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**OECD Territorial Reviews: The case of Guangdong, China**

**Assessment and Recommendations**

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*This document is submitted to delegates for DISCUSSION and APPROVAL.*

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## ASSESSMENT AND RECOMMENDATIONS

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### *The most populous region of China...*

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1. Guangdong is China's most populous province. With 95.4 million inhabitants, its population size, which represents one third of that of US, and 75 to 90% of that of Japan and Mexico, exceeds all other OECD countries. The total land mass of the Province is almost equal to that of the United Kingdom. Unsurprisingly, the density is strikingly high, actually the highest among China's provinces, and above that of all OECD countries. This high concentration of population is linked to a deep urbanisation process (63.4% urbanisation rate as compared to a national average of 46%) whose rate over the last two decades is probably unprecedented in human history. Chosen as a test bed for a wide range of economic reforms when China introduced the Open Door Policy in 1978, Guangdong has transformed itself from a backward agricultural, lagging region into a dynamic industrial-based economy. Attracted by massive job creation, a sustained inflow of rural migrant workers from other provinces has fuelled Guangdong's high annual population growth, which over 1990-2008, stood at 2.8%, i.e. more than three times China's average and four times that of the OECD average.

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### *... and the richest economy*

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2. Guangdong is also the largest economy in China and has been the principle driver of the national economy over the last thirty years. Since 1981, the Province has registered one of the highest output growth rates in the nation, with an annual average of 13.7%, vis-à-vis a national level of 10%, increasing its share of national GDP to reach 12% in 2008. With a GDP of USD 940 billion, Guangdong's economic size is almost equivalent to that of Australia and Turkey (GDP, PPP). Within the Province, a number of cities serve as engine of the growth, the provincial capital of Guangzhou, the financial hub and high tech city of Shenzhen, and the manufacturing base of Dongguan, to name a few. Together with several other large cities, they contribute to the prominent economic position of the Pearl River Delta (PRD), a cluster of 9 cities that concentrates half of the total population of the Province (47 million) and 83.3% of the provincial GDP. The Pearl River Delta is often referred to as the "manufacturing hub of the world".

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### *A success based on an externally oriented economic model*

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3. Guangdong success has been built on its externally oriented model, characterised by a high ratio of trade to GDP and high FDI inflows. Thanks to its strategic geographical location, i.e. China's southern gateway, leading to Hong Kong and Macao, three 'Special Economic Zones (SEZs) were introduced in Guangdong in 1980 (Shenzhen, Zhuhai and Shantou). The SEZs benefitted from a range of incentives designed to gradually introduce foreign investment and technology in China. Initially, there were limited spillovers from the SEZs to other parts of the region. However, several factors have led to a massive relocation of Hong Kong firms throughout the PRD, including: the pursuit of reforms in the early 1990s; improved regulations and increased decentralisation; the acceleration of globalisation of supply chains which relocated component manufacturing to developing countries; the return of Hong Kong and Macao to China; and cheaper land and labour costs, including fiscal and regulatory advantages offered in the special economic zones and the other types of development zones that have been introduced over time. The Guangdong economic model evolved towards that of a "Processing Trade", which allows companies to

benefit from importing, assembling, and re-exporting via Hong Kong. During the 1990s, investors from Chinese Taipei and MNCs from Japan, the US, and Europe gradually began to locate in other parts of the PRD as well. Guangdong therefore becomes one of the main receivers for China's incoming FDI (25% of China's total FDI from 1978-2008, in cumulative terms). Virtually all of the manufactured outputs were exports. This allowed Guangdong to become the largest exporting province in China (28.3% of China's total exports in 2008), and also remarkable internationally, e.g. Guangdong's goods exports are larger than that of the Russian Federation.

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*An economic model that has peaked*

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4. Guangdong's past success cannot mask the increasing challenges it is facing today. How to (i) upgrade the economy, (ii) deal with strong internal disparities and (iii) address huge environmental challenges have become pressing issues.

