Hong Kong's economic restructuring and China's Open Door Policy. And I am not sure if anyone else would share my aspiration of making the Delta our economic space and life space. Hence, before we talk about aspirations, we have to take stock of the region and have a better understanding of this "geographical net".

As argued by Healey (1997, p. 4), socio-economic changes "give rise to demands for space, location and qualities of places.... These demands are mediated through local political systems and practices and by regional and

national government politics and administration. Through these interactions, general economic and social tendencies interrelate with local conditions and concerns to produce distinctive, contingent responses to the dynamics of urban region change”. In other words, we need to find out the following information on the PRD Region:

- Socio-economic changes initiated as a result of economic restructuring in Hong Kong, and China’s Open Policy and transition to a Socialist Market Economy.
- Spatial demands (quantitative and qualitative) as a result of the changes identified.
- Political and administrative systems and practices in the region and the responses generated (or the lack of responses) to meet the demands.

Socio-economic and Political Changes in the PRD Region

We have to appreciate that Hong Kong and the China Mainland had embarked on very different development paths since the mid-twentieth century. Table 24.1 briefly outlines the evolving political economies under the “One Country, Two Systems” arrangement. Before the introduction of the socialist market economy, China pursued an almost closed-door policy. While many people from Hong Kong because of historical reasons have maintained linkages with Guangdong, pre-1997 colonial Hong Kong and the Mainland had minimal interactions. For Hong Kong, its open economy was more outward looking and it had served as no more than a market for agricultural produce from China.

Table 24 1 Political Economies in “One Country, Two Systems”

Reforming Socialist Market Economy in China Mainland	Capitalist System in Hong Kong SAR
<ul style="list-style-type: none"> • State-dominated Polity under the Strong Control of the Communist Party • Civil Society Hardly Exists • Centrally Planned Economy Introducing Market Mechanisms at Local Levels • Increasing Foreign Investments • Most of the Economic Enterprises are Intervened One Way or Another by the Governments at Different Geographical Levels 	<ul style="list-style-type: none"> • Market-led Economy with well Established Market Rules and Regulations • Economic Restructuring • Executive Government-led Polity • Government “Maximum support for and minimum intervention in the economy” • Democratizing Civil Society • Facing the New Challenge of Working with Higher Levels Governments in the Mainland

The separatist pattern of development ended with the return of the sovereignty of Hong Kong to China in 1997. In fact, the merging of the two places started much earlier. The Open Door Policy in China and economic restructuring in Hong Kong have triggered an economic integration in the PRD Region. Because of escalating costs of production in Hong Kong, manufacturers were more than keen to relocate their production facilities to the PRD to tap in cheap land and labour resources. The exodus of labour-intensive and low value-added industries have quickened and deepened the economic restructuring process in Hong Kong, with serious spatial, socio-economic and political consequences. On the other hand, the mushrooming of industries all over the PRD have led to all sorts of socio-economic and spatial problems too. Let us have a very brief recount of these:

Hong Kong

- Rapid loss of manufacturing jobs, rising unemployment and increasing social polarization, particularly after the Asian financial crisis.
- Environmental stress as a result of decades of growth-oriented development.
- Rapid population growth due to immigration from China, most are for family reunion purposes — as many lower class men in Hong Kong could only afford to get married in China.
- Because of economic restructuring, the existing urban fabric of the 20th century Hong Kong has become a “limit to capital.” Physical restructuring is urgently needed to equip the city for another round of capital accumulation. For Hong Kong to become a knowledge society based on information, we have to improve the quality of life and human resources, and move towards hi-tech industrial development, building on our strength as a financial centre.

The Pearl River Delta (PRD) Region

- Rapid industrialization has degraded the “land of fish and rice.” Not only has rich agricultural land been taken up by industrial uses, the natural environment has been contaminated by air, water, noise pollution and wastes produced in the industrialization and urbanization processes.
- Floating population have been an issue in the Delta for decades by now and they have led to all sorts of social problems.

- Similar to Hong Kong, different parts of the Delta have undergone various degrees of economic restructuring leading to all sorts of "destructive construction." Social polarization is evident too.
- As all the local authorities would like to attract more investment, they have entered into a vicious cycle of competition and local protectionism, duplicating efforts and wasting resources in the race to lure investors.

Trans-boundary Problems

- The rapid economic integration has led to many environmental, social and physical planning problems.
- Pollution problems in the PRD cannot be contained within the Delta itself as there is only one environment in our planet. Pollution problems have reached an alarming state and unless concerted efforts are made soon, the region will not be sustainable in the future.
- Because of the discrepancy of economic developments in Hong Kong and the PRD, many social problems such as second wives, trading of parallel goods, and various crime related activities take place.
- So far, the economic "integration" has primarily been "market-led". Individual local authorities and manufacturers are very keen to cooperate and work together on individual projects, Within Hong Kong or the local authorities in the Delta, the public sector has been keen to put in place infrastructure to facilitate the circulation of capital. However, because of the lack of cooperation in the past and the "One Country, Two Systems" arrangement, governments on both sides of the administrative boundary have been slow, if not reluctant, to embark on more proactive joint planning. Hence, various transaction problems at road, rail and water cross-boundary points often feature prominently in the mass media.
- The lack of cooperation actually deprives all sorts of creative partnership among the governments, the private sectors, and the community level organizations, which as proved elsewhere, constitutes enormous energy and resources for building a life-nourishing region.

Qualitative and Quantitative Spatial Demands as a Result of the Socio-Economic Changes

Because of the interactions of various socio-economic forces, demands on

spatial changes are evident. Within Hong Kong, we face the daunting task of regenerating our physical fabric, our human resources and our economy. We need a lot of space to make this happen. However, the continuous population pressure has eroded rapidly all the hard work various parties have put in to improve the quality of life in the city. Without improving the quality of life in the city, there is little hope of engaging in the “new” economy. Hence, some advocates are suggesting not just relocating factories to the PRD but also relocating people, if not communities, to the Delta region. As the PRD is a lower cost region, life should then be more affordable for the lower income earners. The question from a Hong Kong perspective then is how to create space for that to happen in the PRD. Unless transaction points and mechanisms between the two places are improved, institutional (political) barriers and environmental problems are overcome, the PRD still could not serve as a solution space for Hong Kong’s problems.

For the PRD, the transferred industrialization has created a lot of environmental problems that need to be tackled urgently. However, the competition for more investment and the need to keep jobs within their administrative boundary means that local authorities can do very little to clean up the environment. Cooperation is urgently required but few recognize the need of cooperation for collective survival. And this naivete can be understood if we take a closer look at the administrative set-up in the Region.

One Country, One Region, One Environment, Many Histories, Many Systems

While geographically, the Hong Kong and Pearl River Delta region is situated within “one environment”, there are “multiple administrative systems”. Within the PRD Open Economic Zone, there are a variety of administrative settings: the provincial capital of Guangzhou, two SEZs (Shenzhen and Zhuhai), six leading cities, 16 county-level cities, and three counties. Guangzhou and Shenzhen enjoy the same level of power and rights as the Guangdong Province in managing their economies. This complex administrative setting is further complicated by the existence of the Hong Kong and Macao SARs. The relationship between Hong Kong and the China Mainland under the “One Country, Two Systems” is more complicated than a “normal” relationship between central and local governments. Except for defence and foreign policy, the central government in theory should not intervene with the internal administration of the population living within the Hong Kong SAR. Figure 24.1 shows the administrative set-up.

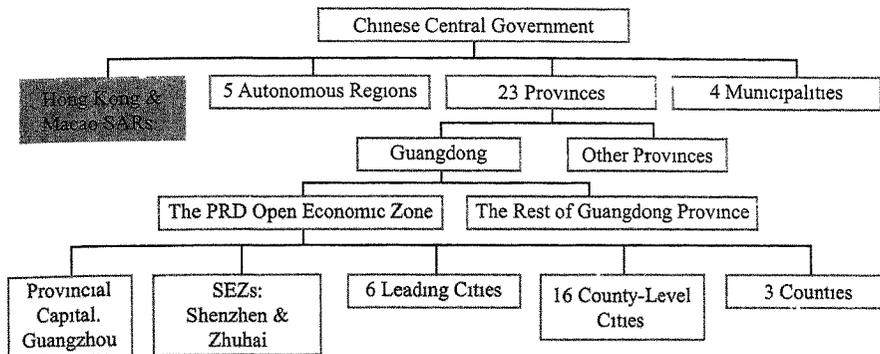


Figure 24 1 “One Environment, Multiple Systems” in the Hong Kong-PRD Region

THE PRD REGION: “A SPATIAL EXPRESSION OF SOCIAL CHOICE”?

The above discussion shows us that the market and the quest to earn “a few dollars more” have created many problems in the PRD. The lack of political will, blind belief of the market forces, vested interests in the existing institutional set-up, and a perception of the PRD as a resource base rather than our home have all contributed to the poor state of the social and natural environment in the region. If the current state of development in the Region is not desirable, it is indeed a reflection of “social choice”.

Should we discredit this sporadic and uncoordinated “social” choice and embrace high-handed top-down government efforts to “right” all the wrongs in the region? Or we should continue to trust the market for its ability to sort things out and achieve optimal efficiency eventually? Can there be a third (or fourth, fifth, etc.) “social choice(s)”?

According to Healey (1997, p. 9), a number of trends can be identified in regional governance:

- Governments are moving from “provider states” towards a proactive, enabling role providing a framework within which firms, agencies and voluntary groups may deliver services and promote development.
- From integrated formal government, with policy articulation and delivery concentrated in a few key arenas to a fragmentation of governance tasks among different agencies in the public, private, mixed, intermediate or “third sector” (NGOs).

- From a dominance of national ministries, politicians and lobby groups to regional and local ones.
- From a clear separation of public and private spheres, to new forms of partnership between public and private sectors, between state and market, and between the public sector and citizens.
- From hierarchical and bureaucratic form of organizations to proactive and interactive forms of governance, building constituencies of support and negotiating contributions from various parties to programmes and projects.

As will be argued, these trends are inevitable for building a life-nourishing region. Without people's intelligent input, "planning is a barren externalism" (Mumford, 1938, p. 386). A regional planning and development system should be robust and life-enhancing if it is able to tap into the resources and creativity of various stakeholders. Yet this does not mean that the governments can shy away from a more proactive role.

As argued by Roberts *et al.* (1999, p.14), metropolitan planning in the absence of a matched system of metropolitan governance or government may prove to be vulnerable and the strategic priorities of a metropolitan region may be set aside in the pursuit of local interests. He further argues that the most successful examples of metropolitan planning and governance demonstrate the following characteristics (1999, pp. 248-9):

- They already have, or are developing, structures of administration, planning and governance that allow for the metropolitan system to be managed as an entity.
- They have the capacity to implement an agreed strategy, either by executive action at the metropolitan level or in association with lower-tier authorities and national/state governments.
- They are able to ensure the appropriate use of land, provide adequate internal and external transportation links, promote and ensure spatial cohesion within the metropolitan region, and establish and maintain a distinct and distinctive (international) identity.
- They are not immune to changes induced by internal or external events, but they do have established political and partnership structures which allow a response to be constructed and implemented.

In other words, if "numerous political boundaries overlies a single metropolitan region" (Short, 1996 quoted in Roberts, 1999), the exercise of rational regional planning will be severely constrained. Following on this, the existence of a body responsible for the integration of the various strands of metropolitan planning policy can be considered to be a necessary functional requirement for effective planning (Roberts, 1999, p. 250). If this body has teeth in resources allocation, it should be publicly accountable and directly elected (Roberts, 1999, p. 250). Given the dynamics and fluidity of a region, a strategic plan should be "policy-led" rather than "plan-led" (Roberts, 1999, p. 251). In other words, the process of involving various stakeholders in formulating the plan and relying on them to implement it is of crucial importance.

If these are the prerequisites for a strategic regional planning exercise, there seems to be no hope for the PRD region as it contains numerous political boundaries without a single body integrating various sectoral policies. Even if one existed, it would not be directly elected and raising resources for plan implementation would be another issue that needed to be addressed. Moreover, valuing the planning process more than the plan is still something beyond the imagination of many key planners in the region. Planning in the Western sense of participation, partnership, collaborative thinking and implementation are still alien concepts for most of the planners in the region. Many are still adhered to the concept of planning as making a blueprint, of mapping out a brave new world of the future.

BUILDING A LEARNING REGION IN THE PEARL RIVER DELTA: A TWO-PRONGED STRATEGY

Under the "One Country, Two Systems" arrangement, the existing system of Hong Kong will not be changed for 50 years. Five per cent of this period has already lapsed. Will the two systems merge smoothly by the end of 50 years? Or do we need to anticipate the event and take certain actions as appropriate? In this age of globalization and information revolution, comparative advantages of an economy, very often, are man-made, rather than given by nature. Seldom would market alone produce all these advantages and the government usually plays an important role in facilitating economic competitiveness. In the case of the PRD, governments on both sides of the administrative boundary have to be more proactive because current development in the region has threatened environmental sustainability, produced social polarization and worsening quality of life for all. These, of course, are easier said than done.

Planning is political in nature because it defines “who gets what, where, when and how”. This probably is why local authorities in the region have shied away from regional cooperation and coordination. However, if we aspire to build a learning region that can enrich and nourish our lives, there is an urgent need for us to develop a regional development strategy and a course of actions to tackle existing problems. As argued by Roberts above, a publicly accountable body integrating various sectoral policies is a functional requirement in metropolitan planning. This may be a difficult requirement for the Pearl River Delta region because of the lack of political support. Perhaps to facilitate the eventual convergence of places on both sides of the artificial boundary, the two sides should cooperate and put in resources for the setting up of an independent Regional Development Institute (RDI).

RDI: Regional Research and Review

As argued elsewhere (Ng, 1995, pp. 254-5), I have suggested the setting up of an Institute of Regional Development and Planning for two interrelated tasks: to serve as an information centre to facilitate the restructuring of the regional built environment, and to lay the groundwork to enhance regional development and planning. If this Institute could embrace researchers from various cities or counties in the region, then a better understanding of all the issues involved in the development process can be achieved.

