

Summary

This report summarizes the findings of the "Greater PRD Study", and is divided into three parts and nine chapters. The first part, entitled "Objectives and Strategies", expounds in three chapters on the characteristics, challenges and progress of the development of the Greater PRD City-region and sets out the recommended development objectives and spatial strategies. The second part, entitled "Spatial Plans", presents in four chapters the recommendations for realizing the development objectives and implementing the spatial strategies in four areas, namely the master spatial coordination plans, plans for cooperative development of transportation, ecological and environmental protection plans, and cross-boundary cooperative development plans. The third part, entitled "Coordination and Actions", presents in two chapters recommendations on improving the regional coordination mechanisms and the major tasks in the short term. The main findings of the study are summarized as follows:

Development Objectives

The recommended development objectives of the Greater PRD City-region are in three aspects, namely, the overall objectives, objectives by areas and objectives by phases.

Overall objectives: to build a coordinated and sustainable world-class city-region that is vibrant and globally competitive, with joint efforts of Guangdong, Hong Kong and Macao. In more specific terms, the objectives are to build (1) a world-class city-region of global competitiveness and influences; (2) a world-class advanced manufacturing base with innovation abilities; (3) a highly open world-class centre of modern services; (4) a world-class domestic and international transportation hub; (5) a cultural centre of global influences; and (6) a quality living area that is affluent, civilized, harmonious and liveable.

Objectives by areas: PRD - to develop into a world-class advanced manufacturing and modern service industry base and an important economic centre of China; **Hong Kong** - to continue to strengthen its position as an international metropolis in Asia, develop its international finance, trading, shipping, logistics and high value-added service industries, further upgrade to a major worldwide modern service centre and strive to develop into a quality living global city; **Macao** - to become the most attractive tourism and leisure centre and regional trading and commercial service platform in the world.

Objectives by phases: Short-term (2012) - to deal with the financial crisis and minimize the negative impacts of the crisis by such means as regional cooperation, restructuring of industries and macro-economic control by government. **Medium-term (2020)** - to reduce the barriers for the flow of key economic factors and fully optimize the overall spatial structure of the city-region, and ensure the Bay Area of Pearl River Estuary possesses all prerequisites to become one of the most developed city-regions in the world. **Long-term (2030)** - to further enhance the flow of key economic factors

within and outside the region, achieve a high degree of regional economic integration, and grow into a highly developed world-class city-region.

Development Strategies

Three major development strategies for the Greater PRD City-region are recommended, namely the strategies for **optimization of spatial structure, high accessibility and quality environment.**

Strategy for optimization of spatial structure: creating an overall spatial structure featuring the "focus at the Bay Area and three Metropolitan Areas", "development of three Axes and four Tiers" and "development of three Sub-regions in a poly-centric pattern".

The "Bay Area" and the "three Metropolitan Areas" refer to the Bay Area of Pearl River Estuary and the three Metropolitan Areas formed by Guangzhou and Foshan, Hong Kong and Shenzhen, and Macao and Zhuhai. They constitute the economic, social and ecological/environmental core of the Greater PRD City-region. The aim of the strategy of "focusing at the Bay Area and the three Metropolitan Areas" is to establish a development core with global attraction through the formation of a highly efficient spatial structure. Externally, the Bay Area and the three Metropolitan Areas, as the core of the Greater PRD City-region, should carry out the functions of global cities like New York, London and Tokyo. Internally, they should take a pivotal role in promoting the overall development of the Greater PRD City-region and "Circum-PRD", and serving as an economic centre of China.

The "three Axes" and "four Tiers" include the "Guangzhou/Shenzhen/Hong Kong", "Guangzhou/Zhuhai/Macao", "Coastal" Development Axes, and the four-tier development framework, with the Bay Area as the core tier, the outer Greater PRD region as the "consolidation-expansion" tier, and the "Circum-PRD" and "Pan-PRD" regions as the hinterland tiers. The strategy of "development of three Axes and four tiers" serves to reinforce the core functions of the Bay Area and the three Metropolitan Areas, and also stimulate the development of the outer Greater PRD region and the "Circum-PRD" region for the expansion of hinterland and market.

The "three Sub-regions" and the "poly-centric pattern" refer to the "Hong Kong/Shenzhen/Dongguan/Huizhou", "Guangzhou/Foshan/Zhaoqing" and "Macao/Zhuhai/Zhongshan/Jiangmen" Sub-regions and the various types of functional centres in the Greater PRD. The strategy of "development of three Sub-regions in a poly-centric pattern" emphasizes balanced development of the Greater PRD City-region as a whole as well as the growth of specific regional centres, sub-regional integrated centres, specialized centres and specialized towns in the region. The main purpose of the strategy is to facilitate establishment of the three economic zones proposed under "the Outline" through promoting collaborated and balanced developments, while allowing specialized development of individual place and "smart growth" in the city-region.