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*An urgent need to upgrade the economy*

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5. (i) The first pressing issue for Guangdong is to move up the value chain. Both the productivity level and productivity growth rate remain low, raising concerns about Guangdong's competitiveness in an evolving global economic environment. Despite double digit growth in industrial output since the early 1990s, the productivity level declined slightly over 2003-2005 and has remained steady since then. Relocation, outsourcing, and off-shoring activities into the PRD region have given rise to a surge in manufacturing, which evolved into a range of generally low value-added light industries in textiles, toys, footwear and simple electronics. Such an "export processing" system depends on the simultaneous import of primary goods and the export of manufactured goods. Recent trends point to increasing challenges for manufacturing in Guangdong from rising labour costs to limited availability of land, all within a context of increasing competition for lower value-added goods and commodities from other regions in China and emerging countries like Vietnam, Indonesia, Bangladesh, and India. The sustainability of an economic model based almost entirely on value-added exports has also been recently questioned by the strong impact of the recent global economic crisis on the Province. Previous double-digit growth rate of exports and FDI turned negative over late 2008- early 2009, with some cities like Dongguan and Zhuhai experiencing a deep contraction in demand that led to negative growth in early 2009. Widespread factory closures and massive job losses were also reported (e.g. 590,000 migrant workers in 2008). While the recent period signals recovery, these past trends have pointed out the need to climb the value chain and to reduce the strong reliance on exports by focusing more on the domestic demand.

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*An emerging internal competitor: the Yangtze River Delta*

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6. The Guangdong economic model is not only challenged by external factors but also by rising internal competitors, especially the Yangtze River Delta (YRD) with Shanghai's re-emergence as China's principal metropolis. The widespread reforms of the 1990s that benefitted Guangdong also unleashed productive capacities that led to more rapid growth and deeper structural changes in the YDR. While Guangdong contributed an additional 5.4% to China's GDP, reaching 12.5% in 2007, up from 7.9% in 1990; the YDR's share increased from 15.5% to 22.7% (an additional 7.2%) over the same period. Moreover, as the YDR began to develop in the 1990s, its productivity level began to surpass Guangdong's. Once well behind Guangdong in terms of the share of China's total FDI (24% in 1990 vs. 42% in Guangdong), the YRD stands now at the same level as Guangdong (27%). The YRD now also contributes a larger share to China's industrial production (25% vs. 13% in Guangdong). A large portion of this difference is explained by rising productivity in the YRD resulting from specialisation in higher value-added production than in Guangdong and a capacity, like Beijing and Tianjin, to attract far more durable and forward-looking FDI with profits that, though accruing later, are being re-invested locally.

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*The highest internal regional disparities in China*

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7. (ii) The second pressing issue for Guangdong is that its economic model has generated high internal disparities. The Province contains four territorial regions: Eastern Guangdong, Western Guangdong, Northern Guangdong, and the Pearl River Delta region (PRD) in the south. The PRD region, with half of the total population generates 83% of the whole provincial GDP. The North Guangdong region has a per capita income among the lowest in China, while the PRD region is among the highest. Disparities are mainly the result of an imbalanced distribution of foreign investment. This is illustrated by estimates showing that more than 90% of foreign enterprises in Guangdong locate in the PRD region, and 7/8 of USD 800 billion FDI utilised by Guangdong over the past 30 years has been invested in the PRD region. The major reason for concentration in the PRD region is its proximity to Hong Kong, which stands out as the dominant FDI source (62%) in Guangdong. Cost reduction and short travel distance are two major criteria for low value added and labour intensive Hong Kong firms to choose investment sites. The PRD region offered a sufficient supply of un-skilled and semi-skilled workers, affordable land prices, and limited travel distance to Hong Kong. Therefore, with less than 1/4 of provincial territory, PRD's GDP per capita is four times higher than the least developed regions in Guangdong Province. Within the PRD, most of the dynamism comes from the three largest metropolitan regions (GuangFo (Guangzhou and Foshan), Shenzhen and Dongguan), which account for almost 70% of the provincial economy and 8% of the Chinese economy. The strong performance of these metropolitan regions has occurred hand in hand with increasing urban rural disparities, e.g. net income difference between urban and rural reached 3.78:1 in 2006, up from 2.8:1 in 2002.