The RDI should be funded and supported collectively by local authorities on both sides of the political boundary and could be responsible for the following tasks:

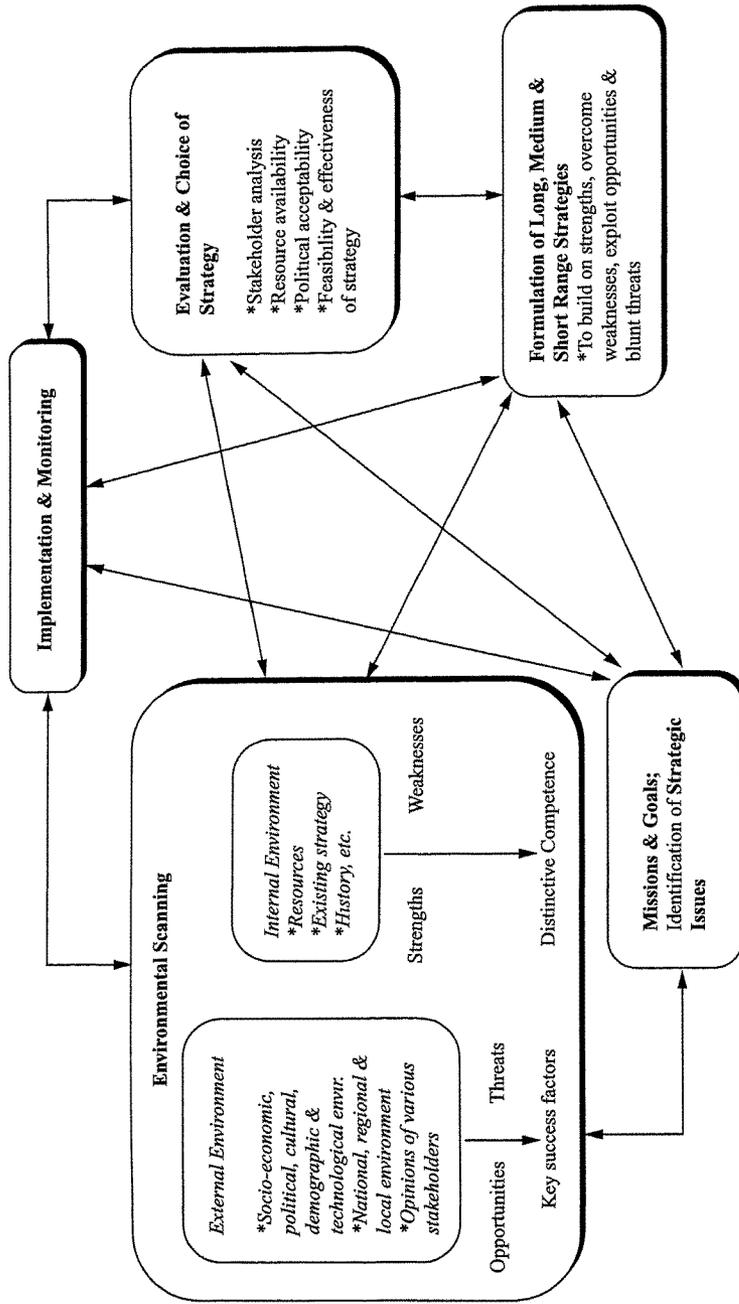
- Research can be conducted on how other mega-urban regions are planned, developed and managed.
- To facilitate consensus building when we plan for our shared space. However, before we can talk about our visions, we need to have a better understanding of the region. As our appreciation of a region is limited by our life experience, it is therefore very important to involve different stakeholders in scanning the environment and identifying major issues faced by a region (Figure 24.2). This is particularly true for the PRD region because of its complex administrative structure and varied development histories. There is an urgent need for the people in this region to develop a better understanding of themselves and the region. Taking stock of the region, doing an SWOT (strengths, weaknesses, opportunities

and threats) analysis and identifying threats and opportunities are very important steps before strategic regional development issues can be identified.

- Identifying an agreed vision for the region while difficult is just the first step. Figure 24.3 outlines the theoretical relationships between national, regional and local plans. Any regional plan is bound to be influenced by national development objectives and policies. And regional plans, unlike local plans, are not just physical development plans. Regional plans should consist of socio-economic development strategy, a spatial translation of this strategy and a development programme which assigns specify types of development (land uses, infrastructure, transportation network etc.) over space. And to reiterate what Roberts has argued (1999), the whole regional development strategy and implementation plan should be sustainable environmentally, socially and economically.
- Topics which should be included in any strategic and integrated study of the Pearl River Delta region: development and planning processes in different localities, institutional set up, environmental pollution, waste management, infrastructure coordination, tourism, high technology industrial development, agricultural development, cross-border arrangements, urban design, local culture and place making, etc.
- After doing surveys and analyses and identifying the strategic visions, the RDI can perform the following tasks for the consideration of various stakeholders:
 - The RDI can help generate different scenarios of plausible future developments in the Region and the pros and cons of various options of regional plans;
 - Suggested courses of actions, partnership schemes, activities etc. for different stakeholders;
 - Mechanisms for the RDI to monitor and evaluate the implementation of the regional plan.

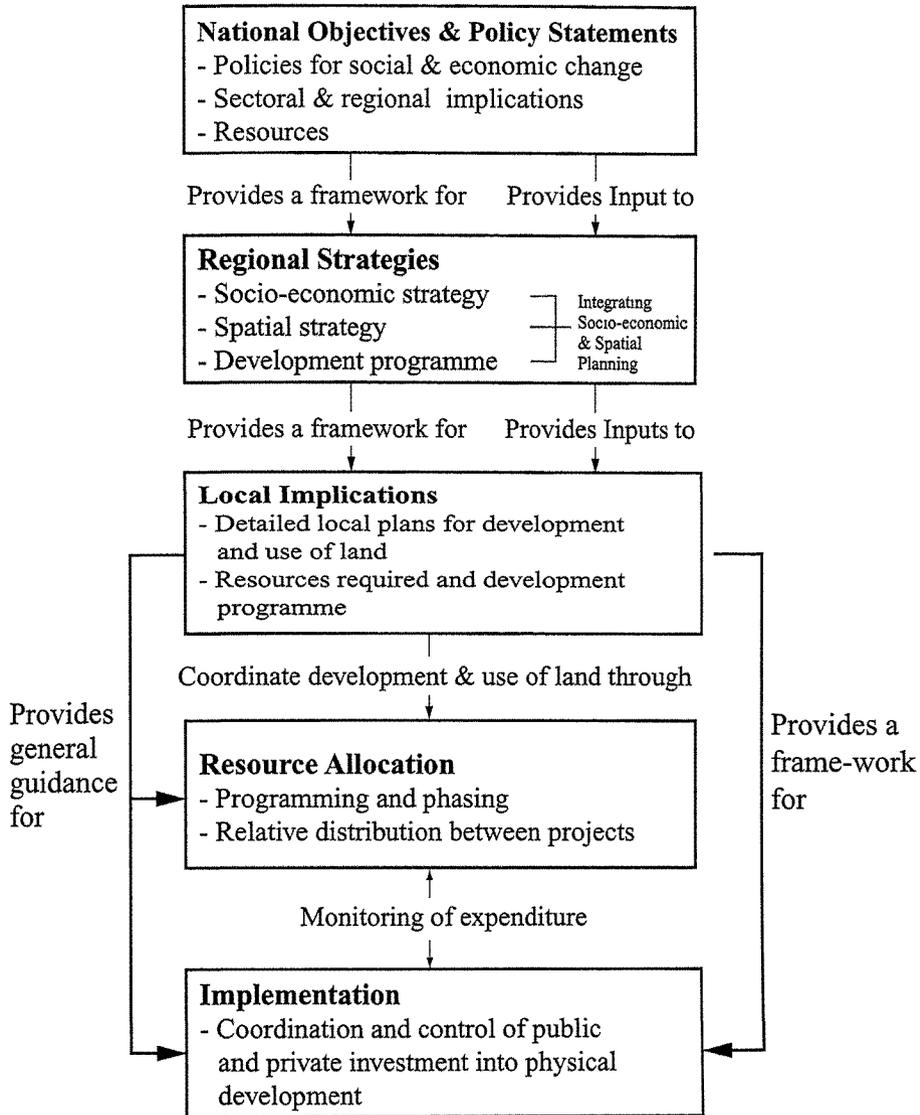
To improve the accountability and utility of the RDI, perhaps it can be steered and advised by a round-table attended by government officials from different cities. These officials should also provide useful sources of information.

Figure 24.2 A Strategic Planning Process



Source: Ng, 1997, pp. 31-59

Figure 24.3 An Ideal Framework for Strategic Planning and Implementation in the Public Sector



Source: Modified from Bruton, M.J. and Nicholson, D.J. (1985), "Strategic land use planning and the British development plan system", *Town Planning Review*, Vol. 56, No.1, Page 27, Figure 1.

Building Trust and “Institutional Capacity”

“Institutional Capacity,” according to Healey (1997, p. 23) refers not just to formal organizational structures, procedures and policy measures, it also includes the collective store of relationships, alliances and interactions where actors come together to develop and consolidate strategies. Developing a thorough understanding of the region cannot be done in a short time and this demands a lot of mutual contacts and interchanges. Hence, besides the diligent research and coordinating work by the RDI, partnership should be encouraged at all levels within the region. For instance, we should encourage all sorts of exchange programmes between school children in the PRD and Hong Kong. Activities such as “Planning for Sustainability in Zhongshan, the PRC” organized by the Chinese University of Hong Kong should be encouraged.

The mass media such as television stations can jointly develop and show programmes about different localities. These will foster mutual understanding. The governments can also put aside resources for various localities to bid for projects, which will facilitate and promote better understanding among stakeholders in the region.

Private businesses, non-government organizations can also host competitions for best practices on environmental protection, community planning or human resources development, etc. These not only encourage healthy competition among local authorities and promote mutual understanding, local governments will then be forced to consider how things are done elsewhere.

Only when inhabitants start to appreciate the connectivity of their living space and the rest of the region will they start thinking about its future development. Only when the various actors know about the region can they offer substantive and meaningful ideas on its future development. Building a life nourishing region requires everyone’s planning imagination!

NOTE

- 1 This title is borrowed from John Friedmann’s book, *Life Space and Economic Space: Third World Planning in Perspective*. New Brunswick, USA: Transaction Books, 1988.

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Conclusion

Chapter 25

The Pearl River Delta Region: Future Scenarios

Tunney LEE, Ralph GAKENHEIMER, Nien Dak SZE and
Ming ZHANG

INTRODUCTION

“Scenarios are not predictions, forecasts or projections. Rather, they are stories about the future with a logical plot and narrative governing the manner in which events unfold... Scenarios usually include images of the future (snapshots of the major features of interest at various points of time (and an account of the flow of events leading to such future conditions.”¹

This chapter presents the stories of three possible futures for the Hong Kong-Pearl River Delta region as they may unfold over the next twenty years. Each story, or scenario, is a product of both imagination and analysis. Each is based on a suite of assumptions, with outcomes drawn partly from the histories of other urban regions. These narratives help us imagine what may happen in the Delta when specific policy decisions and economic conditions are combined. The scenarios are intended, in their methodology and in their vision, to identify those decisions so that stakeholders can see how they might play out in different ways. Doing so also provides a common framework for various parties to raise important issues, and provides a forum for ongoing discussion and debate.

All three scenarios are developed based on the same general assumptions about the macro-economic, social and political context in which the region will evolve. In the coming twenty years or so, the world and Chinese national economic and political environments are assumed to perform well at the global scale. The scenarios use the World Bank estimate that the economic growth of China will maintain an annual rate of seven percent at the national level. There are no dramatic international or domestic political conflicts. The “One Country, Two Systems” framework is maintained.

THE SCENARIOS

SCENARIO I - BUSINESS AS USUAL

Scenario I assumes some intra-regional collaboration over common concerns, but efforts to meet demand for transportation favour motor vehicle use. Governmental cooperation is inadequate to produce a strong land use strategy. There are consequences in terms of urban sprawl and decreased environmental quality. Economic growth is partially hobbled by these constraints.

Regional and Local Decisions

Hong Kong, Macao, and the municipal governments in the Delta coordinate on an *ad hoc*, event-driven basis. That is, when there is a regional conflict to be solved (e.g., a pollution spill), or there are common interests to exploit (e.g., developing telecommunications services), stakeholders meet and seek feasible solutions. Consequently, coordination and cooperation are observed largely between neighbouring municipalities, such as Hong Kong and Shenzhen, Macao and Zhuhai, and Guangzhou and Foshan.

What distinguishes Scenario I from the other scenarios is its emphasis on motor vehicles and highway-oriented mobility. Municipalities in the Pearl River Delta generally accept the expansion of private automobile use because of its apparent economic benefits, and because of demand-side pressure for greater personal mobility. Policy-makers are concerned about the rampant growth of motor vehicles, but pressure for accommodations for the car is strong, both in Hong Kong (where motor vehicles were growing at the turn of the century in spite of strict policies) and even more so in the PRD. Cost differences and easy access encourage Hong Kongers to own cars in the PRD, and rising incomes in the Delta makes for rapid motorization. In addition, large portions of China's goods are moved by truck, so there are pressures from shippers to focus on highway infrastructure. Intercity rapid transport, such as high-speed rail, is developed only between selected primary cities. Governmental spending on transportation infrastructure concentrates on highway and expressway expansion, while intra-city public transit is generally under-funded.

Although many of the local communities and municipal governments are concerned about environmental conditions in the region, levels of commitment vary, as do the fiscal and technical resources to tackle environmental problems. Emission standards in the more advanced areas are set at higher levels. In other areas, standards are either set much lower or are not strictly enforced

because of perceptions that higher standards may increase production costs and household expenses, which will further burden those areas struggling to catch up in economic development.

Large increases in household automobile ownership means that individuals are more mobile. As demand for better housing rises with incomes, so too, does the tendency to live farther away from the city centre: households want more space, and have the means to travel to it. Inevitably, travel demand increases, as does the demand for suburban housing. Municipalities have to expand road networks and respond to the demand for both new roads and new suburban developments.

Hong Kong/Shenzhen and Macao/Zhuhai have implemented plans to improve cross-border connections in response to local demands. This union between the Special Administrative Regions (SARs) and the Special Economic Zones (SEZs) tends to insulate the two southern parts of the Delta from the northern part. The lack of regional support delays the bridge linking Hong Kong/Shenzhen and Zhuhai/Macao.

Characteristics of Scenario I

Population Growth

The population in the Pearl River Delta grows at the same rate in each scenario — it is the dispersion of people that will change for each. By 2022, the total population of the region reaches around 51 million, of which 18 percent, or 9.2 million, live in Hong Kong and the remaining 41 million or so in the Pearl River Delta. Some middle or higher income Hong Kong households move out to more spacious housing or vacation homes in the Pearl River Delta and commute by car, while new immigrants (150/day) settle down in Hong Kong. The share of urban population in the PRD approaches 80 percent, much higher than the 48 percent share it had in the late 1990's.

Transport/Infrastructure

The transportation picture in the Delta is mixed. On the one hand, expressways now connect the region's principal cities, improving mobility throughout the Delta; on the other, the capacity of the road network has become so strained that many sections of the network are chronically congested. In fact, Guangzhou and Foshan are paralyzed by massive congestion, prompting many trucking companies to place a congestion surcharge on goods transported to these cities,

as well as other parts of the northern and western Delta.

In this scenario, the region is well connected by intercity expressway and road networks because policy has emphasized highway-based transport infrastructure development. Rail networks have also been expanded, but to a more limited extent. High-speed rail services are provided between Guangzhou and Shenzhen/Hong Kong. Among other cities in the region, rail service is secondary to road, and mainly used for freight transport.

Yielding to pressure from motor vehicle users, local governments favour and in effect subsidize highway travel. Motorization rises significantly in the Pearl River Delta. In Hong Kong, the government is forced to loosen its control over automobile ownership, not only because of higher incomes in Hong Kong, but because auto-based development in the PRD fuels the demand for car ownership and travel in the SAR.

