

Pearl River Delta Regional Air Quality Management Plan
Enhanced Control Measures of the Guangdong Provincial Government

Measures	Implementation Programme	Progress (Up to 30.11.2009)
Use cleaner energy	To reduce gradually the energy consumption per 10,000 Yuan GDP. To establish by 2010 a diversified energy production and supply system that is safe, stable, economical, efficient and clean.	<p>The energy consumption per 10,000 Yuan GDP of Guangdong for 2008 was 0.715 tons of standard coal equivalent, down 4.32% as compared with that in 2007. The energy consumption per Industrial Added Value of Guangdong was 0.869 tons of standard coal equivalent, down 11.32% as compared with the 2007 level.</p> <p>To reduce reliance on more polluting fuel like coal and oil, Guangdong is developing two new natural gas projects apart from the Guangdong Liquefied Natural Gas (LNG) Project –</p> <p>(a) CNOOC Zhuhai Natural Gas Pipeline Project, with a capacity of about 1.19 million tonnes/year, utilizes natural gas from the South China Sea since February 2006; and</p> <p>(b) Zhuhai LNG Receiving Station Project, with a capacity of 3 million tonnes/year for Phase I, is expected to be commissioned partially by 2010.</p> <p>The power plants that have been converted to the use of natural gas as fuel include Zhongshan Hengmen Power Plant, Zhuhai Hongwan Power Plant (since February 2006) and Shenzhen Nanshan Power Plant (since April 2007).</p>

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	<p>To construct natural gas trunk pipeline and the associated works. To complete Phase I in 2005 that will have a capacity of 3 million tonnes/year. In 2009, to complete Phase II that will increase the total capacity to 7 million tonnes/year and finish construction of a number of natural gas power plants.</p>	<p>The capacity of Guangdong LNG Project Phase I has been expanded from 3 million tonnes/year to 3.7 million tonnes/year and gas supply was started in mid 2006. The total capacity for Phase II will be expanded to 7 million tonnes per year.</p> <p>Four newly built natural gas power plants (with a total of 11 generating units) have all been commissioned in 2006 and 2007. Residents in Shenzhen, Guangzhou, Dongguan and Foshan can also use natural gas supplied through pipeline network.</p>
	<p>To improve by 2005 the 500KV dual circuit annular core transmission grid to ensure transmission of electricity from western provinces.</p>	<p>The five AC and three DC main transmission channels from western provinces have been completed.</p>
	<p>To rationalize the distribution of new power stations. Apart from proper construction of generating units for combined heat and power supply and those thermal power plant projects which have been reported to the State for planning and building, no more new coal-fired and oil-fired power plants will be planned for building in the PRD region.</p>	<p>Being implemented.</p>
	<p>To gradually enlarge the scale of electricity transmission from western provinces to Guangdong.</p>	<p>Being implemented.</p>
<p>Control sulphur content of fuel</p>	<p>To control the use of high sulphur fuel (sulphur content of coal and fuel oil should be below 0.8% in the acid rain control zone by 2005).</p>	<p>Being implemented.</p> <p>By 2010, enterprises which have not installed desulphurization system would have their fuel sulphur content controlled at below 0.7% for coal and below 0.8% for fuel oil. Those not</p>

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		meeting the limits would need to use sulphur fixing agents or sulphur removal agents.
Reduce emissions from coal-fired and oil-fired power stations	To phase out small-scale thermal power generating units. Power plants with a capacity equal or above 300 MW to account for over 70% of the total installed capacity in the region in 2005, which is 35% higher than that in 2000.	The Guangdong Provincial Government announced its plan in March 2007 to close down small thermal power generating units with a total capacity of 9,660MW in the Province by the end of 2010, including those with a total capacity of about 7,100 MW in the PRD Economic Zone [Units of about 1,600 MW closed down in 2007, 3,600 MW in 2008 and 1,900 MW in 2009 (Annex C).] As at end 2008, small thermal power generating units with a total capacity of 8,340 MW in the Province had been closed down.
	To install FGD systems at the power plants in Shajiao, Huangpu, Taishan and Zhuhai by 2005.	In 2008, generating units installed with FGD systems have increased by a capacity of 3,800 MW, amounting to a total capacity of 27,800 MW. Large scale thermal power generating units in Guangdong have all been equipped with FGD. (Item completed)
	To require all oil-fired and coal-fired generating units of capacity above 125MW to be equipped with FGD systems by 2007.	
	To require all coal-fired and oil-fired power plants to adopt low nitrogen oxides (low-NOx) combustion technologies in case of alteration or expansion.	Low-NOx combustion technologies have already been required at all units in case of alteration or expansion.
	To require all coal-fired and oil-fired power plants under construction, alteration or expansion to install flue gas denitrification systems.	Being implemented.
	To promote the installation of low-NOx combustion device at	Being implemented.