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*Rapid development has generated considerable environmental concerns ...*

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8. (iii) The third pressing issue is that Guangdong's development model has generated considerable environmental issues that threaten its ecological system and resources, its inhabitants and its economy. The extraordinary rate of urban and industrial growth in Guangdong Province has resulted in high levels of energy consumption, with Guangdong's total energy consumption having almost tripled over 1997-2007, and doubled since 2000. High energy consumption translates into high greenhouse gas emissions, as coal and crude oil accounted for 76% of energy sources in 2007. While the Province's industrial production, 82% of which is concentrated in the Pearl River Delta region, is responsible for a large share of emissions, energy inefficient buildings and transportation modes, and sprawling urban growth patterns also contribute greatly to energy consumption. Building energy consumption in Shenzhen accounts for 30% of total energy consumption in the Province, and 5% of the Province's total energy consumption is used by air conditioners during the summer. From 1990 to 2000, built-up land area in the inner Pearl River Delta grew by over 300% in a pattern of sprawl that was hitherto unknown in China. Industrial and urban activities have also taken a toll on the water quality of the Pearl River Delta watershed. In 2008, 35.1% of river segments in the province were polluted, and the Pearl River Delta region was home to all waterways classified as extremely polluted. Energy shortages and high levels of air and water pollution threaten to limit urban development and discourage foreign investment, particularly in industries higher up the value chain; in China as a whole, damages from air pollution represent 3.8% of the GDP, and water pollution can cost nearly 2% of GDP.

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*...in the context of high vulnerability to climate change.*

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9. Contribution to climate change through high levels of greenhouse gas emissions is accompanied by a vulnerability to climate change impacts due to rising sea levels, higher urban temperatures and more extreme precipitation and storm surge events, particularly in the low-lying areas of the Pearl River Delta where economic activity is concentrated. For example, by 2050 flooding in the province is expected to increase by about 50% and sea levels are predicted to rise 30 cm. This will put cities such as Guangzhou,

Zhuhai and Foshan at serious risk of flooding. Guangdong's position in the Greater Pearl River Delta also affects the air and water quality of Hong Kong, with implications for the region's economic activities and the future growth of one of the world's key economic centres.

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*A forward looking strategic vision from the central and provincial public authorities...*

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10. The provincial government of Guangdong has been aware of the competitiveness challenges and has developed an ambitious plan to move forward. More specifically, as displayed in the Guangdong 11th Five Year Plan (FYP), the provincial strategy is based on two main pillars: (a) upgrade the industrial base through "Establishing Modern Industrial System" programme, targeting the development of modern service sectors, high-tech industries, and high value added manufacturing; (b) develop lagging non-PRD regions through the "Double Relocation Policy", aiming at moving low value added factories and low-skilled labour force to lagging peripheral regions in the hope of benefiting from lower labour costs, raw material prices, and greater land availability while releasing land in the PRD. This vision has been reiterated in the "The Outline of the Plan for the Reform and Development of the Pearl River Delta region 2008-2020", the first central government sub-provincial regional development strategy produced in China's history.

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*...based on an ambitious investment plan to help move up the value chain,...*

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11. (a) The "Establishing Modern Industrial System" Programme mainly targets the development of pillar industries primarily in heavy manufacturing industries (e.g. automobile, shipbuilding, petro-chemical), supported by investment in hard infrastructure transport projects and energy supply. The main policy instruments include investment attraction measures in various development zones operated by provincial, municipal or township governments, including fiscal deductions, low-cost land, better physical infrastructure, relatively flexible administrative procedures, etc. The breakdown of spending from the stimulus package (named as "New Ten Project") launched in 2008 for the period 2008-12 is as follows: out of CNY 2.37 trillion (EUR 237 billion) 28% will go to the transport network (PRD inter-city transit, subway, expressway, Hong Kong-Macao-Zhuhai bridge), 24% to energy Security (thermal and nuclear power plants) and 21% to heavy manufacturing industries (shipbuilding, petro-chemical, steel, automobile). Only 8% of the package has been allocated to advanced services (e.g. Guangzhou Financial Innovation Service Zone) and high-tech industries (e.g. LCD TV display module).