Since the coverage and capacity of road networks are increasing rapidly, more people rely on cars for travel. Intra-city public transportation infrastructure is poorly maintained and the public modes are losing their market shares. Hong Kong manages to keep the modal share of public transportation at a level of 80 percent for daily commuting. In the Pearl River Delta, however, daily commutes made by public modes only accounts for 40 percent or less. The figure is slightly higher in large urban areas like Guangzhou and Shenzhen.

On the Hong Kong side, the overall increase in motor vehicles causes the road systems to become very congested, since there is not much flexibility to expand the existing networks. Congestion occurs in most road sections for much of the day. On the Mainland side, congestion occurs in nearly all urban areas as road expansion lags more and more behind the fast growth in motorization and travel demand.

Land Use

Improved individual mobility and road infrastructure enables people to travel faster and farther. This new mobility leads to de-densification of central urban areas and decentralization of households and firms at the metropolitan scale. Urbanization at first follows the major highway pattern, but gradually sprawls across the countryside. To accommodate the increasing traffic and housing demand, more land must be allocated for roads and more farmland is transformed to urban uses.

Improved cross-boundary connections reduce or eliminate the bottleneck effects on traffic at the border checkpoints. Accordingly, a very large population moves to the Mainland side for more residential space, while still within commuting range to Hong Kong for work.

Environment

Increasing motorization creates a spatially dispersed and dominant source of emissions. Although the loading of particulate matters decreases as a result of higher fuel standards, more efficient power plants, and reduced trash burning, the vehicular emissions of nitrogen oxides (NO_x) and volatile organic compounds (VOC) continue to increase and spread over a greater area. Photochemical transformation of these leads to formation of ozone — one of the most persistent and harmful ingredients of smog. Elevated levels of ozone not only adversely impact public health, but also adversely effect crop yields. While the level of particulate matter may decline, the region is faced with rising ozone levels — a more difficult and costly problem to contain. Overall, the air quality of the region worsens, leading to a decline in productivity and tourism revenues.

Since the region's economic expansion had increased land prices and labour costs, some manufacturing activities move to the northern reaches of the Pearl River Delta. The lack of uniform standards and enforcement cause additional discharges of organic wastes, pesticides, and toxic heavy metals, many of which are persistent and non-biodegradable. Displaced industry moves pollution upstream, which causes significant degradation of the water quality further down-river. This in turn harms public health, fish and wildlife throughout the region.

Economic Development

Unfortunately, despite serious efforts in environmental controls made by a few municipalities, overall environmental quality continues to deteriorate and so does the quality of life in the region. Air pollution, characterized by heavy smog, discourages global firms and other investors from entering the Delta. Inevitably, the competitiveness of the Hong Kong and Pearl River Delta region faces serious challenges from other Asian regions. Economic growth starts to slow down after 2010.

Despite these unfavourable factors, there are positive changes over time to offset the declining economy. For instance, a steady growth of infrastructure

investment is expected to help the region maintain its economic growth at a moderate level. Moreover, growth of the consumer market continues, creating more demand for both domestic and international goods.

SCENARIO II - ENCLAVES AND COMPETITION

Scenario II investigates the consequences of municipalities and other local entities seeking the greatest autonomy possible. Transport strategies are local — some focusing on transit, others on highway. The GNP at 2022 is somewhat lower than the other two scenarios because poor air and water quality, combined with disjointed infrastructure development, have stalled new investment and made doing business more difficult.

Regional and Local Decisions

Municipalities in the Delta are determined to pursue the highest level of autonomy they can, not only to preserve their political and economic independence, but also to compete directly with other, comparable municipalities in the region. While Hong Kong and Macao maintain their status as special administrative regions, other municipalities seek major spatial and administrative restructuring. The administrative role of Guangdong Province is weakened as a result; decentralization and fragmentation of governance prevail. Municipalities begin to compete fiercely with one another.

Since each municipality acts on its own, mobility policies vary greatly across the region. Hong Kong continues to support its efficient public transportation systems while enforcing control over private automobile use via electronic pricing and other measures. In other major cities in the Delta, such as Guangzhou and Shenzhen, both public and private transport modes are encouraged. In smaller cities, private transportation has become an important mode, since they generally cannot afford the huge investment in public transport services. There is a general lack of coordination at the regional level for transport infrastructure development.

Similarly, local legislation and action on environmental matters vary significantly. Regional-level emission standards scarcely exist or are not enforceable because there are no region-wide monitoring or enforcement systems. The lack of such monitoring also precludes the implementation of regional-wide emissions trading, an incentive-based control measure which has amply demonstrated its cost effectiveness in Western Europe and the US.

Local municipalities are inclined not to set higher standards as the spillover of pollution from adjacent areas or upper streams will negate their limited spending on environmental actions. Issues of solid-waste treatment, and the siting of landfills and other undesirable uses, are resolved mainly within municipal boundaries.

Land use and management is conducted at the local level. Local communities see no need to coordinate land use planning and development. Hong Kong continues to cluster high-density development along its new rail facilities. Shenzhen continues to expand its initial founding plan at medium densities that accommodate motorization. Guangzhou and its surrounding urban regions are more tolerant of general de-densification.

Motivated by faster economic growth, municipalities in the Pearl River Delta all make an effort to establish direct or closer linkage with their more affluent neighbours. But these efforts are frustrated because border controls are tightened in response to intense immigration pressures. The bridge connection between Hong Kong/Shenzhen and Zhuhai/Macao is still under consideration, but no action is taken.

Characteristics of Scenario II

Population Growth

In this scenario, the region would house a population of nearly 52 million by 2022. The geographic distribution of the population, however, would be quite different from those in other scenarios. As municipalities compete with each other, disparities in development levels among them increase proportionally. People migrate to affluent areas where there are more job opportunities, educational resources, welfare provision and other social services. Lack of efficient regional transportation systems also contributes to people's desire to move close to or locate in wealthier urban areas. By 2022, Hong Kong's population reaches 11.5 million as all eligible migrants apply; the population of Shenzhen approaches 10 million.

Transport/Infrastructure

Lack of coordination among municipalities in the region results in piecemeal development of regional transportation infrastructure. Each municipality attempts to build its own extensive transportation facilities to make itself more attractive to outside investment. The duplication of airports, seaports, and other facilities, begun in the 1990's, becomes more extensive.

Mobility policies and strategies implemented in different municipalities vary. Some metropolitan areas have made efforts to improve public transportation systems; others continue to support automobile-related development and to encourage automobile-based household consumption behaviour patterns. Consequently, motorization levels rise significantly on the Mainland side, but because incomes are rising slowly motorcycles and older cars prevail. In Hong Kong, population growth and high travel demand begin to cause serious road congestion during morning and afternoon peak hours.

Land Use

Land development strategies also vary among different municipalities. No single feature can characterize the Pearl River Delta in terms of land use pattern. In large metropolitan areas such as Hong Kong, Guangzhou and Shenzhen, density continues to rise to extremely high levels, and the quality of life is consequently lowered. This scenario presents the most diverse situation in land use and management among all the scenarios. In some respects the outcome is chaotic. For example, it leads to no agreement over appropriate responses to overspills of population from one locality to another, or over appropriate modes of regional transportation.

Environment

The disjointed nature of development in this scenario exacerbates environment conditions, in spite of limited local improvements. Increased motorization, more motorcycles, reliance on older vehicles, lack of uniform environmental standards and a wide range of monitoring capabilities contribute to both the heavy loading of particulate matters and enhanced smog formation. Even costly environmental enforcement by Hong Kong and other municipal governments becomes ineffective because of the spatially dispersed nature of air pollution and the lack of incentives for establishing a region-wide green industry. The atmosphere is so overloaded with pollutants that its natural cleansing capacity is overwhelmed. Pollutants linger appreciably longer, and air quality is more permanently degraded, to the point that an eventual recovery will take decades. Crop yields in the Delta are so reduced by enhanced ozone levels that food has to be imported from overseas or from remote domestic markets.

Some polluting industry moves northward in search of lower costs and regulations that are less strict. Together with a lack of coordinated water resource management, this tends to further increase discharges of wastewater,

heavy metals, and other noxious effluents into the Delta's rivers and streams. These discharges result in degraded water quality, erosion, and flooding, all of which have adverse impacts on the communities downstream. The poor water quality and increased demand for water in Shenzhen and Dongguan forces Hong Kong to seek expensive alternative sources. Water-borne diseases become more common throughout the region.

Economic Development

The region continues to grow in the early part of the new century. However, this momentum soon diminishes because of unproductive competition between municipalities and a rapidly degrading environment. The region begins to lose its attractiveness to foreign investors, forfeiting trade, business opportunities, and skilled workers, and consequently begins to lose its competitive advantages to those of other Asian regions.

SCENARIO III - COLLABORATIONS FOR SUSTAINABLE GROWTH

Scenario III assumes the establishment of regional organizations that are successful in guiding development and launching an effective programme of environmental control. The region confronts motorization, retaining a high travel modal share for public transport. Unified land use planning knits the region together. The region's economy soars, and it establishes itself as one of the primary engines of growth in Asia.

Regional and Local Decisions

A regional advisory and coordinating body is established. It is set up by the Hong Kong and Guangdong Governments to advise the various levels of government on policies of regional importance and options for implementation. It includes business and community leaders from all municipalities in the region with government officials serving as observers. The body is assisted by a regional think tank with relevant expertise in transportation, health, education, the environment, remote sensing, the arts and sciences, agriculture, business, and legal and social issues. The think tank is responsible for continually reviewing regional conditions and revising development strategies. It also includes a regional planning initiative that enables it to advise and assist in the implementation phase.

The advisory organization assists the governments, businesses, and organizations of the region by identifying their specific needs and

responsibilities in regional development: it formulates region-wide strategic plans, proposes investment and incentive programs, and works towards common environmental standards. It also monitors the performance of each party in implementing plans and enforcing standards. Such a body enables the region to build a foundation for sound decision-making on regional development. It also significantly widens the range of choices for policy implementation, including cross regional incentive-based control measures.

Although the regional highway networks continue to expand to support the movement of goods and people, the Delta has adopted a rapid-transit based solution to support regional economic development. The region is committed to improving mobility by carrying out major investments in construction and expansion of intercity rapid transport (e.g., high-speed rail), cross-harbour or cross-river links (e.g., bridges or tunnels), and intra-city mass transit (e.g., subway systems and commuter rail lines). The continued growth of the national economy creates a favourable climate for public/private infrastructure development in the Delta.

A consensus is reached to tackle regional environmental problems in order to sustain long-term economic growth and improve the quality of life in the region as a whole. Sufficient funds are allocated to control pollution and encourage local action. Different approaches for cost-effective control and preventive measures are studied and assessed by the think tank. Training institutes and universities are geared towards providing necessary skills in environmental control and management. Issues of wastewater and solid-waste treatment, and the siting of landfills and other undesirable land uses, are resolved cooperatively among municipalities on a regional basis.

Land use management is conducted at the local level as before. In addition, meteorological and geographical information is incorporated in every phase of regional planning for optimal, holistic resource management. Strategic land use planning, however, is under the guidance of the regional organization to ensure a consistent land development strategy throughout the Delta. The decision has been made to emphasize transit-based clustered land use patterns in urban areas, and to form urban nodes along intercity rapid transport links. The objective is to provide sufficient living space for households, preserve land resources, and assure efficient transportation.

Cross-boundary connections are improved to accommodate the increased flow of people and goods between Hong Kong and Shenzhen, between Macao

and Zhuhai, and between Hong Kong/Macao and the rest of the Delta. The improvements are the result of a greater number of crossing points, simplified operational procedures (e.g. one-way checking only), and 24-hour checkpoint operation. The land connection between Hong Kong/Shenzhen and Zhuhai/Macao is also completed as part of a regional transportation system.

The regional organization, with the direct support of municipalities, provides incentives and funding for coordinated economic activities in various sectors. The four major airports and nine large seaports in the region take steps toward operating as complements, rather than rivals.

Characteristics of Scenario III

Population Growth

The population of the Pearl River Delta grows at a steady rate, reaching 51 million by 2022. Of this, 18 percent, or 9.3 million, is located in Hong Kong (with improved economic opportunities in the region, immigration pressures are reduced), while the remaining 41 million are located in Guangdong. The urban share of the population in the region approaches 80 percent, up from 48 percent in the late 1990s. Despite the overall population increase, a higher educational attainment has been achieved as the region continues its long tradition of emphasizing education.

Transport/Infrastructure

Transit networks grow. The successful institutional ties among the region's governments prompt them to cooperate in building and maintaining an extensive interregional transport network with an emphasis on rail and ferry transit.

In this scenario, railways become the backbone of the regional transport system, and are complemented by expressways, waterways and air transport. A full transportation loop linking the three city clusters in the inner Delta (Hong Kong/Shenzhen, Macao/Zhuhai and Guangzhou/Foshan) is complete by the opening of the bridge (both road and rail) between Hong Kong and Macao/Zhuhai. Overall, the Pearl River Delta region is well served by multi-modal, intercity transportation networks.

Consistent with the regional transport development strategy, intra-city transportation is also served by efficient public transportation systems. The Hong Kong transit model, i.e. a public transport system composed of diversified

modes ranging from subway, trolley, and taxi to bus and minibus, has been successfully applied to the major urban areas in the Delta. In Hong Kong, the modal share of public transportation remains stable at about 90 percent of daily commutes. In the Delta, daily commutes are also mainly by public modes, with a share as high as 60 percent in major urban areas. Private motorized modes (automobile and motorcycle) account for less than 10 percent in Hong Kong and less than 20 percent in the Mainland. In Guangzhou and other Delta cities, bicycles still constitute a significant mode, with about 20 percent modal share.

Although strong governmental regulations have restrained the use of private motor vehicles, motorization levels have increased compared to the late 1990s. The increase in car fleet size is mainly due to a rise in population and income, and a fall in average household size.

Another vein of regional integration is the dramatic extension and development of information technology and telecommunications, especially in the Pearl River Delta, where access to telecommunications has risen enormously. Private ownership of personal computers is high, and the use of mobile communications devices has become nearly universal. Cross-boundary working associations have been enhanced by electronic connections, which include dedicated centres for telework and other systems that unify communities of interests throughout the entire region.

A broader consequence of these policies is that the entire region becomes an attractive location for the information technology industry. Hong Kong emerges as Asia's premier Internet hub, eclipsing Singapore through its entrepreneurial vigour and Tokyo through its greater openness to foreign markets. The IT industry is supported by superior telecommunications infrastructure in the region, a highly educated, computer-literate workforce, substantial venture capital, and a generally high quality of life that makes it an attractive home for this very mobile industry. The widespread use of meteorological and geographical information enables the practice of precision agriculture, which increases crop yield and reduces the need for chemical fertilizer and pesticides.