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	existing coal-fired and oil-fired power plants.	
	To study the feasibility of installing flue gas denitrification systems for existing power plants.	Development and Reform Commission of Guangdong Province has issued the relevant policy document and notification on the need for existing power plants to install denitrification systems.
	To require all power plants under construction, alteration or expansion to install FGD equipment, particulate removal devices and automatic continuous emissions monitoring system.	Being implemented. The existing coal-fired generating units of capacity above 125MW had put in place continuous emissions monitoring system (CEMS) by end 2008, with a view to allowing the relevant authorities to have instant on-line access to the CEMS data.
	To enhance technological improvements of existing power plants and to implement cleaner production. Newly built power plants have to meet the advanced standard on cleaner production in the country.	Being implemented.
	To materialize the subsidization policy for thermal power plants to desulphurize by giving concessions, support and assistance in land acquisition for desulphurization systems and import of essential equipment so as to facilitate the full implementation of desulphurization projects.	From 1 July 2006, power plants with desulphurization system receive extra RMB 1.5 cents per unit when the electricity is sold to the power grid.
	To offer better sales terms (e.g. higher rates and grid connection priority) to power plants that are equipped with FGD and denitrification systems.	Extra RMB 1.5 cents per unit and grid connection priority have been offered to power plants with FGD systems. Better sales terms for power plants with denitrification systems are under preparation.

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	To establish a province-wide quota administration system for total emissions of SO ₂ and to study the emissions trading mechanism of SO ₂ .	Being implemented.
	To implement more stringent air pollutant emission standards for thermal power plants.	The new “Guangdong Emission Standards of Air Pollutants for Thermal Power Plants” has been implemented to further tighten the air pollutant emission standards since August 2009.
Control emissions from industrial boilers and industrial processes	To phase out coal-fired boilers with a capacity of less than 2 tonnes/hour in the urban areas of cities. By 2005, to stop using such coal-fired boilers in build-up areas of key cities. To require all large and medium-size industrial boilers to install desulphurization systems or adopt clean combustion technologies to reduce emissions.	The operation of coal-fired boilers of less than 2 tonnes/hour has been largely phased out in the urban areas of cities in the region. Removal devices for particulates must be installed onto all industrial boilers. Restaurants located in sensitive areas and those having major impact on public livelihood must be installed with devices to purify cooking fumes.
	To tighten emission standards for local boilers by 2010, so as to reduce emissions from industrial boilers and other boilers (e.g. commercial boilers).	“The Guangdong Emission Standards of Air Pollutants for Boilers (Draft)”, which was released in August 2009, is expected to come into force by end 2010.
	To continue phasing out various production technologies and installations that have caused serious pollution by emitting SO ₂ , smoke and particulates.	To implement on a mandatory basis a system to phase out enterprises, various production technologies and installations that have caused serious pollution. In principle, no construction of new cement plants and extension of cement plants will be planned in the PRD Region. Future development will focus on projects of new dry-type cement plant with daily production capacity of more than 4,000 tonnes. Projects of new dry-type rotary kiln cement plant with daily capacity of 2,500 tonnes and below will be

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		<p>prohibited.</p> <p>Programmes are being implemented to phase out high energy consuming and highly polluting cement plants, production lines of vertical kilns, dry hollow kilns, Lepol kilns and wet process kilns.</p> <p>The relocation project of Guangzhou Cement Plant, completed by end 2005, was estimated to reduce particulate emissions in the Region by approximately 3,000 tonnes/year.</p> <p>Some cement production units located in Sanshui area in Foshan City were closed down by the end of 2007. All existing vertical kiln cement production units were closed down by the end of 2008.</p> <p>Guangdong announced in January 2008 a plan to phase out all serious polluting cement plants in the province with a total production capacity of 38 million tonnes by 2010. Of these, a total production capacity of 28.53 million tonnes is located within the PRD Economic Zone (Annex D). As at the end of 2008, Guangdong had phased out cement plants with a total production capacity of 41.23 million tonnes.</p> <p>Guangdong announced in October 2007 a plan to phase out iron and steel plants (a total production capacity of 16 million tonnes) (Annex E) by end 2010. As at the end of 2008, Guangdong had phased out iron and steel plants with a total production capacity of more than 7 million tonnes.</p>