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*...and a large scale spatial relocation plan.*

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12. (b) The *Double Relocation Policy* is composed of two main actions: i) moving the labour intensive, resource-consuming processing industries from the central PRD to less developed areas, such as northern, western and eastern Guangdong; ii) favouring transfer of workers formerly engaged in agriculture in non-PRD to work in the secondary and tertiary sectors, and improve their skills through training. The principal tool for implementing the Double Relocation Policy is the creation of "Industrial Parks" which should attract firms to selected locations in lagging regions. A total of CNY 50 billion (EUR 5.3 billion) has been allocated for the whole programme over the period 2008-12, including CNY 22.5 billion (EUR 2.25 billion) from the provincial government, of which 67% is for the construction of parks, 22% is for the training programme for migrant workers, and 11% for subsidies to firms. Major tasks are to build infrastructure for the current 28 industrial parks in the non-PRD, provide incentives to firms to relocate (e.g. subsidies for firms to upgrade their technologies should they accept to relocate) and a specific proportion is dedicated to train the labour force in the lagging regions (e.g. subsidies for training programmes). Released rural labour is encouraged to take jobs locally in the new industrial parks. In order to ensure implementation, the Double Relocation Policy has been introduced into sub-provincial level

annual government employees' performance evaluations, *i.e.* linked with promotion of government officials. Although the DRP is the first of its kind in China, territorial relocation in Guangdong started at least one decade ago. This is demonstrated, for instance, by the development of the "Specialised Town Program" in rural non-PRD. Launched in 2000, this programme is based on the concept of one city one product, *i.e.* specialisation in one specific item or a limited range of similar products. Industries in towns that acquire the official label of a "specialised town" can benefit from direct subsidies and preferred-supplier status for public procurement contracts. Over time, this programme has increasingly benefitted cities in the non PRD (38% in 2003 to 60% in 2008).

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*There are limits to the current approach...*

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13. The provincial strategy is an ambitious plan aimed at promoting principles of both "excellence" and "harmony". However, experience in OECD countries shows that some of the policy tools featured in the strategic framework for Guangdong have produced mixed outcomes.

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*... including insufficient focus on soft assets and regional specificities...*

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14. Despite massive government-led investments, challenges lie in how to improve attractiveness to high value added activities. There appears to have been two main drivers of Guangdong's productivity growth in the last decade: i) increased share of higher value activity in ICT, whose share in Guangdong's industrial output value grew by 7% over 2000-07; and ii) an important shift from light to higher value-added heavy industry, which grew by 6.4% during this period. Such trends seem to occur only in a limited number of areas in the Province, *e.g.* Guangzhou which has attracted heavy industry investment from Japanese automobile manufacturers Honda, Toyota and Nissan since late 1990s; Dongguan, the city that boomed by processing trade industries, established the Songshan Lake Park innovation development zone in 2001, to attract high-tech and innovation oriented companies. Doubts remain regarding the capacity of the current sectoral approach - focussing on pillar industries, investment in hard infrastructure and subsidies to firms – to overcome Guangdong's challenges in moving up the value chain and reducing regional disparities. More attention could be paid to the soft assets (skills and innovation) that are necessary to attract and develop high value added activities and to sub-regional specificities.