Land Use

Clustered decentralization is the core mode of urbanization in this scenario. Land markets will generally respond to the transit-based mobility provision in

the region: clustering developments would largely occur around train stations or other transit stops. Land use planning and management are carried out in a cooperative and coordinated manner among municipalities across the region. Transit-based policies and land use planning reinforce each other, creating more compact land use patterns and consuming less land than in other scenarios.

The integrated transport infrastructure reduces the unit cost of commuting. In the same amount of time, people are able to travel farther than before, particularly along transit corridors. As a result, households can relocate farther away from central cities, and may enjoy larger living spaces without sacrificing accessibility. This de-densification process helps relieve the exceptionally high densities of such areas as inner Guangzhou and central Hong Kong. Population growth pressures in the larger cities ease.

Improved cross-boundary connections reduce or eliminate bottlenecks at checkpoints. A sizable population moves to the Mainland side to live and commute to Hong Kong for work. A bridge linking Hong Kong with Macao/Zhuhai creates a new wave of development in the west flank of the Pearl River, similar to the synergy forged between Hong Kong and Shenzhen in the 1980s.

Environment

The environment will flourish. Sufficient disincentives to using private motor vehicles (such as parking restrictions, taxes, and road pricing) are introduced, effectively stabilize the emissions from these sources. The cleaner, transit-based travel has resulted in measurably improved air quality. The use of real-time space-borne meteorological and geographical data makes it possible to identify and combat pollution from stationery sources by implementing fuel-switching strategies. At the same time, the coordinated efforts of Delta governments have significantly expanded investment in clean technologies developed by the burgeoning green industry. Region-wide monitoring systems have helped build trust among local municipalities in enforcing environment regulations and in implementing cost-effective incentive-based emission trading programmes. As a result, the worsening trend of air quality seen in the late 1990's is reversed by about 2008, and blue skies become a normal, everyday occurrence.

To combat the projected 12 percent annual increase in total wastewater discharged into Guangdong's river system, the provincial government has

increased investments in wastewater treatment facilities, and has restored watersheds that were damaged by urbanization. Starting in 2010, the combination of higher treatment capacity, stronger regulations, and market mechanisms lead to rapid improvements in river water quality and more efficient water use. This, in turn, lowers both the number of waterborne diseases and the costs associated with cleaning water for industrial production.

Economic Development

The economy grows rapidly, benefiting from the region's achievements. Improved infrastructure, air and water quality, and education of the labour force, combined with better coordination among stakeholders, all contribute to sustained growth and increased regional competitiveness. All major metropolitan areas and medium and small cities and towns in the Delta begin to pay greater roles in both the regional and global economy.

CONCLUSIONS AND IMPLICATIONS

“Such storytelling also allows people to find the most pleasing scenario. Then they can start figuring how to make it happen.... Indeed, the point is not to focus on outcomes too much as to understand the forces that would compel the outcome; less on figures, more on figure-ground.”²

Getting to the Integrated Scenario: Some Next Steps

There are many ways in which Scenario III could come about. We have suggested below the formulation of a Working Group and a Research Institute, in another, final scenario-building moment. Whatever forms the next steps take, however, there are two clear areas — the environment and transportation — where coordinated policy should benefit all constituents. The mandates for further work in each of these fields are summarized below.

The Mandate for the Environment is to:

- Clearly and scientifically define the scope and extent of environmental problems in the region.
- Begin to gather and analyze data (standardized across boundaries) on emissions and atmospheric conditions, on a regional scale, using Geographic Information Systems, remote sensing techniques, and models.
- Identify opportunities and incentives for green businesses and industries that foster environmental protection and resource management.

- Identify relevant educational and training needs.
- Analyze the differing statutory, economic and social contexts.
- Devise incentives and disincentives for upgrading and prevention.
- Establish reasonable goals and a timetable in which to implement them, based on objective cost/benefit analyses.
- Design and implement a regional monitoring network to complement existing observational capacity.

The Mandate for Infrastructure Coordination is to:

- Link key infrastructure projects with regional economic development.
- Link infrastructure projects with urban patterns and environmental protection.
- Establish achievable goals and a timetable in which to implement them, based on cost/benefit analyses.

Two New Institutions

With the initiative and the strong commitment and support of political leaders, the Hong Kong/Guangdong Cooperation Joint Conference and the Infrastructure Coordinating Committee convenes a *Working Group* to prepare a strategic plan for environmental protection and infrastructure coordination for the Delta region. This is in recognition of the interrelated nature of the decision they face. The members are government environmental protection officials, urban planners, scientists, economists, and businesses from Hong Kong and Guangdong. The Working Group may be composed of sub-committees on specific topics, such as air pollution and meteorology, water and sewerage, solid waste, intercity transportation, airport and seaport coordination. The Group's objectives in its two essential fields, the environment and infrastructure coordination, follow the mandates just described. Both groups are to hold meetings throughout Hong Kong and the Delta to define the problems and solicit feedback.

The Hong Kong private sector, philanthropies and academic institutions, in cooperation with their Guangdong counterparts, initiate and support the process by establishing a Regional Planning and Research Institute. The Institute would serve as an independent think tank to conduct objective studies

and gather information for all concerned parties to use. It would also seek to convene constituents with disparate interests and views so that they may find threads of agreement. In this, it would lay the groundwork for the activities of the Working Group.

The goals of the Institute are to:

- Establish a regional planning support system (a mapping and data gathering system).
- Identify gaps in knowledge and skills, and orient research and training accordingly.
- Document and assess the economic benefits and costs of environmental protection and opportunities in green industries.
- Model practical, enforceable programmes of regulation and compliance.
- Conduct studies on regional authorities and cross-border environmental initiatives.
- Assess environmental monitoring programmes and provide management training.
- Initiate public education programmes in both Hong Kong and Guangdong.

Both the Working Group and the Institute will work to take into account the widely divergent economic, social and legal contexts in the region, and to devise financially feasible, practical and enforceable regulations and incentives.

The Guangdong government, local governments and the Hong Kong SAR would undertake the major issues requiring governmental action. The private sector would cooperate in compliance and undertake positive actions to implement new industries and management techniques. Educational institutions would undertake to train workers skilled in environmental engineering, technology and other areas.

Initiatives, plans, and programmes would be monitored by the Regional Planning and Research Institute and modified on a regular basis. As the structure and allocation of costs and benefits are negotiated, regional water authorities and airport/seaport coordinating bodies would also be set up. Public educational initiatives would be launched as long-term investments.

NOTES

- 1 Gallopin et. al. (1997), *Branch Points: Global Scenarios and Human Choice*. Stockholm Environment Institute. p. 5.
- 2 Garreau, Joel (1994), "Conspiracy of Heretics", *WIRED*. 2: 11, November 1994.

Chapter 26

Further Cooperation Between Hong Kong and the Pearl River Delta in Creating a More Competitive Region

Anthony Gar-on YEH

INTRODUCTION

When one looks at the satellite image or any map, Hong Kong and the Pearl River Delta form one entity. Hong Kong's built-up area is very similar to that of the other large cities in the Pearl River Delta, Guangzhou and Shenzhen (Figure 26.1). But, because of their different histories, there are significant economic and political differences between these cities. Hong Kong Island was ceded to Britain in the Qing Dynasty on 29 August 1842 by the Treaty of Nanking after the First Opium War. The Kowloon Peninsula and the Stonecutter's Island were ceded in 1860 by the First Convention of Peking after the Second Opium War. The New Territories, comprising the area north of Kowloon up to the Shum Chun (Shenzhen) River at the border with China and more than 200 outlying islands, were further leased to Britain on 9 June 1898 for 99 years by the Second Convention of Peking. The development of Hong Kong and of the Pearl River Delta was very different after 1842 and was particularly so after 1949 and the change of regime in China. Hong Kong was returned to China on 1 July 1997 after the signing of the Sino-British Joint Declaration on the Future of Hong Kong by the Chinese and British governments on 19 December 1984 in Beijing. Hong Kong is now a Special Administrative Region (HKSAR) of China. Under the principle of "One Country, Two Systems" of the Joint Declaration and the *Basic Law of the Hong Kong Special Administrative Region of the People's Republic of China* adopted by China's National People's Congress on 4 April 1990 (after five years of drafting and consultation), Hong Kong's existing capitalist system and lifestyle are to remain unchanged for 50 years. It has total autonomy, with the exception of defence and foreign affairs (http://www.info.gov.hk/basic_law).

In the late 19th and early 20th century, Guangzhou, the largest city in the Pearl River Delta, was more developed than Hong Kong, which at that time was only a relatively small trading post and entrepôt of Britain. The main

turning point which enabled Hong Kong to surpass Guangzhou was the change of regime in China in 1949. Despite the decline in entrepôt trade because of the political developments in China, Hong Kong was able to transform quickly into an industrial city in the 1950's through the influx of refugees from China, which provided cheap labour, capital, and entrepreneurship for its industrial development (Szczepanik, 1958). External demand for goods and the lack of competitors also helped in developing export-led industries (Koo, 1968; Lin et al., 1980). The textile and plastic industries expanded quickly at an early stage. The electronics and electrical industries started to grow in the 1960's. Since the early 1970's, manufacturing industries have progressively diversified. There was a shift from labour-intensive and simple products to more technology-intensive and sophisticated products. Although manufacturing still remained important to its economy in the late 1970's, Hong Kong was further transformed into a major regional financial center (Chen, 1984, 1990). By contrast, social and economic development in the Pearl River Delta was much slower after 1949 because of the continuous political movements in China after 1949, notably the Great Leap Forward in the 1950's and the Great Cultural Revolution in the 1960's. Although most of the people in Hong Kong were from China, interactions between Hong Kong and the Pearl River Delta were close to non-existent during the Cold War period, except for the import and export of food supplies and basic goods. Crossing the boundary in Shenzhen between Hong Kong and the Pearl River Delta was extremely difficult. It was only after the adoption of the 'Open Policy' and economic reform in China in 1978 that interactions and relationships between Hong Kong and the Pearl River Delta began to change drastically. Since 1978, with rapid economic development in China, and in the Pearl River Delta in particular, there has been a big increase in the flow of people, goods, and capital, especially from Hong Kong to the Pearl River Delta. Taking advantages of the cheap labour and land in the Pearl River Delta, many Hong Kong industries have moved to the Pearl River Delta, industrializing as well as urbanizing the once rural counties there. The Pearl River Delta has now established itself as one of the leading economic regions in China (Vogel, 1989). The aim of this chapter is to examine changing relationships between Hong Kong and the Pearl River Delta and to explore their implications on future cooperation and coordination in increasing the competitiveness of the region.

Further Cooperation Between Hong Kong and the Pearl River Delta
Delta in Creating a More Competitive Region

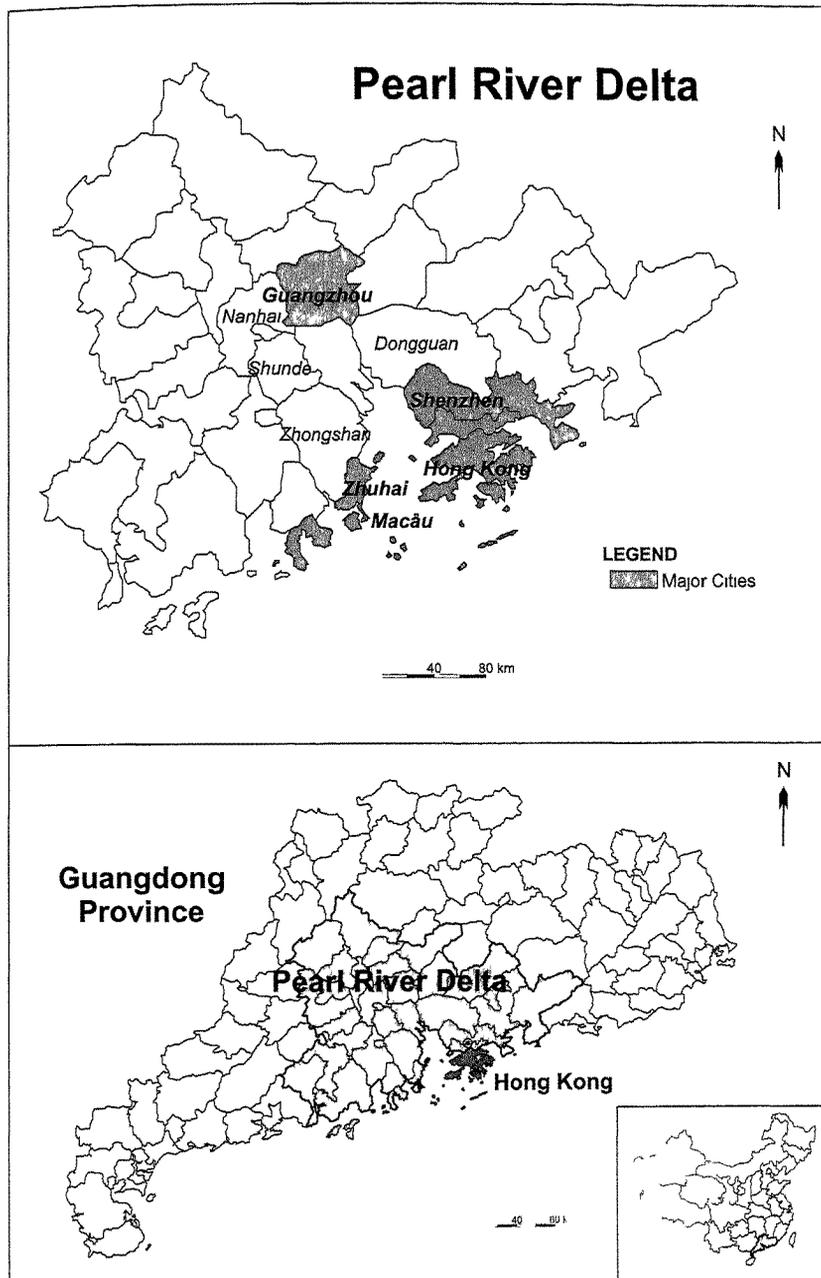


Figure 26 1 Hong Kong and the Pearl River Delta

ECONOMIC DEVELOPMENT: RELATIONSHIPS BETWEEN HONG KONG AND THE PEARL RIVER DELTA

Since 1978, Hong Kong has contributed greatly to the economic development of the Pearl River Delta and to the urbanization of this region which, in turn, has had great environmental impacts. On the other hand, the outflow of factories to the Pearl River Delta has led to the restructuring of Hong Kong's economy with rapid decline in manufacturing industries.

Hong Kong's Influence on Rapid Economic Development in the Pearl River Delta

Shenzhen, the border town in Guangdong Province next to Hong Kong, was designated as one of the first four special economic zones in 1979 as China began to experiment with economic reform (Phillips and Yeh, 1989). The Pearl River Delta was designated as a Special Economic Development Zone in early 1985. These zones offered special incentives and other forms of preferential treatment in order to attract foreign investors. Since 1978, Guangdong Province has become one of the fastest growing regions with regard to its annual industrial and agricultural output. In 1999, the value of the gross domestic production (GDP) and the output of the export trade were US\$102.23 billion and US\$78.76 billion respectively. The province occupied the first position in both the gross domestic production and the export trade output in the nation. This economic development is closely correlated with foreign investment in the Pearl River Delta. Foreign investment is usually related to two major types of industries - processing industries ("processing, assembling, manufacturing and compensation trade") and joint ventures between local and foreign investors in industrial and agricultural development. Guangdong has attracted over half the amount of foreign investment and built up over half the number of processing industries and joint ventures of the whole nation (Yeh, 2000).