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	<p>To actively study the technologies for controlling emission of NOx from stationary sources such as power plant boilers, industrial boilers and restaurant boiling water furnaces.</p>	<p>Emission of NOx from stationary sources such as electricity station boilers, industrial boilers and restaurant boiling water furnaces will be under control in 2010.</p>
	<p>Location and planning of industries causing serious pollution will be strictly determined and administered centrally. The system of environmental assessment of construction projects will be enhanced.</p>	<p>Being implemented.</p>
	<p>For industrial sectors such as petrochemicals, steel, non-metallic mineral products, paper and paper products, textile and dyeing, technological improvement at existing enterprises will be enhanced and cleaner production will be implemented. New projects have to meet the advanced standard on cleaner production in the country.</p>	<p>Being implemented.</p>
<p>Reduce the emission of VOC</p>	<p>To replace by 2003 paints using VOCs with xylene as the main solvent.</p>	<p>Completed.</p> <p>Since 1 January 2006, all water-based paints and adhesives are required to comply with the technical requirement of environmentally friendly products. All water-based paints and adhesives bearing an environmentally friendly label have to comply with the VOC content limit.</p>

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	<p>Initiate tasks for vapour recovery at petrol filling stations, tanker trucks and oil depots. To fully implement motor fuel vapour emission standard for all oil depots, tanker trucks and petrol filling stations.</p>	<p>Guangdong announced in March 2008 a plan to complete vapour recovery work at oil depots, tanker trucks and petrol filling stations in the major PRD cities by end 2010.</p> <p>Since 2009, the work plan for installing vapour recovery systems at petrol filling stations, oil depots and tanker trucks is being implemented in phases. The installation work in PRD region is expected to be completed by 2010 and for other areas in Guangdong by 2012.</p>
<p>Reduce tailpipe emissions from motor vehicles</p>	<p>To commence the construction of a regional rapid light-rail system by 2005. To construct expressways in major cities, such as the district expressway in Southern Guangzhou and the Shenzhen-Shenping Express Trunk Road.</p> <p>To develop green transport by implementing clean vehicle action programmes in major cities of the region. To encourage the use of clean fuels, develop electric vehicles, actively promote the use of advanced clean fuel motor vehicles and step up the development of public transport.</p>	<p>Phase I of Shenzhen-Shenping Express has been commissioned. Rail system between Guangzhou and Zhuhai started construction in December 2005. The system, 144km in length with a maximum speed of 200km/hr, is expected to be completed by 2009.</p> <p><u>Shenzhen</u></p> <ul style="list-style-type: none"> - Formulated the “Medium to Long Term Planning for the Development of Clean Vehicles in Shenzhen”. - Drew up and implemented the 2003-2008 general work programme for the use of clean fuel in public transport vehicles. - The National III emission standard has been implemented ahead of schedule for newly purchased public transport vehicles as well as replacements. In 2007, the number of replacements amounted to 1,874, making a total of 8,702 public transport vehicles complying with the National III emission standard in the city. - Selected in January 2009 as one of the first pilot cities to demonstrate

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		<p>and promote energy-saving vehicles and vehicles powered by new energy. Subsidies are provided to public service organizations to encourage purchase and use of energy-saving vehicles and vehicles powered by new energy</p> <ul style="list-style-type: none"> - A total of 50 new generation hybrid public transport vehicles were put in use in Shenzhen at the end of 2008. <p><u>Guangzhou</u></p> <ul style="list-style-type: none"> - Active promotion of LPG public transport vehicles. There were over 6,700 LPG-driven public buses in Guangzhou, accounting for 80% of all public buses in the city (as at the end of 2007). The 16,700 taxis in the city have largely been converted into LPG taxis. - At present, there are 28 LPG refilling stations. - New generation hybrid public transport vehicles started to run in Guangzhou in January 2008. <p><u>Huizhou</u></p> <ul style="list-style-type: none"> - From 1 August 2007, all new public transport vehicles are required to comply with the National III emission standard.
	<p>To require all new motor vehicles to fully meet emission standards. To step up annual inspection and on-road spot checks of in-use vehicles. To strengthen the control of in-use vehicles to ensure that over 90% of motor vehicles in the cities within the</p>	<p>The National II emission standard was implemented in 1 July 2005.</p> <p>A recommended catalogue of motor vehicles complying with the National III emission standard was introduced on 1 July 2006 to encourage and support the sale, import, purchase and</p>