Strategy for High Accessibility: to establish a systematic transport network with the Bay Area as the hub of external links, "intercity one-hour commuting circle" and "seamless connections" in cross-boundary traffic.

The Bay Area as the hub of external links: to establish a multi-airport system and an integrated port system with positive competition, cooperation and high operational efficiency in the Bay Area. Connections between the major traffic nodes, including the airports and ports, should be strengthened to reinforce the Bay Area's function as a hub of external links.

Intercity one-hour commuting circle: to allow commuting between any two places within the Bay Area, the three Sub-regions as well as the three Metropolitan Areas in the city-region to be completed in one hour, mainly by railways and expressways.

"Seamless connections" in cross-boundary traffic: Hong Kong, Macao and PRD to work together to enhance the cross-boundary transport networks and facilities in order to reduce the time and cost of crossing boundaries, and thus increase the overall transport efficiency in the Greater PRD City-region.

Strategy for Quality Environment: to establish a comprehensive regional eco-security system, cooperate in regional environmental management and demarcate environmental protection duties of each city.

To establish a comprehensive regional eco-security system: a comprehensive regional eco-security system comprising the three major rivers (as river-based eco-corridors), seven mountain ranges (as mountain-based eco-corridors) and three vertical and three horizontal trunk routes (as traffic eco-corridors) should be established. Emphasis should be put on the protection of major functional origins and nodes of ecological significance to create an integrated system comprising clean water and green hills as the main elements and green belts as an important landscape setting.

To cooperate in regional environmental management: joint efforts should be made in the management of atmospheric and aquatic environment in the region. The control over major pollution sources and polluted areas should be undertaken in a more comprehensive approach. The ecosystem of the Pearl River Estuary should be protected to make it a key part of the quality ecology/environment of the Bay Area.

To demarcate environmental protection duties of each city: the roles of each city in the establishment and protection of ecological areas should be clearly defined. Joint efforts should be made to implement regional environmental management and related technical measures to enhance the environmental protection in the region. Common environmental objectives should be formulated and implemented to safeguard ecological/environmental protection.

Master Spatial Coordination Plans

In order to implement the strategy for optimization of spatial structure, this report suggests six master spatial coordination plans, including the plans for Bay Area development, Metropolitan Area development, Axis development, Tier development, Sub-region development and poly-centric development.

Plans for Bay Area Development: to establish an "innovation bay for early and pilot implementation" with the main development axis formed by Guangzhou-Shenzhen-Hong Kong to facilitate opening up of the existing system to accommodate innovations, adopting innovative approaches of land development and management, and undertaking studies on formulating common practices and standards among Guangdong, Hong Kong and Macao; to establish a "high-end industry co-operation bay" through optimizing the distribution of industries and developing a world-class advanced manufacturing and modern service base; to create an "internally and externally accessible hub bay" through building rapid and convenient linkages between the transportation hubs in PRD, Hong Kong and Macao; to create an "ecological bay with blue sky and clean water" through the control of air and water pollution and the building up of green and liveable environment; to create a "scenic bay" with proper development intensity through adopting "smart growth concept" in land development, consolidating urban developments in clusters, developing "sunshine coasts" for leisure activities, building up waterfront landscape with distinctive features, and establishing harmonious and vibrant city features; and to develop a "pioneer vibrant bay" to facilitate integrating different cultures and establishing a region of innovation.

Plans for Metropolitan Area Development: to develop an integrated "Guangzhou-Foshan Metropolitan Area", an international "Hong Kong-Shenzhen Metropolitan Area" and a distinctive "Macao-Zhuhai Metropolitan Area".

—— **An integrated "Guangzhou-Foshan Metropolitan Area":** to formulate the urban plan for the integration of Guangzhou and Foshan with a view to serving as a model for economic integration and guidance for strengthening linkages of government administration and integration of resources and functions; expedite the implementation of the cooperation agreements made for the integration of Guangzhou and Foshan in key areas such as energy, education, culture, employment, social security and quality human resources.

—— **An international "Hong Kong-Shenzhen Metropolitan Area":** to continue the implementation of the "Cooperation Agreement on Shenzhen/Hong Kong Innovation Circle" and the relevant cooperation projects, strengthen the cooperation between Shenzhen and Hong Kong that combines the functions of the production, education and research sectors with a view of establishing strategic alliances among the three sectors to facilitate innovations at the regional as well as national levels; Hong Kong to cooperate with Shenzhen in the allocation and flow of key resources while strengthening

its status as the international servicing centre, with a view to developing both cities into a global financial, logistics, trading, innovation and innovative cultural centre as well as an international metropolis.