Two separate stages of economic development which have had different spatial impacts can be observed in the Pearl River Delta after economic reform in 1978. In the first stage (1978-1990), the economy was mainly influenced by the development of labour-intensive processing industries. The second stage (1990 to present) saw the diversification of the economy to encompass tertiary activities and real estate development. These two stages are associated with different processes of urbanization and agricultural land loss in the Pearl River Delta (Yeh and Li, 1997, 1999).

The First Stage (1978-1990)

From 1978 to 1990, Guangdong's real gross domestic product (GDP) increased at an annual rate of 12.3 percent compared to 8.9 percent for the whole nation. However, most of the increase should be attributed to the Pearl River Delta which contributed significantly to Guangdong's economic takeoff. Before economic reform in 1978, the annual growth rate of GDP of the Pearl River Delta was only 4-7 percent, but the growth rate reached 14-16 percent in 1978-1990, which was 2-3 percent above that of Guangdong Province (Liu et al., 1992).

The greatest stimulation to the economy of the Pearl River Delta in this stage of development came from labour-intensive processing industries. Hong Kong partners subcontracted their manufacturing work to Chinese partners with the provision of necessary raw materials, equipment and production techniques. The Chinese partners earned processing fees by finishing the required production and returning the processed goods to Hong Kong middlemen. In 1999, according to China's Customs Statistics, Guangdong's export earnings were US\$78.76 billion which was about 40 percent of the national total. Nearly half came from subcontracted processing industries (Liu et al., 1992). Many of these industries were located as village enterprises in the townships of the Pearl River Delta. These village enterprises began to take up agricultural land but not at a very large scale at this stage.

The Second Stage (1990-Present)

Land reform in 1987 that re-introduced land values in China through land leasing and the charging of land use fees created a property market and increased the rate of housing construction (Yeh and Wu, 1996). The rapid development of a property market in the second stage of development intensified agricultural land loss in both urban fringe and rural areas. Influenced by the property boom in Hong Kong, there was a sudden rise in the development of a real estate industry in China in 1992, especially in the coastal cities. Before the property boom in 1992, investment in real estate was limited to Shenzhen, Guangzhou, Panyu and Huizhou in Guangdong Province. In and after 1992 investment in property development soon spread all over the Pearl River Delta, and then beyond to other parts of China. Both foreign and domestic investors have been deeply involved in property development. Foreign investors usually come from Singapore, Japan, the United States, South Korea, Hong Kong and Taiwan, but Hong Kong occupies the largest proportion of property investment in

Guangdong Province. In 1992, investment from Hong Kong totalled US\$2.56 billion for land acquisition and US\$0.97 billion for construction (Tian, 1994). Property development fuelled by the capital from Hong Kong has led to the rapid loss of valuable agricultural land and a highly dispersed urban development in the Pearl River Delta (Yeh and Li, 1997, 1999). The loss of valuable agricultural land to economic development, especially in the small towns in the Pearl River Delta where local government, urban planning and environmental regulations are weak is occurring at an alarming rate. Agricultural land loss and dispersed urban development are threatening the sustainable development of the Delta (Yeh, 2000 and Yeh and Li, 2000).

Economic Development in the Pearl River Delta and Economic Restructuring in Hong Kong

The most significant economic restructuring in Hong Kong occurred in the late 1980s after the adoption of economic reform and Open Door Policy of China in 1978. This resulted in a marked decline in the manufacturing sector.

Economic restructuring in Hong Kong is reflected in the changes in the employment structure between 1961 and 1999. The manufacturing sector increased steadily from 43 percent of the total employment in 1961 to 47 percent in 1971 followed by a tremendous decline from 41.2 percent in 1981 to 28.2 percent in 1991, then continuously decline from 13.7 percent in 1996 to 10.9 percent in 1999. There was a steady increase in the service (wholesale and retail trade, restaurants and hotels) sector from 14.4 percent in 1961 to 22.5 percent in 1991, continuously increase to 44.5 percent in 1999. There was a slight increase in the professional service sector (community, social and personal services) from 18.3 percent to 19.9 percent in 1991, then decreased to 14.9 percent in 1999. The marked increase in the producer service and office (financing, insurance, real estate and business services) sector mainly occurred after 1981. It increased from 4.8 percent in 1981 to 10.6 percent in 1991, and moved to 18.4 percent in 1999.

The decline in the manufacturing sector has not only occurred in relation to its proportion of total employment — there has also been an absolute decline. Employment in the manufacturing sector has dropped from 0.9 million at its peak in 1981 to about 0.24 million in 1999. Its contribution to the GDP also dropped from 26.9 percent to 6.04 percent over the same period. With the decline in the manufacturing sector and the increase in the service and office sectors, there is now an oversupply of industrial land. In 1993, there was a

surplus of 62.4 ha of industrial land and a ten-year surplus of 206 ha (Yeh, 1997).

The decline in the manufacturing sector and industrial restructuring reflects the impact of both internal and external factors. Internally, serious labour shortages in the 1980s boosted wages. Externally, protectionism in foreign markets has forced local industrialists to upgrade the quality of their products and to diversify into new products. Neighbouring ASEAN countries have gained the advantage in the production of labour-intensive products. Thus, local manufacturing industries have to restructure in order to maintain their competitiveness in the world market. In the context of the New International Division of Labour (NIDL), industrialists, especially those with large-scale production, attempt to maximize their benefits through disintegrating their production processes. They allocate production processes to countries or regions with comparative advantages with the aim of reducing overall production costs. The subcontracting of production to China is a realization of the concept of the NIDL.

China's economic reforms since the late 1970s and the 1980s have had a far-reaching effect on the economic restructuring of Hong Kong's economy. After 1978, many Hong Kong industrialists began to set up branch plants or undertake subcontracting processes in China. A gradual "regional division of labour" between Hong Kong and China's new development areas, especially the Pearl River Delta Region, began to take shape. It became quite common among the labour-intensive industries such as garment making, toys and electronics to disintegrate their production processes through outward processing arrangements to shift their labour-intensive production processes which required unskilled labour to China. In order to ensure operational efficiency and control by the management in Hong Kong, local industrialists preferred to subcontract such production processes within Guangdong Province.

Although economic reform and economic development in China, especially the Pearl River Delta, have contributed to the decline in Hong Kong's industries, they have also stimulated the growth of the service and office sectors. Hong Kong industries with production processes in the Pearl River Delta are still using Hong Kong as a base for research, marketing and distribution. Hong Kong is also providing a hub function to China more generally and is resuming the function of an entrepôt for the rapidly growing areas in the Pearl River Delta. Re-exports to and from China have increased sharply since 1990. Apart

from providing transshipment services through the world's second largest and highly efficient container port in Kwai Chung, Hong Kong also has an efficient banking system to handle letters of credit for China. Many international firms are also using Hong Kong as a stepping stone for doing business with China, making use of local expertise and professional services.

China, and especially the Pearl River Delta, is increasingly important to the economic development of Hong Kong. Although Hong Kong is the major source of foreign investment in China, especially in Guangdong Province, many provincial and municipal entities are also setting up their own companies and investing in major economic sectors in Hong Kong.

INTERACTIONS BETWEEN HONG KONG AND THE PEARL RIVER DELTA

Even without the return of Hong Kong to China in 1997, the economic relationships between Hong Kong and the Pearl River Delta increase as a result of China's adoption of an open door economic policy since 1978. China has become Hong Kong's largest trading partner since 1985. Merchandise trade between Hong Kong and China has grown by 39 percent per annum between 1978 and 1988 (Hong Kong Government, 1990). China is now the largest market for Hong Kong's re-exports, and second largest market for Hong Kong's domestic exports. China is also the largest supplier of goods to Hong Kong. Hong Kong also overtook Japan in 1987 to become China's largest trading partner and accounted for 27 percent of China's overall external trade. China has, since 1979, been Hong Kong's largest re-export market as well as the largest source of goods re-exported through Hong Kong. In 1988, nearly 80 percent of Hong Kong's re-exports were related to China, either as a market or as a source of supply. Besides merchandise trade, various forms of invisible trade between Hong Kong and China also increased. These included tourism and travel services, transport services, financial services, and professional and other business services (Lau, 1986).

Hong Kong is the most important source of foreign investment in China. Many Hong Kong manufacturers have established compensation trade and outward processing arrangements with Chinese enterprises, especially those in the Pearl River Delta region and the Shenzhen SEZ. The growing economic relations between Hong Kong and China have added a new dimension to Hong Kong's economic growth.

There has been a new spatial division of labour between Hong Kong and the Delta (Sit, 1989). Chinese partners provide the plant, labour, water, electricity and other basic facilities, whereas Hong Kong's investors supply machinery, materials, product design, and are responsible for marketing. The nearby areas of Hong Kong in the Pearl River Delta has urbanized very rapidly as a result of foreign investment and outward processing of Hong Kong (Sit and Yang, 1997). A large megalopolis is emerging in the Pearl River Delta. What is happening in the Pearl River Delta is similar to the experience in other border areas, such as the United States-Mexico border (Hansen, 1983, Herzog, 1991) and the Growth Triangle of Johore-Singapore-Riau (Lee, 1991). Such a development of transnational urbanized areas along national borders is the outcome of the era of global cities where there is a frequent movement of population, industry, and capital to international boundary regions (Herzog, 1991). Urbanization over the border is an extension of the functional role of the urban system where the investment originates (Suarez-Villa, 1985).

Hong Kong is providing a hub function to China. It is resuming the function of an entrepôt. Re-export to and from China has increased sharply since 1990 (Figure 26.2). Apart from providing transshipment services by the world's second largest and highly efficient container port in Kwai Chung, Hong Kong also has an efficient banking system to handle letters of credit for China. Such economic ties with China has increasing impact on urban development in Hong Kong, which is evident in the recent construction of the new China Ferry Terminal and headquarters of the Bank of China, and the expansion of the Kwai Chung container port. Chinese capital is playing an increasingly important part in property and infrastructure development in Hong Kong.

Communication technology is often regarded as space-extending and allows individuals and firms to function within a geographically larger set of boundaries (Brotchie, 1984; Kellerman, 1984). Communication technology has helped to decentralize economic activities and population away from the city centre of western cities. The improvement in telecommunication in the Pearl River Delta, the increase in economic ties between Hong Kong and the Pearl River Delta, and the big difference in house prices has led many Hong Kong people to buy houses in the Pearl River Delta. Some even live in Shenzhen and commute to work in Hong Kong. In 1992, 69,561 housing units the Pearl River Delta were being marketed in Hong Kong and about 30,000 housing units were sold in Hong Kong (*Ming Pao*, 4 January 1993). This is a huge amount compared to the 26,222 domestic units completed in Hong Kong in

the same year (Rating and Valuation Department, 1993).

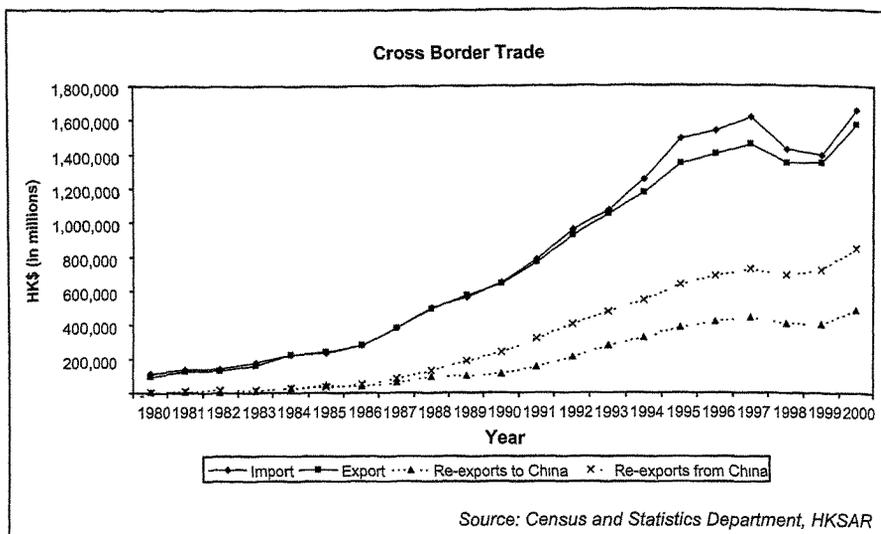


Figure 26.2 Increases in Cross-Border Trade

The amount of cross-border traffic has increased tremendously since 1983 when the investment from Hong Kong to the Pearl River Delta began to take off. Travellers crossing the Lo Wu border has increased from less than 10 million in 1983 to 40 million in 1994, and drastically increased to 86 million in 2000. Vehicles crossing the border also increased from 0.7 million in 1983 to 8 million in 1994, and then jumped to 11 million in 2000 (Figure 26.3).

The unanticipated 8 times increase in cross-border vehicular traffic has caused much traffic problems in Hong Kong. The Tuen Mun Highway and the Tolo Highway that were designed in the late 1970s were not designed to handle such a large volume of cross border traffic. As a result, traffic congestions often occur in these two highways that link the new towns in the New Territories with the city centre.

As Shenzhen is a border city, much of the traffic going through the border and the city is external traffic. It is estimated that over 55 percent of the cross-border passenger trips are passing through Shenzhen SEZ to other places in the Pearl River Delta. The increasing of the entrepôt role of Hong Kong has

led to a major increase in cross-border freight traffic. There are not enough bypasses to divert cross-border traffic that needs to go to places outside the SEZ away from the city centre, causing traffic congestion in the city centre.