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*...which might not help industrial relocation materialise*

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15. Although the Double Relocation Policy is a comprehensive governmental policy to foster more balanced regional development in the province, experience in OECD countries indicates that an exogenous approach to redirecting the location of economic activities produces only marginal results. In particular, the development of subsidised industrial parks in remote regions has proved to be extremely costly and largely ineffective in many countries. Today, low value-added manufacturers are more likely to relocate to other coastal locations in southern China – Beihai, Fengchenggang in Guangxi Province, Fujian Province, and the Yangtze Delta Region – where there are more dense agglomerations of suppliers (including of labour), and where they have better access to export markets through coastal container ports, than in peripheral regions of Guangdong where these export-oriented advantages do not exist. Similarly, labour tends to migrate to areas with the widest range of employment options, and where aggregated demand pushes wage rates higher. While the Double Relocation Policy is focused on engaging local residents in receiving locations to take up the expected new non-farming employment, a huge divergence in skills and knowledge exists between the PRD core and Guangdong's periphery. Attracting skilled migrant workers to Guangdong's periphery will be difficult as firms are more likely to be attracted to locations where there is at least a semi-skilled labour force rather than relying on a supply driven by government efforts in training local workers from a relatively low base.

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*Looking ahead: developing a regional development approach*

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16. The implementation of the current policy framework could well benefit from some elements of the *OECD's new paradigm for regional development*. This requires incorporating into the current strategy measures focused on developing soft endogenous assets and that leverage the regional dynamics. More precisely, they could include the following:

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*Strengthening human capital is key...*

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- (i) Capitalising on innovation and skills as the main drivers of regional growth and industrial upgrade:

17. Industrial upgrade and innovation activities in Guangdong in part depend on the ability of the Province's human capital to meet the demand. Although Guangdong has an abundant supply of qualified human capital to work in labour intensive industries, the Province seems to lack sufficient advanced human capital to engage in higher value added industries. Comparisons with other provinces reveal that the percentage of people with college and higher education in Guangdong (5.5%) is lower than the national average (6.2%); the percentage of Guangdong residents with a secondary education (14.5%) is higher than the national average (12.1%) yet lower than Beijing (24.2%), Shanghai (24%) and Tianjin (20.2%). Within the Province, there are huge differences in both vocational training and university education attainment. Knowledge-intensive industries and services are only likely to be attracted to provincial cities with high concentrations of university graduates – Guangzhou (15.2%) and Shenzhen (12.7%) while county-level cities, particularly in Western Guangdong have very low vocational education attainment rates, suggesting that they will be hard-pressed to attract medium value-added industries.

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*...as is developing regional innovation systems*

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18. Innovation is one of the structural weaknesses to be addressed in Guangdong. Although Guangdong is already in a strong position within China for high-tech trade, one of the challenges for the region will be to improve its innovation capacity in order to seek and restructure its economy to higher value-added manufacturing. While Guangdong has considerably increased R&D intensity by incrementally increasing the volume of investment, the cumulative R&D spending on a per capita basis remains lower than some other Chinese regions. To boost knowledge creation capacity, a target has been set by the provincial government to increase R&D intensity to 2.0% by 2012, up from the current level of 1.41% (2008), (the OECD average was 2.26% in 2006). In order to improve the innovation performance of the Province, currently lead mainly by the private-sector, and attract higher quality FDI, the region needs to better develop its knowledge generation infrastructure. Improvements in cooperation between public research organisations, universities, large firms, and small firms will also be needed to improve the productivity of the regional innovation system. Currently, one of the main public instruments to foster innovation is the innovation platform that is part of the Specialised Town Programme. However, the evaluation so far has highlighted difficulties in increasing coordination between universities and in promoting the idea of risk sharing among firms. More efforts could be made by the public sector to support innovation through grants for start-up and establishment of intermediate institutions for SMEs.

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*Partnerships with Hong Kong should be pursued*

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19. Further developing partnerships with Hong Kong is key to fostering better knowledge generation capacity. Hong Kong's innovation capacity is relatively underdeveloped compared to Singapore, Japan and South Korea, as measured by patent applications per million inhabitants according to WIPO. In 2005, Hong Kong's R&D intensity (0.81%) was only a third the rate of Singapore (2.4%). However, Hong Kong has unique advantages that Guangdong does not have in attracting high quality researchers, including a

pool of highly qualified scientists and top-ranked universities (fourth in Asia). As Hong Kong attracts highly skilled human capital, more benefits could be achieved for Guangdong through partnering with Hong Kong. The current “Hong Kong-Shenzhen innovation circle” is a cooperation agreement that mainly sets out a coordination mechanism for technology issues, and also encourages students and researchers to exchange ideas and create joint laboratories and/or conduct joint research on specific topics. The cooperation agreement is expected to provide the platform for talent attraction.