—— **A distinctive "Macao-Zhuhai Metropolitan Area"**: to implement the consensuses between Macao and Zhuhai on cross-boundary cooperation, commence the construction of important transportation infrastructure such as the Hong Kong-Zhuhai-Macao Bridge, Guangzhou-Zhuhai Intercity Rail Transit (extending to Hengqin Island) and the projects for linking up the cross-boundary transport infrastructure, and build an integrated transportation hub on the west coast of Pearl River Estuary; create a new economic growth pole with international competitiveness on the west coast of Pearl River Estuary by utilizing the edges of Macao's consumer service industry and Zhuhai's resources in land, tourism, etc; adopt innovative mechanisms in spatial management and accelerate cooperation in land utilization; explore a "smart growth concept" for economic development, and fully realize the opportunities for industrial development set out in "the Outline"; on the basis of the tourism industry in Macao and Zhuhai, establish diversified leisure and tourist spots and an international service centre with Hengqin Island as the development core.

Plans for Axis Development: to optimize the "Guangzhou - Shenzhen - Hong Kong Development Axis", enhance the "Guangzhou - Zhuhai - Macao Development Axis", and create the "Coastal Development Axis".

—— **Optimization of the "Guangzhou - Shenzhen - Hong Kong Development Axis"**: to improve the quality of developments through proper planning for urban-rural integration and urban regeneration, replacing the low-quality, wide-sprawling mode of industrial developments and land use pattern, with more focused and "smart growth" approach; coordinate the planning and construction of transportation infrastructure and implement "seamless connections" among the intercity rapid rail transit networks, cross-boundary routes and intra-city transportation systems; strengthen the cooperation between Hong Kong and Shenzhen in land utilization to facilitate establishment of a world-class high and new technology industry base.

—— **Enhancement of the "Guangzhou - Zhuhai - Macao Development Axis"**: to intensify the development by formulating an action plan to narrow the development gap between the east and west coast of Pearl River and integrating the specialized towns and industrial zones into specialized centres by such means as the consolidation of administrative functions and urban-rural integration; undertake thematic planning on tourism, explore the use of transportation infrastructure in integrating tourism resources, establish key tour routes and encourage cross-boundary cooperation between the service sectors in Zhuhai and Macao to raise the servicing standards along the development axis.

—— **Creation of the "Coastal Development Axis"**: to create a continuous development space by expediting the construction of Hong Kong-

Zhuhai-Macao Bridge and the study of Shenzhen-Zhongshan Bridge; promote the development of high standard projects and establish a new model of land use and urban/rural structure with more efficient and effective utilization of resources through proper planning and environmental assessment.

Plans for Tier Development: to strengthen the role of the Bay Area as the focus of the region, bring into play the function of the outer Greater PRD in the consolidation and expansion of regional developments, strengthen the radiation of the influences of the Greater PRD into "Circum-PRD", expand the economic hinterland in the "Pan-PRD", and link up with the international and domestic markets.

—— **Strengthen the role of the Bay Area as the focus of the region:** by implementing the Plans for Bay Area Development.

—— **Bring into play the role of the outer Greater PRD in the consolidation and expansion of regional development:** to radiate the influences of the Bay Area to a larger area by expanding the infrastructure such as intercity transit rails and expressways, consolidation and expansion of developments as well as division of functions within individual Sub-regions; develop Huizhou, Zhaoqing and Jiangmen into sub-regional centres; plan for new sub-regional specialized centres by integrating and adjusting the functions of individual administrative districts.

—— **Strengthen the radiation into the "Circum-PRD":** to establish the mechanisms for the co-ordination and cooperation among Guangdong, Hong Kong and Macao, implement the "double shift" of industries and workforce, and promote the relocation of industries into industrial parks; accelerate the planning and construction of major transportation corridors and study the ways to extend PRD's intercity transit rail into the outer cities; maintain the buffer function of the mountainous area in the north to conserve the ecology of the Greater PRD, give priority to the protection of the drinking water sources, and strengthen the protection of ecology and environment.

—— **Expand the economic hinterland in the "Pan-PRD":** to promote cooperation in the development, production and sales of energy projects, strengthen the linkage of land transportation systems such as railway networks, expressway networks and national and provincial highways linking the Greater PRD City-region and the Pan-PRD, promote cooperation in regional tourism, marketing of agricultural products, sharing of information, training and flow of workforce, and protection of the ecology and environment.

—— **Link up with the international and domestic markets:** to consolidate Guangzhou's position as an integrated transportation hub in the Mainland, enhance the construction of land transportation infrastructure linking the Greater PRD and the developed regions in the Mainland, and draw the State's attention to the importance of further strengthening the linkages among the city-regions in the Yangtze River Delta, Beijing-Tianjin-Hebei and the Greater PRD in the national planning level; establish an international

shipping hub system with Hong Kong as the centre and facilitate railway connections with South Asia, Middle East, Europe, North Africa and Southeast Asia; further strengthen the multilateral cooperation with Southeast Asia under the "10+1" free trade framework, organize international promotion conference for the Greater PRD, pave the way for Guangdong, Hong Kong and Macao to participate jointly in international R & D and technological innovation activities, and improve the image of Greater PRD.