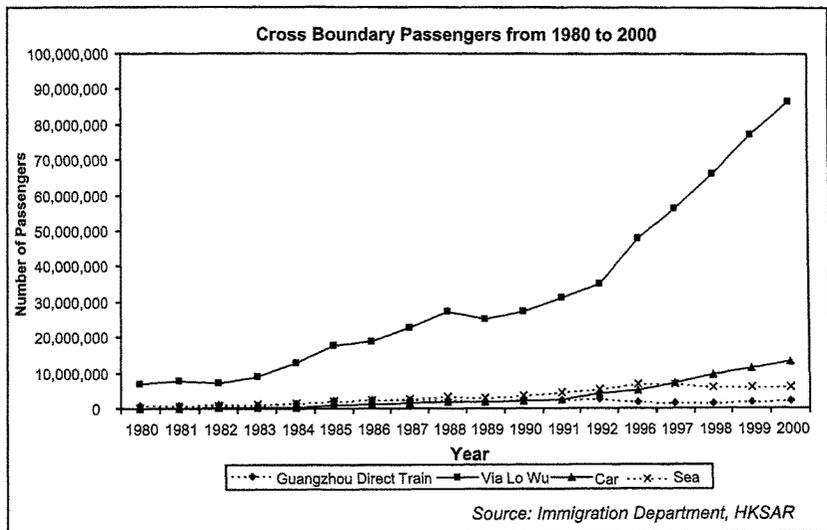
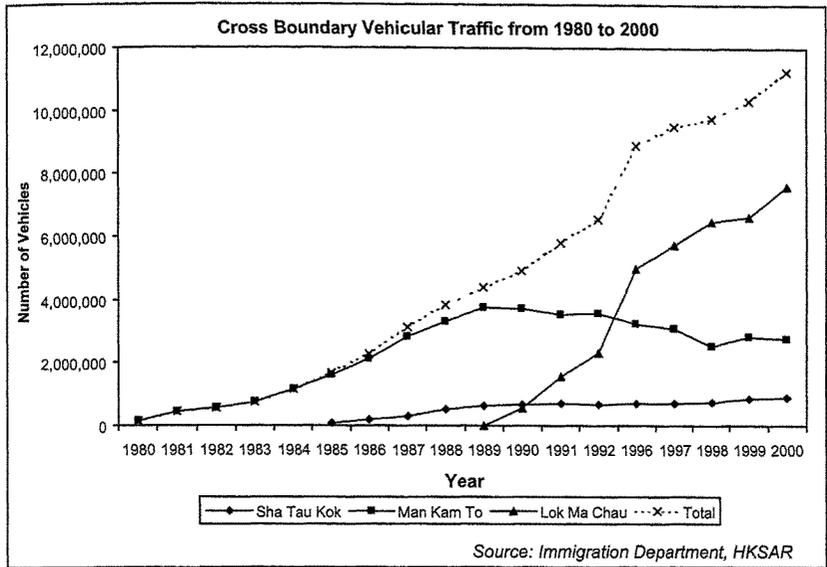


Figure 26.3 Increases in Cross-Border Traffic

Most cross-border trips are related to business and visiting friends and relatives. A *Cross Boundary Travel Survey* was conducted by the Planning Department of Hong Kong government through face-to-face interviews during a two-week period in October to November 1999 to provide data on the trip pattern and the socio-economic characteristics of passengers. It was found that about 1,386,000 Hong Kong residents departed for the Mainland China in which 627,300 are regular visitors who visited the Mainland more than once. There was 110,200 Mainland China residents came to Hong Kong in which 22,600 are regular visitors. The survey showed that the most common trip purposes for Hong Kong residents to Mainland China were business (29 percent), visiting friends/relatives (23 percent), shopping/leisure (20 percent), and sightseeing (17 percent). Moreover, their common destination the Pearl River Delta (94 percent), with a majority of 59 percent going to Shenzhen, the border city next to Hong Kong. For those Shenzhen trips, the purposes are for shopping/leisure (31 percent), business (23 percent), visiting friends/relatives (22 percent) and sightseeing (14 percent). For those trips to PRD Region (excluding Shenzhen) are for business (41 percent), visiting friend/relatives (24 percent), sightseeing (18 percent) and vacation (having property in the Mainland) (7 percent).

The result also shows that there are about 51,000 of Hong Kong residents who were living in the Mainland China travelled to Hong Kong. Among them, 28,400 live in Shenzhen, 15,400 in PRD region (excluding Shenzhen). For Hong Kong residents living in the Mainland, their usual purposes to Hong Kong are for visiting friends/relatives (25 percent), work (24 percent), business (20 percent) and vacation (12 percent). Also, about 5,600 persons are frequent travellers (4 or more times a week). It also estimates that there are 900 children who are Hong Kong residents living in Shenzhen and are frequent commuters to Hong Kong. For the Mainland residents living in the Mainland, their common trip purposes are for business (34 percent), sightseeing (26 percent), visiting friends/relatives (19 percent) and transit to other mode of transport (6 percent).

60 percent of the passenger trips from Hong Kong are business trips. Cross-border traffic is highly asymmetrical. Hong Kong controls very tightly the flow of people and vehicles from Shenzhen whereas Shenzhen does not control much over the flow of people and vehicles from Hong Kong to Shenzhen. Although a quota system is used by Shenzhen for

issuing cross-border vehicle licences, the quota is quite large. Hong Kong people with valid Home Visit Permits and vehicles with Chinese registration plates and drivers with Chinese driver licences can go freely into Shenzhen. Because of this, only around 6 percent of the cross-border passengers are from China, the rest are from Hong Kong.

Passengers have little choices on the use of transport modes to the border crossings. Train is the only transport mode from Hong Kong to Lo Wu. However, they can have choices of trains, buses, cars, minibuses, and taxis after they cross the border to Shenzhen. Vehicles are the only mode of transport for the Sha Tau Kok, Man Kam To, and Lok Ma Chau (Huanggang) check points. Cross-border passenger trips have been expanding 17 percent annually. In 2000, there were on average 265,214 people crossing the border by land mode a day (Hong Kong SAR Government, 2001), with the peak of 350,000 a day during major public holidays, such as Easter Holiday in 2001, making it one of the busiest borders in the world.

COMPETITIVE ADVANTAGES AND FUTURE DEVELOPMENT OF HONG KONG AND THE PEARL RIVER DELTA

Competitive advantages have been identified to be the major factors affecting the growth of cities and nations (Porter, 1990). Competitiveness is a key factor of success for Hong Kong and the Pearl River Delta in the future, especially in the era of global economy and the entry of China into the World Trade Organization(WTO). Despite still possessing some advantages over other competitors, such as open and fair market system, efficient and well connected sea and air cargo handling, good foundation in fund management and as an international financial centre, and international communication hub (Enright and Dodwell et al. 1997), Hong Kong has lost its manufacturing industries to the Pearl River Delta after the opening of the Pearl River Delta for foreign investment since 1978. Although a lot of industries have moved to the Pearl River Delta, Hong Kong still provides producer services to these industries, providing them with banking, marketing, trading and shipping services. A “Front Shop, Back Factory” regional division of labour has been formed in the Pearl River Delta region with Hong Kong providing the front end marketing and office services whereas factory production is done at the back of Hong Kong — the Pearl River Delta. Hong Kong businessmen who used to be the receiver of multinational firms and orders in the 1960s and 1970s, now become the major source of foreign investment, utilizing the cheap labour and land in

the Pearl River Delta as its production base and hinterland. In the late 1970s, Hong Kong industries were already facing competition from the newly industrializing countries in Asia with much lower production costs. Economic reform and the open door policy in China in 1978 had given businessmen in Hong Kong the competitive advantages again in the global economy. Instead of "Made in Hong Kong", it is now "Made in China" with Hong Kong's capital and management. As the base of Hong Kong's industries in the Pearl River Delta is still in Hong Kong, there was a major growth of producer services. Because of the "shop" function, it has grown from 4.1 percent of the total employment in 1981 to 10.9 percent in 1991, and to the current 20 percent in 2001. However, with very high labour and operating costs in Hong Kong and socio-economic development in the Pearl River Delta and other parts of China, especially Shanghai (Yeung and Sung, 1996; Yeh, 1996), there is doubt whether the "shop" function on which the economy is increasingly heavily dependent can be sustained.

To be competitive, it does not only depend on how well you are doing but also how your competitors are doing too. You may be doing very well, but you are still not competitive if your competitors are performing much better than you. In economic development, competitiveness is not only related to productivity because firms have to cope with the social, economic and institutional environment in which they operate. The *World Competitive Yearbook* (International Institute of Management Development, 2000) used 290 criteria, of which 41 are background information and not used in the ranking calculations, to rank and analyse 47 key players in the world economy. They are further grouped under eight criteria — domestic economy, internationalization, government, finance, infrastructure, management, science and technology and people. Similarly, the *Global Competitiveness Report* uses eight major factors to assess the performance of each city/country. The eight factors are openness, government, finance, infrastructure, technology, management, labour and institution. In 2000, they were replaced by four indexes to reflect the changing world economic development. They are the growth competitiveness index, current competitiveness index, economic creativity index, and environment regulatory regime index.

The worry of the future competitiveness in Hong Kong is not without grounds. As with other economies in Asia affected by the Asian financial crisis; Hong Kong's GDP growth has dropped from 5 percent in 1997 to -3 percent in 1998. Hong Kong is one of the few economic dragons in Asia that has a

negative growth as a result of the Asian financial crisis (Figure 26.4).

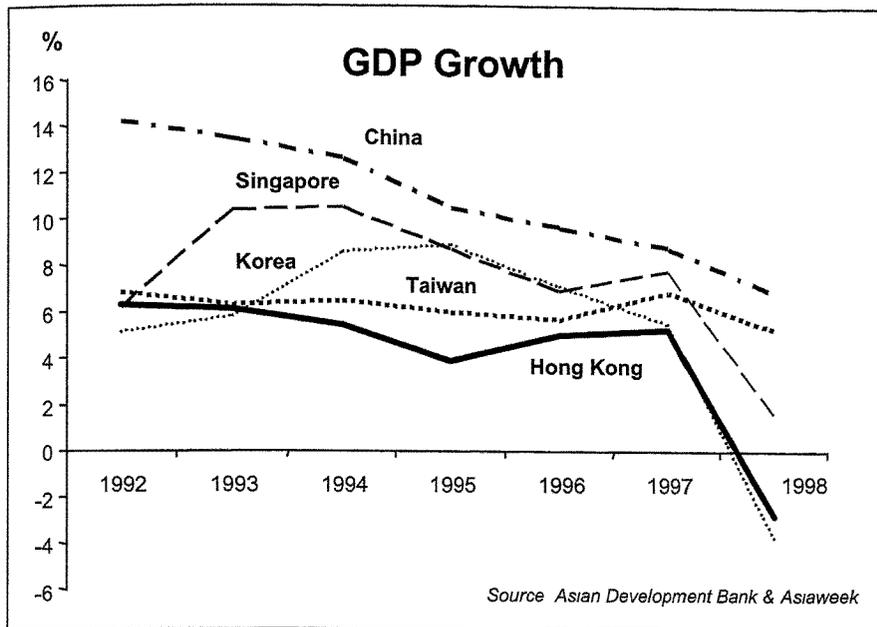


Figure 26.4 Economic Performance of Hong Kong After the Asian Financial Crisis

More alarming is the significant drop in its world competitiveness rankings. Hong Kong ranked very highly in the *World Competitive Yearbook* and *Global Competitiveness Report* in 1996-1998. It ranked 3rd and 2nd respectively in the two rankings. However, the rankings have dropped to 14 and 8 respectively in 2000. They show that the competitiveness of Hong Kong has decreased whereas other countries have increased. Hong Kong is doing well in most indicators. Hong Kong still has a leading edge over other countries on government policy, freedom of trade. But, the major weaknesses are the high cost of doing business, lack of research and development, poor environmental conditions, education and manpower (Table 26.1).

Table 26.1 Major Weaknesses of Hong Kong in World Competitiveness

	Rank	Country Value	47 Country Average
High Cost of Doing Business			
Electricity costs for industrial clients US\$ per kwh	46	0.105	0.059
Office Rent Office total occupation cost (US\$/SQ.M/P.A.)	43	757	411
Real short term interest rate Average real discount/bank rate, Jan - Dec	41	12.19	4.25
Remuneration in services professions Total remuneration in US\$	40	-	-
Remuneration in management Total remuneration in US\$	41	-	-
Lack of Research & Development			
Investment in telecommunications Average percentage of GDP	37	0.419	0.654
Total expenditure on R&D Percentage on R&D	40	0.253	1.313
Business expenditure on R&D per capita US\$ per capita at current prices and exchange rates	35	5.18	174.01
Total expenditure on R&D per capita US\$ per capita at current prices and exchange rates	28	57.5	272.2
Poor Environmental Conditions			
Pollution problems and infrastructure The infrastructure is affected by serious pollution problems	43	3.83	6.09
Health, safety & environment Health, safety and environment concerns are not adequately addressed by management	42	4.79	6.19
Poor in the Education System			
Total and current public expenditure on education As a percentage of GNP	43	2.9	5.0
Pupil-teacher ratio (secondary education) Number of pupils per teacher	36	20.13	15.87

Source: *The World Competitiveness Yearbook 2000*, International Institute of Management Development (IMD)

Although Hong Kong is doing very well in most indicators, the main killers are its high land price and operating costs. Land and property prices have skyrocketed since the early 1990's. Apart from making housing increasingly unaffordable which is one of the main concerns of the new SAR government (Yeh, 1999), it is also rapidly eroding the competitiveness of Hong Kong in the development of manufacturing and service industries, threatening the sustainability of Hong Kong's economy. Hong Kong is now one of the most expensive cities in the world (Bacani, 1998). Jones Lang Wootton (1998) in April recorded that the average rent in Hong Kong's CBD was US\$954/square metre per year, much higher than that of US\$659 in Tokyo which used to be the most expensive city in the world. Hong Kong has replaced Tokyo since 1994 to be the top in office and house rentals in Asia. As a result of the high property prices and rentals, the cost of living and wages have also gone up tremendously. The Corporate Resources Group's worldwide cost-of-living ranking showed that Hong Kong has surpassed Tokyo to become the number one most expensive cities in the world. According to World Executive's Digest and Trade Media Ltd., Hong Kong was ranked first in 1997-98 in terms of the median salary of senior managers in Asia-Pacific and second after Tokyo in terms of the median salary of middle and junior managers.

The high property prices and rentals, wages, and cost-of-living have made Hong Kong to be less and less competitive among the cities in Asia, especially in the service industry which is playing an increasingly important role in Hong Kong's economy after the rapid decline of manufacturing industry in the 1980's (Yeh, 1997). The increasing uncompetitiveness of Hong Kong will affect its long-term economic development. Some companies have already moved their operations away from Hong Kong. For example, the data processing work of Cathay Pacific has moved to Perth in Australia and that of the Hong Kong and Shanghai Bank to Guangzhou in China.

Twenty years ago, Hong Kong was much ahead of China in all aspects of economic development and China could not compete with Hong Kong. But, since 1978, China has developed very rapidly. With the slowing down of economic growth in Hong Kong but double-digit economic growth of China in the last two decades, the economic gap between Hong Kong and China has narrowed although Hong Kong is still more developed than China. Some well-developed areas in China, such as Shanghai, are becoming more competitive in the quality of services but much less expensive. With the further increase in its capacity in trade, cargo handling, finance and attractions for

regional headquarters activities, Shanghai will inevitably be in competition with Hong Kong as business centres in China and the region (Hong Kong Trade Development Council, 2001). In a recent survey of about 200 European companies in China by Fodicoa Consultancy, 6 out of 10 firms with headquarters in Hong Kong wanted to move to Shanghai or Beijing. The survey also found that by 2000, only 7 percent of the total respondents expected to be based primarily in the Hong Kong SAR.