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*Focusing on the Outer PRD first could help*

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(ii) Focusing on the Outer PRD as a first step of Double Relocation Policy:

20. Within the PRD, population and economic activity are highly concentrated in a core area, the inner PRD (75% and 88% respectively). Despite its emerging locational advantages, the Outer PRD, is currently under settled (1/3 of the population of the Inner PRD), under urbanised, under industrialised, and under served by high-speed roads (54% of the density of high-speed roads by 2020/2030 of the Inner PRD). Drive-time analysis demonstrates that parts of the Outer PRD are becoming more accessible to strategic logistical and distribution hubs in Guangdong and Hong Kong. Its land prices are significantly lower than in the Inner PRD. The drive-time analysis also suggests that accessibility will only be improved in the non-PRD to a limited extent by 2020/2030. Rather than covering all non-inner PRD regions, as a first step, the Double Relocation Policy could be adjusted to foster agglomeration economies in the Outer PRD. This would require careful planning of additional expressway links and feeder roads, sufficient supply of industrial land that would keep prices affordable to low and medium value-added firms relocating from the Inner PRD and adequate levels of infrastructure services in the new industrial developments.

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*Fostering endogenous growth in lagging regions is essential*

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(iii) Promoting endogenous growth in lagging regions:

21. A more viable approach to develop the peripheral regions is to target measures that strengthen existing endogenous assets. Existing industrial specialisations are already growing in importance, in three of four municipalities in the Eastern Region, three of five in the Northern Region, and all three in the Western Region. Rather than trying to induce export-based firms to relocate from the Inner PRD, the government of Guangdong might consider redirecting its investments and policy efforts to strengthening existing comparative advantages in the core industries of those cities and towns in peripheral regions. This would require developing a regional development policy approach taking into account the local comparative advantages and specific territorial weaknesses. Promoting the development of lagging regions areas requires prerequisite levels of public service provisions. While the Double Relocation Policy points in this direction, e.g. training for rural migrant workers and providing transport infrastructure, more action could be taken to improve housing for workers and people, health care and social services, public utilities services and other services to individuals and firms. Guangdong might be inspired by the experience of some OECD countries, like Italy, which has been suffering from serious territorial disparities. There, incentive mechanisms have been set up to increase the commitment of local authorities to achieve objectives laid out for selected public services areas.

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*Environmental issues need to be addressed systematically...*

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22. Although current planning documents include an environmental component, efforts to improve environmental quality need to be more systematic and better linked with competitiveness and equity objectives. Concrete actions have been taken to reduce energy consumption and increase energy efficiency. The Province of Guangdong and its cities, particularly Guangzhou and Shenzhen, are key national energy



consumers and centres of energy-intensive production, but are also becoming key leaders in increasing energy efficiency, switching from fossil fuels to renewable energy, and developing new low-carbon technologies. The province of Guangdong is funding research in energy conservation, renewable energy and pollution abatement technologies, while Shenzhen, the first city in China to release building energy efficiency regulations, has also created medium and long-term energy conservation targets. Guangzhou has established local energy conservation targets for the 150 energy-intensive enterprises that contributed 65% of the city's total industrial energy consumption, and has also set an ambitious goal for private and public sector funding for its renewable energy plan. However, these efforts appear to be not enough, given that environmental indicators continue to deteriorate. Total energy consumption, especially from coal-fired power plants, is still rising despite major improvements in energy efficiency. Despite Guangdong's high vulnerability to the major effects of global climate change, to date neither Guangdong provincial, municipal, or Hong Kong governments have prepared climate change adaptation strategies. In the medium term, climate change will have serious impacts on the most economically active areas of Guangdong; without adequate adaptation measures, these impacts will exacerbate the Province's declining competitiveness in attracting innovation-based and capital-intensive manufacturing and services firms.