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	<p>region will meet tailpipe emission standard by 2005.</p>	<p>use of motor vehicles on the catalogue.</p> <p>Starting from 1 July 2008, all newly registered motor vehicles in PRD Region have to comply with National III emission standard.</p> <p>Starting from 1 July 2009, all newly registered motor vehicles in Guangdong Province have to comply with National III emission standard.</p> <p><u>Guangzhou</u></p> <ul style="list-style-type: none"> - The requirement for all newly registered vehicles to comply with the National III emission standard was advanced to 1 September 2006. - The “blacklist” of vehicles with excessive emissions was first published on the Guangzhou Environmental Protection website in August 2007. <p><u>Shenzhen</u></p> <ul style="list-style-type: none"> - A catalogue of motor vehicles complying with the National III emission standard has been implemented since 1 July 2007. - A reporting and joint investigation system for smoky vehicles has been established.
	<p>To introduce subsidy policy for replacement of “yellow-label vehicles” (i.e. petrol vehicles with pre-National emission standard or below and diesel vehicles with National II emission standard or below).</p>	<p>The subsidy policy was rolled out in September 2009 to tie in with the national policy of subsidizing “replacement of old vehicles with new vehicles”. The policy offers subsidy to owners ranging from RMB 3,000 to 6,000 for vehicle replacement.</p>

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	<p>To study the feasibility of advancing the implementation of National IV emission standard for light-duty vehicles by 2010.</p> <p>To study the feasibility of advancing the implementation of National V emission standard for heavy-duty vehicles by 2010.</p>	<p>Preparatory work is being conducted.</p> <p>Subsequent to the issue of a catalogue of motor vehicles complying with the National IV emission standard in July 2008, the Shenzhen Government aims to require newly registered motor vehicles to comply with the National IV emission standard by 1 January 2011.</p>
	<p>To strengthen management on regular inspections of in-use motor vehicles to make sure that the required environmental performance is met.</p>	<p>The in-use motor vehicles inspection / maintenance system is being progressively implemented and improved. Non-compliance motor vehicles are prohibited from using the roads.</p> <p><u>Shenzhen</u></p> <p>The pollutant emissions inspection and mandatory maintenance system for motor vehicles has been implemented since 1 December 2007.</p>

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	<p>To experiment a labeling system on the environmental categorization of in-use vehicles in key cities, and to regulate and restrict vehicles of certain categories using the road according to the ambient air quality.</p>	<p>The environmental labeling system on in-use vehicles has been implemented in Guangdong since March 2009. A total of 3.04 million labels were issued as at end October 2009.</p> <p><u>Shenzhen</u></p> <ul style="list-style-type: none"> - An environmental labeling system for motor vehicles has been introduced. - Road use restriction measures for “non-green-label vehicles” have been further enhanced since 1 July 2009. The restriction zones for “yellow-label vehicles” are being gradually expanded. Shenzhen aims to restrict “yellow-label vehicles” from using main roads in city by 2011. - The vehicle inspection and environmental labeling management system established by the Ministry of Environmental Protection will be implemented by March 2010. <p><u>Guangzhou</u></p> <ul style="list-style-type: none"> - Starting from 1 January 2008, motor vehicles are granted environmental labels in accordance with performance. - The national-wide vehicle inspection and environmental labeling system for motor vehicles will be introduced in March 2010.

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	<p>To vigorously promote the sale of motor vehicle fuel complying with the National III standard in the province.</p>	<p>Guangdong Province already announced the local National III standard for motor fuel in August 2006.</p> <p>The extension and reconstruction project of Sinopec's Guangzhou subsidiary was commissioned on 9 September 2006. The company is now capable of producing motor fuel complying with the National III standard.</p> <p>All petrol filling stations in Shenzhen and Guangzhou have been supplying National III standard motor fuels since April 2007 and May 2008 respectively. From July 2008, the supply network has been expanded to cover Zhongshan, Dongguan and Zhuhai. It has been further expanded to cover Huizhou in July 2009. Guangdong is seeking to extend the supply of National III standard motor fuels to other cities in the PRD in 2010.</p>
	<p>To give consideration to advance introduction of the National IV standard motor fuel.</p>	<p>Preparation of fuel standard has been completed.</p>
	<p>To study ways to control the growth of motorcycles in key cities.</p>	<p>Motorcycles have been banned from entering the urban areas in Guangzhou and Dongguan since 1 January 2007 and 1 September 2007 respectively.</p>