Plans for Sub-region Development: to innovate the Eastern Sub-region, consolidate the Central Sub-region, and enhance the Western Sub-region.

—— **Innovation of the Eastern Sub-region:** to promote the development of eastern Guangdong, which would contribute to the development of the economic zone on the west coast of Taiwan Strait, through strengthening the development of and linkages among Hong Kong, Shenzhen and Huizhou by infrastructure facilities such as the Liantang/Heung Yuen Wai Boundary Control Point (BCP); promote cooperation among Hong Kong, Shenzhen and Dongguan in the development of high and new technology industries and establishment of a high and new technology industry corridor; implement the agreements among Shenzhen, Dongguan and Huizhou for further liaison and cooperation, undertake coordination in land utilization and distribution of industries by such means as urban renewal, and introduce innovative modes of economic development in the Sub-region; and establish an eco-security framework and coordination mechanisms to jointly protect the ecologically sensitive areas in the Sub-region.

—— **Consolidation of the Central Sub-region:** to expand the transportation infrastructure of Guangzhou to Zhaoqing on the basis of the Guangzhou – Foshan integration plan; strengthen the functions of the sub-regional centres such as the city centre of Zhaoqing, Chancheng, Shunde and Nanhai and develop industrial clusters in specialized towns; establish a landscape belt in Zhaoqing for ecological rehabilitation and improvement and tourism development; and improve the management of the catchment areas of Xi Jiang and Bei Jiang.

—— **Enhancement of the Western Sub-region:** to construct transportation infrastructure across Pearl River, enhance the connections among transportation facilities within the Sub-region, and the linkages between Hengqin Island and Jiangmen and areas further west; establish development centres with specific functions and develop high-quality economic growth poles within the Sub-region; utilize resources in sustainable approaches.

Poly-centric Development Plans: to enhance the functions of the six regional centres and five sub-regional integrated centres, develop a group of specialized centres playing significant role in the regional development, and upgrade and optimize the specialized towns.

—— **Enhancement of the functions of the six regional centres:** based on the missions set out in the relevant regional development strategies

such as "the Outline" and the objective of developing the Bay Area as an area with functions of global cities, the six regional centres, namely Hong Kong, Guangzhou, Macao, Shenzhen, Zhuhai and Foshan should further upgrade themselves and implement division of functions to take up their respective functions in a world-class city-region.

—— **Enhancement of the functions of the five sub-regional integrated centres:** to establish Dongguan, Zhongshan, Jiangmen, Zhaoqing and Huizhou as sub-regional integrated service centres and strengthen the capability of these centres in providing integrated services through administrative measures, enhancing the accessibility to the regional intercity rapid transit network and the connection between the city transportation network and the regional transportation infrastructure; and emphasize differential and distinctive development of these five cities.

—— **Development of Sub-regional specialized centres:** to develop a group of specialized centres of regional significance through government's control at the macro-policy level such as the planning for regional integration and industrial zone concession policy; consolidate the resources to facilitate regional development and industrial conglomeration, and strengthen the advantages of the concerned districts or groups of districts.

—— **Upgrading and optimization of specialized towns:** to promote the development of specialized towns by giving support on aspects such as spatial arrangement and social security; promote and upgrade the image of specialized towns by such means as product promotion conferences, trade fairs and centralized business and investment promotions; and encourage specialized towns to innovate and upgrade themselves through comprehensive training, production, education and research programmes.

Plans for Cooperative Development of Transportation

Three plans for cooperative development of transportation are recommended to realize the "Strategy for High Accessibility". These include the plans of regional transportation hub, "intercity one-hour commuting circle" and "seamless connections" in cross-boundary traffic.

Plans of regional transportation hub: including the establishment of a "multi-airport system" and an "integrated port system", development of South China railway hub, enhancement of the expressway networks connecting Guangdong province with other places, development of the water-based transportation system, and the development of the Bay Area into an integrated transportation hub. Details are as follows:

—— **Establishment of a "multi-airport system":** to implement the "Action Agenda for the implementation of "the Outline" by the five major airports in the Greater PRD Region", request the Central Government to open up airspace, foster the sharing of resources and division of functions, and construct transport corridors to link up the airports with transportation

hubs; undertake researches and pilot schemes for encouraging specialized development of the other airports; explore the feasibility of developing helicopter transportation system in parallel with applying to the State for opening-up the low-altitude airspace; and formulate thematic plans for "multi-airport system".