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*... as does coordination on environmental quality among cities in the PRD and across Guangdong province.*

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23. To broaden and sustain the impact of existing measures, energy and environmental targets need to be better aligned at the city, provincial and national levels, and the evaluation of lower-level officials based on environmental criteria should be systematically implemented. Incentives for inter-municipal coordination at the local level (e.g. grants for inter-municipal responses, or pre-conditions for infrastructure financing) are needed to improve responses to wastewater and other pollution problems that fall under each municipality's responsibility but affect others in the region. Connecting areas of new and existing urban growth through networks of mass transit as well as rail and road infrastructure, and orienting new development around mass transit infrastructure, will lay the groundwork for future economic growth while decreasing the environmental impact of this growth and better connecting the workforce to future employment opportunities. Policies to abate air pollution need to move beyond accords with industries to more stringent standards across the Province, thereby preventing "pollution havens" in less-well regulated areas of the Province. While policies to increase mass transit and innovative alternative fuels can help reduce transportation emissions, a more comprehensive approach is needed that concentrates on reducing the need for vehicle travel through density policies and imposing costs on vehicles during peak hours – both of which have been shown by OECD modelling to not harm local economic growth in the long term. Similarly, water management in the Pearl River Delta needs to be approached systematically, as wastewater discharges and industrial and agricultural pollution affect water quality and sources throughout the region. Finally, concrete measures are needed to prepare for and adapt to the potential climate change impacts. While Shenzhen's monitoring system an important early step, severe storm surge, rainfall and heat events scenarios need to be incorporated into infrastructure and urbanisation plans now to increase the long-term climate resilience of the built environment.

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*The opportunity for a green growth strategy: the Green PRD*

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24. A Green Growth strategy could be a key means to reach the objectives of upgrading the economy whilst addressing equity and environmental quality. Attracting green industries, investing in green infrastructure and renewable technologies, and improving the eco-efficiency of existing industries and buildings could create a significant number of jobs and at the same time strengthen regional competitiveness. Guangdong province has an enormous opportunity to create jobs and reduce environmental impact if it incorporates into its long-term planning the goals being developed by Hong Kong and Guangdong province in the forthcoming Green Pearl River Delta Living Area plan, which is expected to provide a strong vision and strategy for green growth in the Greater Pearl River Delta. In

particular, the plan's focus on cleaner industrial production, increasing building energy efficiency, improving air quality, increasing recycling and attracting green businesses takes advantage of the job growth potential in the sectors of renewable energies, recycling, and energy efficiency consulting and retrofitting. Fully participating in the Plan for a Green Pearl River Delta, particularly the goals of a clean air accord for 2011-20, collaboration under the vision of a "Green PRD Quality Living Area", and expanding the Cleaner Production Programme to also include non-Hong Kong-based firms in Guangdong, would enable Guangdong to fulfil many of the objectives of the Outline of the Plan for the Reform and Development of the Pearl River Delta 2008-20, particularly those related to strengthening of capabilities of independent innovation and promotion of infrastructure modernisation. Guangzhou's landfill waste-to-energy CDM project, which generates 50 Gwh of electricity annually, and Shenzhen and Guangdong's plans to provide subsidies to solar photovoltaic producers, provide models for mechanisms through which the province and its cities could stimulate green growth.

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*Rethinking Governance in Guangdong*

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25. Reforming the governance system is crucial for Guangdong to meet its challenges of upgrading the economy, dealing with disparities and facing with environmental challenges. This features as a priority in both the Provincial 11 FYP and the Outline for the Pearl River Delta. Guangdong's dramatic industrialisation and urbanisation over the past 30 years has subverted the delineation of administrative boundaries (and hence, hierarchies of governance). The lack of consistent planning has led to enormous diseconomies of scale in duplicated facilities, network inefficiencies, uneven standards and uncontrolled suburban development. Governance in Guangdong could be improved by: i) increased regional coordination; ii) fine-tuning of planning mechanisms; iii) and financial instruments which would help solve Guangdong's policy challenges.