Even Shenzhen, a very small border town north of Hong Kong before 1978 which has grown in leaps and bounds from 50,000 people in 1978 before it became a special economic zone in China to the present city of 3 million, is becoming to threaten the competitiveness of Hong Kong. It has a modern landscape which is comparable to that of Hong Kong and in terms of manpower, it is better and much cheaper than Hong Kong. It is estimated that one fifth of the PhDs in China are now in Shenzhen (Crowell and Chung, 2000). The wage of Shenzhen is considered to be quite high in China, but it is at least one tenth cheaper than that of Hong Kong. A worker costs US\$65 a month in the Pearl River Delta, but it can easily cost US\$641 a month in Hong Kong. Such a difference is even greater for more highly skilled workers, such as managers. With such big differences in wages and prices and increasing manpower and service quality less than an hour from Hong Kong, the Pearl River Delta is becoming more attractive and competitive. Hong Kong people are already taking advantages of such price differences. Many people are going to Shenzhen to shop during weekends and public holidays and the trend is increasing. According to a recent study by the Hong Kong Census and Statistics Department, in 2000, Hong Kong residents made a total of 50.1 million outbound trips to Mainland China and 69 percent of the total \$20.3 billion consumption expenditure in Mainland China were spent in Guangdong Province (Census and Statistics Department, 2001). Shenzhen has made US\$840 million from Hong Kong visitors. The increase in the patronage of Hong Kong people in shopping, dining, and entertainment in Shenzhen has already affected the retailing, restaurant and entertainment business in Hong Kong, eroding Hong Kong's economy and employment. Further improvements in the quality and manpower of the service industries in the Pearl River Delta will make Hong Kong service industries to be more disadvantageous because of the wage and price difference. How to lower the operating cost and wages and improve the quality of work and services in Hong Kong in making it to be more competitive without causing too many social and economic disorders will be a big challenge for Hong Kong.

It is not only Hong Kong that is concerned with its competitiveness and sustainable development. The Guangdong government is very concerned with its future development too. It is also competing with other parts of China, such as the Changjiang (Yangtze) Delta region with Shanghai as its centre, and other countries in Asia. It can see from the experience of economic development in other places, especially that of Hong Kong, that economic development cannot be sustained if it does not transform itself from the present labour-intensive processing industries to more value-added and high-tech industries. It also needs to be more integrated with the global economy, especially the accession of China to the WTO. Industries in the Pearl River Delta can benefit from the international perspective and experience of Hong Kong and its producer services. Producer services in the Pearl River Delta, as well as other parts of China, are at an early stage of development. Hong Kong still has a major leading edge over other cities in the Pearl River Delta. In 1998, the total volume of producer services in Hong Kong was US\$65,627 million and that in Guangzhou, the major service centre in the Pearl River Delta, was only US\$3,543 million, a mere 5.2 percent of that of Hong Kong. There were over 1 million workers in producer services in Hong Kong but there were only over 300,000 in Guangzhou. The Pearl River Delta can benefit from Hong Kong's producer services, helping them to market and ship their products to the world just in time and to restructure their economy, if they are better integrated.

Before the return of Hong Kong to China in 1997, although the private sector has been doing a lot of business in the Pearl River Delta through outward processing, there has been very little cooperation between the Guangdong Government and that of Hong Kong. Although a Sino-British Infrastructure Coordination Committee was set up in December 1994, it only discussed issues concerning the development of air, sea, and land facilities straddling the border. It did not discuss economic development and cooperation. The status of this Committee is at the foreign affairs level. When Hong Kong became an SAR of China in 1997, this Committee was replaced by the Hong Kong/Mainland Cross Boundary Major Infrastructure Coordination Committee (ICC). A Hong Kong/Guangdong Cooperation Joint Conference was initiated to provide a dialogue between the Hong Kong SAR and the Guangdong government. Apart from the need to discuss cross-border links, the need for better coordination in infrastructure development and environmental management is also evident in the Pearl River Delta. There are too many seaports and airports in the Pearl River Delta. In the early 1990s, the Central Government in China had approved the construction of three deep-water ports adjacent to Hong

Kong, namely Yantian in Shenzhen, Huizhou port in Daya Bay, and Gaolan port in Zhuhai. These are in addition to the existing Guangzhou port and Shekou port in Shenzhen. Though Hong Kong port is congested, and there is the need for another port in the Pearl River Delta, there will be inadequate freight for all these ports (Sung, Liu, Wong and Lau, 1995). Similarly, there is also duplication in airport facilities in the region. Within an area of 200 square kilometres in the Pearl River Delta, there are five international airports (Hong Kong, Macao, Shenzhen, and two airports in Guangzhou) and four local airports. Within the vicinity of Hong Kong, in a small radius of 25 km, there are four international airports — Hong Kong, Shenzhen, Macao, and Zhuhai. These airports are expensive because they are all planned for international flights. Each local government is looking after its own interest and wants a seaport or an airport as a showpiece. Better region-wide coordination and planning will help to reduce duplication of facilities and utilize regional resource better. Air and water pollution and environmental and land degradation are also main problems in the region which affect its sustainability of development. As 80 percent of Hong Kong's water and 60 percent of its food supply come from the Pearl River Delta, water pollution and environmental degradation in the Pearl River Delta will affect the sustainable development of Hong Kong too. There is a need for regionwide environmental management plan and policies in making the region to be a better place to live in and be more competitive to foreign investments.

CONCLUSION

With 6.8 million people in Hong Kong and 19 million people in the Pearl River Delta and the rapid growth in economic as well as urban development in the last two decades, Hong Kong and the Pearl River Delta region can be developed into a great megalopolis in the world. The socio-economic development and aspirations of the region have been changing very fast since 1978. One year of development in the region is equivalent to at least two to three years of development in most parts of the world. Such development will be even much faster with the advancement of information technology, the further globalization of the world economy, and the entry of China into the WTO. Competitiveness is a key factor of success in the future global economy. There is a need for better cooperation, coordination and planning between Hong Kong and other parts of the Pearl River Delta in order to reduce the amount of unnecessary competition and duplications and to develop the synergy in building a more competitive Pearl River Delta region to face the challenges

from its competitors and to meet the economic, social and environmental challenges that will benefit all the people and business in the region.

In order to achieve this, there are a number of obstacles that need to be overcome. First is the mentality of local governments in the Pearl River Delta, whether they consider Hong Kong as a city in the Pearl River Delta region. In the past, Hong Kong was considered as a separate entity and was not included in a lot of its regional social and economic plans. Second is the mentality of the Hong Kong government, whether they consider themselves to be a part of the Pearl River Delta. In the past, because of historical and political reasons, although there were many interactions among the businessmen and academics in Hong Kong and the Pearl River Delta, the interactions between the Hong Kong Government and local governments in the Pearl River Delta were limited. Although Hong Kong is now part of China after 1997 under the "One Country, Two Systems", such mentalities still exist. It takes time and effort to change such mentalities which are hindering the cooperation and coordination of the region.

One fundamental difficulty in the development of Hong Kong and the Pearl River Delta is how to maintain stability and prosperity of Hong Kong under the spirit of "One Country, Two Systems" and the Basic Law of Hong Kong. Because of the present big difference in wages and prices in Hong Kong and the Pearl River Delta, having too loose a border will attract a lot of illegal migrants to Hong Kong, affecting its society and economy. However, having a too tight a border will limit the interactions with and development of the Pearl River Delta (Yeh, 1995). Such difficulties will be overcome one day when differences in wages and prices of the two places are reduced, hoping not because of a severe lowering of living standard in Hong Kong but because of a rising living standard in the Pearl River Delta, otherwise the spirit in maintaining the stability and prosperity of Hong Kong cannot be achieved.

There is still much room for further improvement in the integration of Hong Kong producer services with the industries in the Pearl River Delta, making the region to be more competitive. The crowded Lo Wu rail boundary crossing, which operated nearly at full capacity in handling 229,100 passengers every weekday in 2000, is impeding normal business trips. It is too formidable for ordinary producer service professionals to join the crowd in crossing the border to serve their clients in the Pearl River Delta. Apart from the opening of more cross-boundary crossings (Yeh, 1995), such as ferry pier in Tuen Mun,

to divert passengers from the existing congested boundary crossings, special business counters, like what China has done in attracting foreign investment, can be set up at the boundary crossings to facilitate two-way flow of business trips between Hong Kong and the Pearl River Delta. The increase in the frequency of direct train services to major cities in the Pearl River Delta with advanced booking services will make business as well as other trips back and forth the Pearl River Delta more convenient and comfortable. The present direct train services ends too early and are too infrequent and limited only to very few cities. The transport network in the Pearl River Delta also needs to be improved with better integrated railway, road, and ferry network, especially public transport interchanges, making intercity traffic more convenient and comfortable. Railway is a comfortable and environmental friendly mass transit system. The area of the Pearl River Delta is similar to that of Greater London, Tokyo and New York. Compared with these megalopolises which are well linked with railways, the railway network in the Pearl River Delta needs much improvements to facilitate intercity business trips. The existing railway transport network is mostly concentrated at the eastern side of the Pearl River Delta. There is a need to improve railway transport at the western side of the Pearl River Delta. All major cities should be within reach in less than one and a half hour. In addition to improvements in cross border and intercity transport, the time it takes to process business visitor entry permit should be greatly reduced to less than two days. At present, although it is quite easy for Hong Kong businessmen to go to China, it normally takes 4 to 6 weeks for businessmen in the Pearl River Delta to apply for an entry permit to Hong Kong. This has hindered the use of the producer services of Hong Kong. Potential clients cannot conveniently come to Hong Kong to shop around for Hong Kong's producer services and meet with their business partners and service providers. There is a need to set up trade offices such as the Hong Kong Economic and Trade Offices and Trade Development Council's Branch Offices (currently, there are two in the PRD, in Shenzhen and Guangzhou) in major cities in the Pearl River Delta. This can help to promote the producer services in Hong Kong to the potential clients in the Pearl River Delta, to have a better understanding of the needs of the market, and to help create a business network. Furthermore, these trade offices can act as agencies for issuing business entry permit quickly to the businessmen in the Pearl River Delta. The recently proposed Free Trade Area between the Hong Kong Special Administrative Region and the PRD may help to simplify the custom procedures, helping the industries in the Pearl River Delta to make better use

of the excellent port and airport facilities in Hong Kong to deliver their goods just in time to the world market.

China's entry to the WTO will have great impacts on Hong Kong as well as the Pearl River Delta (Hong Kong General Chamber of Commerce, 2000; Sit, 2001). Recently, the need to explore ways of further cooperation between Hong Kong and the Pearl River Delta has been actively discussed. There is dissatisfaction on the current level of interactions and cooperation because they have not enabled Hong Kong and the Pearl River Delta to take full advantage of each other's competitive edges. As compared with the development of the Changjiang (Yangtze) River Delta which is closely integrated with Shanghai, the Pearl River Delta is lagging behind. There is a need to strengthen the integration of Hong Kong and the Pearl River Delta through measures in increasing in the flow of people, traffic, cargo and capitals (Bank of China, 2001). Like many large cities in the world, Hong Kong should not be considered in its entity. It should be considered together with the booming industrial hinterland in the Pearl River Delta. There needs to be better cooperation in environment, infrastructure, and urbanization to strengthen the business environment in the region (Project 2022, 2001). How to coordinate development in Hong Kong with that of the Pearl River Delta so that they form a megalopolis that can complement each other to form a production complex in southern China will be high on the agenda in the region in the next few years.

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Chapter 27

Building a Competitive Pearl River Delta Region: Future Prospects¹

Compiled by Alex CHAN

INTRODUCTION

Socio-economic development in Hong Kong and the Pearl River Delta (PRD) region of South China has been remarkable, in terms of both its scale and its pace. Hong Kong's economy has definitely benefited from such a regional growth, illustrated by the rise in its standing in the world league table of trading entities from 23rd to 10th within just twenty-one years (1978 to 1999).² The transformation of the PRD region's economy from an agricultural economy into one of the leading global manufacturing centres in just two decades is even more profound, with its annual growth rate of Gross Domestic Products (GDP) averaging at around 20 percent consecutively during the 1980s and 1990s. As Campanella et al. (2002, p. 9) has rightly observed, such a phenomenal economic development in the PRD region has been unprecedented when put into a wider historical and international perspective:

*The SEZs ("Special Economic Zones" in southern China) attracted a floodtide of foreign investment, and almost overnight became one of the sources of China's economic boom ... A study by the World Bank in 1997 noted that China's growth in the 1980s and early 1990s was among the most rapid in global economic history. Per capita income doubled in the span of a decade, a benchmark that took half a century to attain in the United States during the nineteenth century.*³

Understandably, it is a daunting task for any individual, even any government, to provide a full account of this complicated development process of the PRD region as a whole in the past two decades without engaging in some meaningful and constructive dialogue between the key stakeholders in the region on wide-ranging issues such as economic restructuring, cross-border population movement, and environmental protection at a regional scale.

Drawing upon the comments made by representatives from the business

sector, the governments, the academia from both Hong Kong and the PRD region, this chapter attempts to summarize the major arguments put forth by the conference participants on some contentious issues relating to:

1. Environment — Sustainable Development
2. Environment — Air Pollution
3. Infrastructure
4. Cross-Border Zone Planning
5. Trade and Commerce
6. Science and Technology Development

FRAMING THE DEBATE

Environment: Sustainable Development and Air pollution

It has now become a common knowledge that rapid industrialization and the associated urbanization in the Greater PRD region during the last two decades have brought to the people of the region not only opportunities in terms of further economic growth, but also challenges in terms of worsening environmental degradation in the region's air, water and the natural environment in general. While experts will continue their mission in assessing the nature, extent and the impact of the region's environmental problems on people's lives, policy-makers, businesses and the general public in the region have to face increasing pressure and constraints to find practical ways to ameliorate such an environmental challenge.

First of all, there was a general consensus among participants in the forum that environmental problems were "regional" in nature: they existed across man-made boundary, and they required solutions that were also "regional" in nature. Secondly, collaboration among different stakeholders with a multi-disciplinary perspective provided a new form of "synergy", and would help all of us break the current "mindsets" of solely relying on fragmentary efforts by individual jurisdictions in the PRD region to manage their own pollution problems.

Sustainable Development

Significant economic growth in the PRD region, as illustrated by the phenomenal rise in the Per capita GDP and other economic indicators, was not a sufficient condition for sustainable development of the region. Drawing on this observation as a “point of departure”, several panelists proposed various solutions on how the “sustainability” of regional development of the PRD region needed to be addressed. The basic argument was that “innovative” institutional responses were required to address the “sustainability” in socio-economic development of the Greater PRD region by: (a) setting up common environmental standards and a common knowledge-base on the region’s environmental status, (b) facilitating information-sharing and collaboration in research, policy-making and community involvement across the border, and subsequently (c) establishing formal mechanisms and innovative regional initiatives to allow jurisdictions on both sides of the border to work toward effective regional environmental management.