—— **Establishment of an "integrated port system"**: to coordinate the functions of ports through market negotiation and adjustment by operators; enhance the transport network serving the ports with focus on large-capacity, energy-saving and environment-friendly transportation means, such as waterway and railway; improve the cargo delivery capacity, establish subsidiary container ports in the inland-river areas and enhance the efficiency of major ports in the region; strengthen the overall competitiveness of the region, monitor the development of water-based transport in the neighboring city-regions and its impact on the shipping and port system of Greater PRD; and formulate thematic plans for the coordinated development of the ports.

—— **Development of South China railway hub**: to actively promote the construction of external rail links, optimize the connections between the region's intercity rapid rail transit network and the State's high-speed rail network, foster the connections among the railways in Hong Kong, Macao, PRD and the Mainland China, study the feasibility of constructing a coastal express railway across the Pearl River Estuary, coordinate the designation of high-speed railway stations, allow more flexibility for the Hong Kong/Shenzhen Metropolitan Area in the arrangement of railway routes, promote the development of railway stations in medium-size cities, explore the ways to increase the effectiveness of multi-modal transportation between the Mainland's railway network and the international airports and ports in Hong Kong and Macao, and look into the implications of the Mainland's railway development on ocean shipping of Greater PRD in the future.

—— **Enhancement of the expressway network connecting Guangdong Province with other places**: to expedite the construction of the planned expressways connecting the peripheral cities of Guangdong Province with areas outside the province, and strengthen the connections between the highway network in Greater PRD and the State's expressway network.

—— **Development of the water-based transportation system**: to maximize the potential of water-based transport by improving the navigation channels and using highly efficient vessels, make full use of the water-based transport during special occasions like the Spring Festival and the tourism golden weeks, create a "golden tourism route" along Pearl River, and bring the function of vessels into full play in cross-boundary transportation.

—— **Development of the Bay Area into an integrated transportation hub**: to realize "seamless connections" among all transportation means, enhance the operation capacity of important railway hubs and civil airports, reinforce the connections and cooperation between the three Metropolitan Areas in PRD and coordinate the planning and development of the intercity railway system for linking up with the transportation nodes at all levels.

Intercity one-hour commuting circle: including the establishment of the "one-hour commuting circle within Bay Area", "one-hour commuting circle within Sub-regions" and "one-hour commuting circle within Metropolitan Areas".

—— **One-hour commuting circle within Bay Area:** to speed up the construction of the three express routes between Guangzhou/Foshan and Hong Kong/Shenzhen, the two express routes between Guangzhou/Foshan and Zhuhai/Macao, as well as the two express routes between Hong Kong/Shenzhen and Zhuhai/Macao, and the realization of "seamless connections" between these routes and the transportation networks within individual cities; study on building intercity rail across Pearl River Estuary; intensify the development of stations of the intercity rail network and reinforce the links between the intercity rail network and major airports, railway stations and long-distance bus stations.

—— **One-hour commuting circle within Sub-regions:** to enhance the accessibility of the centres of the three Metropolitan Areas from other cities in their respective sub-regions by improving the intercity railway and expressway networks; make Huizhou, Zhaoqing, and Jiangmen major transportation hubs in the intercity railway network; strengthen the connections between the intercity railway systems and the traffic network within cities through improved road systems.

—— **One-hour commuting circle within Metropolitan Areas:** to enhance the accessibility within the three Metropolitan Areas by improving specific road sections.

"Seamless connections" in cross-boundary traffic: including the reinforcement of connections amongst cross-boundary transport networks, upgrading of the cross-boundary facilities and promotion of coordinated management of cross-boundary traffic.

—— **Reinforcing connections between cross-boundary traffic routes:** to construct or undertake study on major cross-boundary routes, such as the Guangzhou-Shenzhen-Hong Kong Express Railway, Hong Kong-Shenzhen Western Express Line, Hong Kong-Shenzhen Eastern Corridor, Hong Kong-Zhuhai-Macao Bridge, and Guangzhou-Zhuhai Intercity Railway; reinforce the separated flow of passenger and cargo; provide efficient linkages between the cross-boundary routes and the transportation systems within individual cities; and rectify the peripheral position of Hong Kong and Macao in the overall transportation system of China through improving the connections between the two cities' road networks and the regional intercity road network.

—— **Upgrading the cross-boundary facilities:** to relieve the constraints of the existing facilities in meeting cross-boundary flow by building new facilities and improving the capacity of existing facilities through expansion, separating passenger and cargo flows and reinforcing

connections with public transport systems; enhance the cross-boundary facilities among "non-adjoining areas" (see p.117) in the Greater PRD City-region through increasing such facilities and promoting the implementation of cross-boundary facilities for "inland through-train service" (see footnote at p.99); actively promote cross-boundary through train services to link up major transportation hubs in PRD, Hong Kong and Macao for convenient multi-mode transportation.

—— **Promoting coordinated management of cross-boundary traffic:** to reinforce the studies on coordinated management of cross-boundary traffic, streamline the clearance procedure and adopt innovative mode of clearance.