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*...through improved regional planning...*

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i) Increase regional coordination in the Pearl River Delta

26. Fierce inter-city competition has led to duplication of infrastructure, wasteful competition for attracting business and poor interconnections between the different parts of the province. For example, there are five international airports in the region competing with each other and a similar situation exists with respect to international container ports. Some areas in the region are inappropriately serviced by roads from adjacent municipalities due to a lack of coordinated planning. In order to make a strong transition to a high value added economy, Guangdong will have to find a new balance between inter-city competition and co-operation within the Pearl River Delta. Higher levels of governments in China could develop incentives to reward inter-city cooperation as is being done in many OECD countries.

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*...and increased regional coordination within the Greater PRD.*

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27. Differences in government structure have complicated cross-border cooperation between Guangdong and Hong Kong, yet further integration between the two is estimated to have large positive impacts, up to almost a percentage point of GDP growth per year. The proposals for the "Guangdong-Hong Kong-Macao Close Cooperation Zone" and the recent framework agreement for cooperation between Hong Kong and Guangdong could be used to stimulate economic integration. A key to establishing the Guangdong-Hong Kong-Macao Close Cooperation Zone is to give Guangdong the right to be the first to implement the new CEPA initiative (free trade agreement between the Mainland of China and Hong Kong). Guangdong could take the lead to establish a Pearl River Delta sub-regional cooperation mechanism. It might also suitably modify its related policies according to the implementation needs of CEPA. The opportunity can be taken to improve its economic and administrative governance with the benefit of CEPA. The new cooperation agreement – "Framework Agreement on Hong Kong/Guangdong

Co-operation” (FAHGC) in 2010 sets clear targets and development positioning for Hong Kong/Guangdong co-operation, including: to promote joint economic development and environmental cooperation in Hong Kong and Guangdong to create a new world-class economic zone. The establishment of a light institutional body like the Oresund Committee for the cross-border region of Copenhagen and Malmo could greatly facilitate the implementation of the agreement.

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*...fine-tuning planning instruments...*

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ii) Fine-tune planning instruments to avoid sub-urban sprawl

28. There is a wide spectrum of planning measures in Guangdong, including its Territorial Plan which aims to comprehensively address spatial development challenges and introduce new zoning measures. Despite spatial planning frameworks, sub-urban sprawl and the loss of cultivated land has increased rapidly. This can be attributed to several factors, including compensation for rural land that does not reflect market developments, lack of coordination between levels of government and limited monitoring of the spatial plans. The effectiveness of planning could be enhanced by introducing instruments such as urban growth boundaries, density targets and urban design guidelines. There could be stronger coordination between different levels of governments on spatial plans and monitoring mechanisms could be improved by introducing land market assessments, future land-use analysis and scenario modelling.

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*...and more sustainable urban finance.*

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iii) Use urban finance to achieve environmental sustainability, foster equity and stimulate the transition to a high value added economy

29. The main limits to environmental improvement are that taxes in Guangdong Province and its main cities are mainly levied on business activity, with limited taxation of land use and the built environment, thus providing limited incentives to constrain sprawl. Fiscal revenue sources could be so designed that they provide incentives for environmental sustainability: land sales could be further limited, proper pricing of environmentally sensitive services could be introduced and smart taxes and fees, such as congestion charges, parking fees and development charges, could be considered. Predictable, long-term fiscal equalisation mechanisms implemented within the province, based on transparent and objective criteria could be put in place that further reduce regional inequities within Guangdong. Relatively little is spent in Guangdong Province on expenditure items that could stimulate a rapid transition to a more high value added economy, such as education and research and development. Finally, public expenditures in Guangdong could be focused more on items that help achieve the goal to move towards a high value added economy (education, innovation and R&D): the trend of increasing expenditure shares on these items since 1999, with the expenditure share on education rising from 11.7% in 1999 to 15.4% in 2006 (and science and technology from 1.3% to 2.4% over the same period) would have to continue.