Loh, for example, emphasized that open access to environmental information and policy research formed the foundation essential for such a change to become possible in a society, and that, judging from her past experience as both a former legislator in Hong Kong’s Legislative Council and currently a practitioner of a non-governmental “think tank”, she considered there was much room for improvement by the HKSAR Government to involve more stakeholders to participate in the policy-making process in environmental protection. Salkeld, a former Deputy Secretary of the HKSAR Government’s Planning, Environment and Lands Bureau, offered a different view on why and how a “consensual” approach was inherently a better strategy than a “conflictual” approach in involving people in the whole region to address the environmental problems. In response to some references made to conflict between Hong Kong and Guangdong over regional environmental issues, Salkeld argued that:

“Over the last twenty to thirty years Hong Kong and the Pearl River Delta region have been engaged in the most spectacular piece of cooperation. Quite breathtaking Greenfield industrial development has taken place that has lifted millions out of poverty. It has given hope and prospects by increasing investment in education and environmental facilities If discussion focuses on the idea of conflict, it will tend to promote conflict [I]t is more constructive to keep our eyes on the tremendous potential for cooperation and on the question on how, [together

over the coming twenty to thirty years], we can move from the stage of Greenfield development into sustaining patterns of economic and social development that will give continued prospects of education, employment and quality of life to everyone in the region, and not just within the region.⁴

Ma, on the other hand, suggested that incompatible objectives and standards on environmental management between the Hong Kong Special Administrative Region (HKSAR) and jurisdictions in the PRD region, and the subsequent incompatibility and inconsistency in their respective environmental legal systems, posed several kinds of “legal conflicts” and institutional and legal obstacles to implement effective regional environmental management and pollution control programmes. Ma highlighted two potential areas for cooperation in overcoming such an institutional and legal barrier:

- a) The use of policy tools such as the signing of regional environmental agreements, and the adoption of common statutory environmental objectives and standards for the whole PRD region; and
- b) The establishment of a “regional environmental institution” as a formal mechanism for settling interregional environmental conflicts between different jurisdictions within the PRD region.

Air Pollution

Experts from the region’s scientific communities have employed different analytical approaches in their respective research on the nature and the scale of air pollution problems in the Greater PRD region. Chan and his collaborators focused their research on how the interacting effects of natural terrain, meteorological characteristics, and urban development in Hong Kong determined the nature and extent of air pollution in the SAR. Wang’s research, on the other hand, examined the phenomenon of a specific type of air pollution — photochemical smog — that was caused by ozone (O₃), generally considered to be the most abundant gaseous pollutant in the air. Despite differences in their research focuses and methodologies, both Chan’s and Wang’s research helped enhance our understanding of two basic “facts” on air pollution in Hong Kong and the Greater PRD region at large:

1. Despite the complexity of the air pollution problem, there was a general consensus that air pollution in the Hong Kong SAR and the PRD region was “regional” in nature: i.e., air pollutants are being “transported” across regions; and their impacts are observed at the regional level.

2. Given the inherent complexity and the “regional” nature of air pollution, a multi-disciplinary, collaborative approach in scientific research is thus called for to help achieve a better understanding of this regional pollution problem.

On the policy side, representatives from the governments of the Hong Kong SAR and the PRD region reported on the development of environmental policies in tackling air pollution in their respective jurisdictions. Chow outlined the evolution of a policy programme by the HKSAR Government and emphasized that the combination of law enforcement and economic incentives was necessary in promoting the use of “cleaner” fuels and engines by car owners in order to achieve the prescribed targets of reduction in vehicular emission of air pollutants in Hong Kong. Chen pinpointed the Guangdong Provincial Government’s effort in reducing vehicle-initiated air pollution, but was more specific on the need to entice the industrial sector and the power-generation sector in Guangdong to adopt “cleaner technology of production” to help reduce acid rain, which has threatened the region’s public health and agricultural productivity.

INFRASTRUCTURE

The important role played by infrastructure, such as transport systems (air, sea and land), telecommunication system as well as energy utilities, in the rapid industrialization in the region during the past two decades, was highlighted by Tang. In particular, the development of modernized land-based transport infrastructure, such as railway development between the Hong Kong SAR and the Mainland, as well as the port development in the Greater Pearl River Delta region, aptly demonstrates the significance of infrastructure development for further regional economic development of the whole region.

Infrastructure development in the Greater PRD region (regardless of where and how it is built and financed) has continually shown a number of strengths as well as shortcomings. While these infrastructure projects have brought forth benefits such as the promotion of economic and trade, they have also created some problems, such as redundancy in air-traffic capacities of airport facilities in the PRD region. This problem reflected poor coordination in planning and implementation of infrastructure development strategies among different cities and areas in the whole region. And these problems had unfortunately proven to be very costly lessons for policy-makers, business operators as well as the

end-users of these infrastructure facilities. Therefore, Wang and Ho argued that careful consideration by policy-makers and investors alike was called for in planning further investment in the airports' capacity expansion in the PRD region in order to avoid further "deadweight loss" due to over-capacity in air traffic infrastructure investment.

CROSS-BORDER ZONE PLANNING

While the principle of market economy has been heralded for contributing to the "miracles" of China's economic reform and Hong Kong's economic development during the past two decades, the important role played by well-coordinated urban and regional planning in achieving a delicate balance between the diverse goals of social, economic development and environmental management in the whole region was confirmed by several researchers. There was a general consensus that linkages between Shenzhen and Hong Kong had been historically multi-faceted and closely linked, and had become increasingly closer since 1997 (Cheng; Ng, Ava ; Ng, Mee Kam; Shiu; Sun).

Both Mee-kam Ng and Sun pointed out several important theoretical as well as practical issues on cross-border planning in the PRD region. Sun highlighted the potential of using cross-border regional plans as a planning tool for holistic regional planning of the entire PRD region. Mee-kam Ng gave particular emphasis on the need to experiment with institutional innovation in cross-border regional planning, such as the establishment of a cross-boundary planning commission.

The future development of the "Border Closed Area" (BCA) at the border region between Shenzhen and Hong Kong served focal point by several panelists to debate the form of regional planning. Cheng and Shiu identified some positive prospects for developing the BCA into a "Free Trade Zone", citing similar experiences in international practices (notably the case of the US-Mexico border management). Ava Ng, on the other hand, highlighted some institutional and practical barriers to such a development under the existing constitutional framework of "One Country, Two Systems", as well as initiatives already taken by jurisdictions on both sides of the border to broaden the scope of mutual cooperation in urban and regional planning.

TRADE AND COMMERCE IN THE PEARL RIVER DELTA REGION •

On examining the opportunities as well as the challenges that would arise in

further economic cooperation in trade and commerce in the PRD region upon significant changes in the global economic order, four major perspectives were identified:

First, Chen pointed out that further economic integration between the Hong Kong SAR and the PRD region should be evaluated and understood in the context of the global phenomenon of regionalization of economic competition and cooperation among nation-states. Such a regionalization trend was best illustrated by the dominating power of regional trading blocs such as the European Union, NAFTA as well as APEC in setting the agenda of international trade.⁵ Tuan and Ng reminded us that the “growth triangle” of the greater PRD region (including two “Special Administrative Regions” of Hong Kong and Macao), while technically not a formally-established “trading bloc” as compared to the above regional trading organizations, had nevertheless enjoyed the benefits of “economic agglomeration.”

Secondly, economic cooperation and integration in the greater PRD region had shown a considerable degree of “competitive advantages” in international and regional trade and economic activities in the past two decades, as identified in some empirical studies.⁶ But such competitive advantages were fading away in the face of intensified global and regional economic competition.

Thirdly, the key to successful economic restructuring of the PRD region depended on: (a) the extent to which production and manufacturing roles taken by different city economies of the region were successfully rationalized in an overall context of a new spatial division of labour; and (b) whether such a rationalization was effective in promoting the manufacturing of premium-quality products and the provision of high value-added services for the regional as well as the global markets.

Fourthly, researchers have identified two major difficulties in rationalizing the process of regional economic restructuring: given that such a process pertains to so many policy areas (transport and port development, human resources development, as well as industrial upgrading) among so many jurisdictions at different levels, the burden of institutional inertia and political barriers are extraordinarily huge. Moreover, as exemplified in Tung’s analysis of the development of a region-wide logistics industry in the Greater PRD region, successful coordination among jurisdictions in the region is contingent upon significant improvement in the overall investment environment up to international standards. These include a continuing emphasis on the “rule

of law,” sophisticated corporate governance on commercial and state enterprises, as well as a clean and efficient government and effective law enforcement system.

SCIENCE AND TECHNOLOGY DEVELOPMENT

Participants of this panel focused first on the question of, to what extent, experiences of Shenzhen as well as other overseas IT hubs (such as the Silicon Valley in the United States) in developing their high-tech industries were “transferable” to Hong Kong in implementing its own development plan for a high-tech industry. Proponents of the development of an IT industry argued that a well-coordinated industrial development policy and support by the government was deemed essential for the incubation of a new high-tech industry, especially during its early phase of development. Skeptics, however, reminded us that risk was inherently associated with such an “industry-biased” policy for high-tech industrial development. They believed that Hong Kong’s “comparative advantages and weaknesses” in developing her own high-tech industry had to be carefully assessed in order to position the infant industry in an internationally and regionally competitive market niche.

Moreover, they examined the issue of Guangdong-Hong Kong’s cooperation in research on the conservation and management of marine resources along the coastal areas of the PRD region and argued that regional collaboration in marine resource management and related industrial development (e.g., coastal tourism, modern fisheries) is an “unexplored” area that needs further research. This research is essential in helping policy-makers to determine the commercial viability and implications for sustainable development in exploring this new area for regional economic and environmental cooperation in the PRD region.

CONCLUSION

As amply demonstrated by the breath and depth of the discussion on the above issues, the seminar has succeeded in providing a forum for an open dialogue between different stakeholders on some wide-ranging issues concerning sustainable development of the Pearl River Delta region in the twenty-first century. The ultimate goal of such a dialogue, as Fung (2001) has aptly pointed out, is to enhance our capacity for building a “competitive Pearl River Delta region” that will be globally competitive and regionally well-coordinated — a

new Pearl River Delta region that “offers a high quality of life to all its people.”

NOTES

- 1 This Chapter is a summary of the panel discussion and conclusions in the plenary session of the Seminar on Building a Competitive Pearl River Delta Region: Cooperation, Coordination and Planning held on 8 July 2000. The list of chairpersons and speakers is included in Appendix 27.1.
- 2 Fung (2000), p. 2.
- 3 See Campanella et al. (2002), “The Pearl River Delta: An Evolving Region”, in Chapter 1 of this volume, p. 9.
- 4 See Salkeld (2002), “Thoughts on the Environment and Sustainable Development for the Pearl River Delta Region”, in Chapter 18 of this volume, p. 189.
- 5 NAFTA refers to the “North American Free Trade Agreement” that governs free trade operations between the United States, Canada and Mexico since the 1990s; APEC, or the “Asia-Pacific Economic Cooperation”, provides a region-wide forum for major economies in the Pacific Rim in discussing regional and international trade and economic issues.
- 6 Chen and Li (2000) performed an econometric analysis on a data set of trade and capital investment in a time-series (1985-1998), and found out that every percentage point increase in the flow of capital investment between Guangdong and Hong Kong during the said period resulted in a rise in the volume of bilateral trade between the two areas by 5.52 percent (Chen and Li, 2000, p. 6).

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Appendix 27.1

Seminar on
Building a Competitive Pearl River Delta Region:
Cooperation, Coordination, and Planning
共創珠江三角洲動力 — 合作、協調與規劃研討會
8 July 2000

PANEL 1A ENVIRONMENT - SUSTAINABLE DEVELOPMENT

Chair

Mr. Andrew S. L. LAM *President, Hong Kong Institute of Planners*

Panelists

Ms. MA Xiaoling *Senior Engineer, South China Institute of Environmental Sciences, SEPA*
Mr. Kim SALKELD *Deputy Secretary, Environment and Food Bureau, HKSARG*
Ms. Christine LOH *Chief Executive Officer, Civic Exchange; Former Legislative Councillor*
Dr. William BARRON *Associate Professor, Centre of Urban Planning and Environmental Management, The University of Hong Kong*

PANEL 1B ENVIRONMENT - AIR POLLUTION

Chair

Dr. SZE Nien Dak *Chairman, Atmospheric & Environmental Research, Inc*

Panelists

Prof. CHEN Min *Deputy Director, Guangdong Environmental Protection Bureau*
Mr. Thomas CHOW *Deputy Secretary, Environment and Food Bureau, HKSARG*
Prof. Johnny C. L. CHAN *Professor, Department of Physics and Materials Science, City University of Hong Kong*
Dr. WANG Tao *Assistant Professor, Department of Civil and Structural Engineering, The Hong Kong Polytechnic University*

PANEL 2A INFRASTRUCTURE

Chair

Prof. YEUNG Yue-man *Director, Hong Kong Institute of Asia-Pacific Studies, The Chinese University of Hong Kong*

Panelists

Mr. TANG Hao *Deputy Director, Guangdong Provincial Planning Commission*
Mr. Kenneth K. T. TSE *General Manager, Yantian International Container Terminals Ltd.*
Mr. C. K. MAK *Project Manager (NT East), Territory Development Department, HKSARG*
Sir Gordon WU *Chairman & Managing Director, Hopewell Holdings Ltd.*
Dr. James WANG *Associate Professor, Department of Geography, The University of Hong Kong*

Appendix 27.1 (Continued)

PANEL 2B CROSS BORDER ZONE PLANNING

Chair

Prof. Victor Fung-Shuen SIT *Professor, Department of Geography, The University of Hong Kong*

Panelists

Prof. SUN Huasheng *Senior Planner/Senior Architect, Urban Planning & Design Institute of Shenzhen*

Mrs. Ava NG *Deputy Director (Territorial and Sub-regional), Planning Department, HKSARG*

Mr. SHIU Sin Por *Executive Director, One Country Two Systems Research Institute*

Mr. CHENG Yiu Tong *Chairman, Hong Kong - China Relation Strategic Development Research Fund*

Dr. Mee Kam NG *Associate Professor, Centre of Urban Planning and Environment Management, The University of Hong Kong*

PANEL 3A TRADE AND COMMERCE

Chair

Prof. LIU Pak Wai *Pro-Vice-Chancellor & Professor of Economics, The Chinese University of Hong Kong*

Panelists

Mr. YANG Qifan *Deputy Director, Planning and Financing Division, The Department of Foreign Trade & Economic Cooperation of Guangdong Province*

Prof. CHEN Guanghan *Director, Center for the Hong Kong, Macao and Pearl River Delta Studies, Zhongshan University*

Mr. C. C. TUNG *Chairman, The Hong Kong General Chamber of Commerce*

Prof. TUAN Chyan *Professor, Dept of Decision Sciences and Managerial Economics, The Chinese University of Hong Kong*

PANEL 3B SCIENCE AND TECHNOLOGY DEVELOPMENT

Chair

Prof. NG Ching Fai *Dean, Faculty of Science, Hong Kong Baptist University*

Panelists

Mr. ZHOU Houcheng *Representative from Guangdong Provincial Department of Science and Technology*

Ms. HOU Wentao *Representative from Shenzhen Science and Technology Bureau*

Dr. John C. C. FAN *Chairman, CEO and President, Kopin Corporation*

Appendix 27.1 (Continued)

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