Ecological/Environmental Protection Plans

To implement the "Strategy for Quality Environment", five ecological/environmental protection plans are set forth in this study. They include plans to optimize the eco-security system, control regional environmental pollution, determine environmental protection duties of different cities, reinforce the ecological/environmental protection of the Bay Area and strengthen the cooperation in ecological/ environmental studies.

Plans to optimize the eco-security system: to establish an integrated eco-security system and protect the ecologically sensitive areas.

—— **Establishing an integrated eco-security system in the region:** to establish three major rivers as "river-based eco-corridors", seven mountain ranges as "mountain-based eco-corridors" and three vertical and three horizontal trunk routes as "traffic eco-corridors"; protect nine major functional zones, 17 functional origins and seven nodes of ecological significance.

—— **Protecting the ecologically sensitive areas:** to cooperate in protecting the ecologically sensitive hills, watercourses and nature reserves which do not adjoin the boundaries of Guangdong, Hong Kong and Macao but have significant bearing on the ecology of the region; and cooperate in protecting the ecologically sensitive areas which adjoin the boundaries of the three places and need cross-boundary management.

Plans to control the regional environmental pollution: to control air and water pollution and monitor major polluting sources.

—— **Controlling air pollution:** to control acid rain and sulfur dioxide pollution by measures like reducing the discharge of pollutants from power plants, reinforcing the monitoring and control over pollutant discharge, and optimizing energy sources consumption pattern; control nitrogen oxides pollution through controlling automobile emissions and technology advancement; control inhalable particles pollution by stepping up the control of the cement industry, automobile exhaust emissions, power plant boiler discharge and fume emissions of the catering industry; control the pollution

by volatile organic compounds (VOCs) through strengthening the concerned policy guidelines, regulating industrial emissions, fostering relevant studies and expanding the coverage of existing legislations.

—— **Controlling water pollution:** to implement comprehensive prevention and control measures to safeguard water quality, including the formulation of conservation plan and water supply, retrieval and drainage plans for Dong Jiang and Xi Jiang, as well as implementing river rectification works; take advantage of the established financial markets in Hong Kong and Macao to raise funding for speeding up the construction of domestic sewage treatment plants; separate the rainwater and sewage channels; and continue the cleaning of harbours.

—— **Monitoring major polluting sources:** to control industrial pollution by pursuing clean production, strictly controlling the emission of pollutants, improving the industrial structure, adopting more stringent requirements for granting approvals for setting up industrial establishments, reinforcing relevant studies, and promoting the trading of emission rights between Guangdong and Hong Kong; and control agricultural pollution through monitoring the use of pesticides and fertilizers, limiting the scale of animal farming in the catchment areas of rivers, encouraging the relocation of animal farming and enactment of laws.

Plans to determine environmental protection duties of different cities: to demarcate the responsibilities of each city in the establishment and protection of ecological areas; implement regional objectives for environmental control and management; promote the use of advance techniques in the management of atmospheric and aquatic environment, establishment of ecological buffers, and urban waste and sewage disposal systems, etc.

—— **Demarcation of responsibilities in the establishment and protection of ecological areas:** to designate a "West Bank Ecological Zone" comprising Jiangmen as a buffer area, Zhongshan as a transition area, Zhuhai as a radiation area and Macao actively participating in the establishment and protection of the Zone; designate a "Central Ecological Zone" comprising Guangzhou carrying out the buffer, transition and establishment functions, and Foshan, Conghua and Zhaoqing (with funding aids from Foshan, Guangzhou and other areas) as a buffer area; designate an "East Bank Ecological Zone" comprising Huizhou (to attract investments from Shenshen, Dongguan and Hong Kong) for the establishment of ecological areas, Dongguan to focus on the establishment of urban green core and connectivity of ecological areas, Shenzhen to co-operate with Hong Kong to establish terrestrial bio-corridors, and Hong Kong to seek opportunities to cooperate with the concerned cities, Huizhou in particular.

—— **Regional Environmental Control Objectives:** to formulate and implement benchmarks of air pollutant emissions for 2020 and water pollution abatement for 2010 and 2020 in all cities.

—— **Formulating major works:** to promote clean production techniques for protecting the air and water quality; undertake works for the establishment of regional eco-security buffers and urban wastes and sewage disposal systems.

Plan to reinforce the ecological/environmental protection of the Bay Area: to ensure that proper planning and environmental impact assessments will be undertaken for large-scale developments before implementation; raise the threshold for starting industrial operations; implement the environmental mitigation measures before development; exercise stringent monitoring and control on important environmental elements such as air and water as well as important habitats such as wetlands.

Plans to strengthen co-operation in ecological/environmental studies: to reinforce studies closely related to the regional ecological/environmental issues such as the control over multi-source air pollution and persistent organic pollutants (POPs); further the exploration and joint studies on emission rights trading, circular economy, low-carbon cities and other related topics; and undertake studies on the mechanism of ecological compensation in the long term.

Plans for Cooperative Development of Cross-boundary Areas

For the implementation of the Master Spatial Coordination Plans, the Plans for Cooperative Development of Transportation and the Ecological/Environmental Protection Plans as well as the proposals under "the Outline" to promote cross-boundary co-operation in land development and management, two types of cooperative development plans, for "adjoining" and "non-adjoining" cross-boundary areas respectively, are recommended in this study.

Plans for cooperation among "adjoining areas": including the designation of five types of cooperation areas, four types of administrative function zones and major cooperation projects in the short term.

—— **Cooperation areas:** including the "Joint Innovation Zones" in Lok Ma Chau Loop Area in Hong Kong, Qianhai/Houhai District in Shenzhen, Hengqin New District and Zhuhai-Macao Cross Boundary Cooperation Zone in Zhuhai, and Nansha District in Guangzhou to facilitate relevant R & D activities, "Pilot Logistics Zones" in Qianhai-Bao'an District in Shenzhen and Hengqin New District for "early and pilot implementation" of the logistics and servicing arrangements under CEPA; "Education Cooperation Zones" in Lok Ma Chau Loop Area and Hengqin New District for launching innovative education projects; "Tourism Cooperation Zones" for promoting cooperation in tourism between Shenzhen and Hong Kong as well as Zhuhai and Macao; "Boundary-control Cooperation Zones" for enhancing the capacity of customs/immigration/quarantine (CIQ) clearance at the Shenzhen-Hong Kong and Zhuhai-Macao BCPs to enhance co-operation in the development of the surrounding areas.

—— **Administrative function zones:** including the "Consultative Enhancement Zone" for improving coordination of BCPs to enhance CIQ clearance capacity and building up coordination mechanisms for the planning of major projects; "Cooperative Development Zone" for cooperation in setting common development and coordination principles and agenda based on the established cooperation mechanisms (e.g. Expert Groups), and exploring innovative modes of cooperation in joint development; "Collaborative Development Zone" to serve as platforms for discussion participated by governments, public and the private sector in the planning stage of a project; "Joint Protection Zone" for joint efforts in cross-boundary protection of environment through setting out the scope of protection, consensuses in protection and the rights and responsibilities of the concerned sectors.

—— **Major cooperation projects in the short term:** including the Lok Ma Chau Loop Area which would be developed mainly for higher education purpose complemented with high and new technology R & D facilities as well as cultural and creative industries. Further study covering the planning, environmental, transportation and engineering feasibility aspects should be undertaken; the Hengqin Island which would mainly be used for leisure and vacation purposes, R & D of high and new technology industries, cultural and creative industries and higher education. Further studies on the cooperation mode of land development and management, cooperation in industrial operation, environmental impact assessment and transportation connection should be undertaken; and the Zhuhai-Macao Cross Boundary Cooperation Zone which would be used for industrial development along with logistics, trading and product display services. Changes of land use pattern should be further pursued in tandem with industrial transformation, and studies on innovative modes of cooperation in land development and management should be undertaken.

Plans for cooperation among "non-adjointing areas": including cooperation in innovation, tourism, and social services.

—— **Cooperation in innovation:** including the establishment of a regional innovation system with the main axis formed by Guangzhou, Shenzhen and Hong Kong; formulating the "Action Plan for the Bay Area of Pearl River Estuary", establishment of an international "innovation bay" with pilot areas for innovation in the high-tech industry, financial and logistics sectors; expediting the "early and pilot implementation" of innovative mechanisms to facilitate opening up of Guangdong market to the service sectors of Hong Kong and Macao.

—— **Cooperation in tourism:** including the establishment of a tourism "Gold Coast" through cooperation in areas like Renping Peninsula-Xunliao Bay-Daya Bay, Mirs Bay-Dapeng Peninsula, Hong Kong and its offshore islands, Macao and Hengqin Island, Yamen-Gudou, Chuanshan Islands and Wanshan Islands-Outer Lingdingyang-Guishan Island; formulation of tourism development plan for the coastline of the Greater PRD City-region; establishment of a mechanism to protect the waterfront tourism resources; and

strengthening the overall tourism image of the City-region with an integral promotion strategy.

—— **Cooperation in social services:** including the establishment of education and research institutes in Mainland by the universities of Hong Kong and Macao and the promotion of vocational education in Foshan, Zhaoqing, Dongguan, etc by introducing the vocational training system of Hong Kong; promoting cooperation in providing elderly services in Shenzhen, Dongguan, Zhuhai, Zhaoqing and Jiangmen, and medical services in Guangzhou, Shenzhen, Zhuhai, Dongguan, Foshan, Zhongshan, Zhaoqing and Jiangmen; promoting cultural interflow among Guangdong, Hong Kong and Macao and joint applications for the status of world's cultural heritage.

Improvement of the Regional Coordination Mechanisms

In order to safeguard the coordinated development of the Greater PRD City-region, this study gives recommendations on the further improvement of the regional coordination mechanisms in three aspects, including the improvement of the overall framework of the coordination mechanisms, improvement of the coordination mechanisms in key areas and improvement of the coordination mechanisms in town planning.

Improvement of the overall framework of coordination mechanisms: to establish a multi-level framework of regional coordination mechanisms, involving the Central Government, the governments of Guangdong, Hong Kong and Macao, and the governments of other cities in PRD, with clear definition of powers and responsibilities and multi-sector interaction; establish a mechanism of Liaison and Coordination Meeting among Guangdong, Hong Kong and Macao, on the basis of the existing Guangdong/Hong Kong, Guangdong/Macao Cooperation Joint Conference, and establish an 'observer' system; establish channels for the cities in PRD to initiate proposals for coordination with Hong Kong and Macao; and strengthen public participation in the consultation channels and platforms.

Improvement of the coordination mechanisms in key areas: to improve the mechanisms for coordination in regional studies, cross-boundary infrastructure projects, environmental protection and cooperation among cross-boundary areas. This study serves to provide guidance for the coordination in specific issues in terms of the subjects, platforms, means and key issues of coordination. The key recommendations are to establish a "Forum on the Strategy for Coordinated Development of Greater PRD" as a multi-sector interactive consultation platform and to facilitate cooperative regional studies. Other recommendations include the study of the coordination mechanisms in key projects, establishment of information platforms and strengthening market cooperation by encouraging communications and studies.

Improvement of the coordination mechanisms in town planning: to promote the establishment of town planning coordination institutions among Guangdong, Hong Kong and Macao; provide funding for the coordination

mechanisms (in the short term, specific funding for individual tasks provided by the governments of the three places; in the mid and long term, a "Joint Fund" to be set up to ensure effective operation of the mechanisms in the long run); formulate a "Spatial Development Strategy of Guangdong/Hong Kong/Macao" as a common action agenda; develop a town planning information hub for the Greater PRD City-region; and include Macao Urban Planning Institute as an organizer of the "Forum on Planning and Development Control of Greater PRD City-region" which has been organized by the Guangdong City Planning Association and Hong Kong Institute of Planners.

Major Tasks in the Short Term

The major tasks in the short term set out in this study are determined after seeking the opinions of the relevant government departments of Guangdong, Hong Kong and Macao on the basis of the recommended spatial plans and coordination mechanisms. There are totally 20 tasks concerning four major areas, namely cooperation in cross-boundary transportation, cooperation among cross-boundary areas, cooperation in ecological/environmental protection and establishment of coordination mechanisms.

Cooperation in Cross-boundary Transportation: to (1) complete the major cross-boundary infrastructure projects as scheduled; (2) establish an information sharing platform regarding the planning, construction and operation of cross-boundary infrastructure; (3) undertake thematic planning for infrastructure construction of Guangdong, Hong Kong and Macao; (4) undertake thematic planning for the integrated airport and port systems in Guangdong, Hong Kong and Macao; (5) conduct studies on innovations in the management of BCPs; (6) conduct studies on innovations in cross-boundary traffic management; and (7) conduct studies on the implications of the development of inland railway network on ocean shipping of Greater PRD.

Cooperation among Cross-boundary Areas: to (8) conduct studies on the joint development of the key "adjoining areas" (such as Lok Ma Chau Loop Area, Hengqin Island, Liantang/Heung Yuen Wai) and the innovation items for "early and pilot implementation"; (9) undertake thematic planning for building a "quality living area"; (10) formulate the "Action Plan for the Bay Area" to build a sustainable liveable area; (11) undertake joint studies for the formulation of public administration framework on social services among Guangdong, Hong Kong and Macao; (12) undertake joint studies on the cooperation among Guangdong, Hong Kong and Macao in the medical and hygiene matters; and (13) exploring more opportunities for cross-boundary cooperation.

Ecological/Environmental Protection Cooperation: to (14) undertake studies for the formulation of a framework agreement on regional environmental protection; (15) undertake studies for the formulation of a regional green land and eco-corridor framework; and (16) establish a system for environmental monitoring and forecast as well as disaster prevention and forewarning.

Establishment of Coordination Mechanisms: to (17) establish effective liaison and coordination mechanisms among the governments of Guangdong, Hong Kong and Macao; (18) establish an "observer" system on the basis of the Liaison and Coordination Meeting among the governments of Guangdong, Hong Kong and Macao; (19) promote the establishment of a planning information hub among Hong Kong, Macao and PRD; (20) organize the "Forum on the Strategy for Coordinated Development of Greater PRD Region" by the governments of the three places.