For information
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LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS

Supplementary Information on Emissions Trading Pilot Scheme for Thermal Power Plants in the Pearl River Delta Region

Purpose

This paper provides Members with supplementary information related to the implementation of the Emissions Trading Pilot Scheme for Thermal Power Plants in the Pearl River Delta Region (the "Pilot Scheme").

Background

2. On 30 January 2007, the Environmental Protection Bureau of Guangdong Province (GDEPB) and the Environmental Protection Department (EPD) of the Hong Kong Special Administrative Region Government (HKSARG) jointly announced the implementation framework of the Pilot Scheme. It provides a market-based tool to encourage power companies, through emissions trading, to embark upon emission reduction projects. By allowing the trading of the "emission credits" achieved from the emission reduction projects, power companies in the Pearl River Delta (PRD) region can comply with the emission reduction targets laid down by the respective governments of the Guangdong Province and HKSAR more flexibly and cost-effectively.

3. On 26 February 2007, we briefed Members on the implementation framework of the Pilot Scheme. At the meeting, the Administration undertook to provide Members with the following supplementary information.

Overseas experience on emissions trading

4. According to a report by an international consultant firm in February 2007, there are some 12 emissions trading schemes currently in operation overseas. These schemes vary in terms of scale and scope. The geographical coverage ranges from a single state of a country to cross-continent coverage.

They may include about 40 pollution emission sources to over 10,000 emission sources. The US Acid Rain Programme, the EU Emissions Trading Scheme and the Clean Development Mechanism under the Kyoto Protocol are amongst the more prominent schemes. A summary of these schemes is set out at Annex I.

5. As a market-based tool to facilitate pollution emission sources to comply with emissions performance in a cost-effective manner, the benefits of emissions trading can best be considered by evaluating its economic benefits vis-a-vis other conventional pollution control approaches. According to the US Environmental Protection Agency, which has the longest history of implementing emissions trading programmes, research results have suggested that the total costs of achieving the same emission reduction by using conventional approaches of command-and-control will be 60% to 140% more costly than that achieved through the emissions trading tool. They conclude that the emissions trading approach can provide industry with flexibility in achieving government's emission reduction goals in a cost-effective manner.

Impact of the 2010 emissions reduction targets on the local power companies

6. To improve regional air quality, the HKSARG reached a consensus with the Guangdong Provincial Government in April 2002 to reduce, on a best endeavour basis, the emission of four major air pollutants, namely sulphur dioxide (SO_2), nitrogen oxides (NO_X), respirable suspended particulates (RSP) and volatile organic compounds (VOC) by 40%, 20%, 55% and 55% respectively in the region by 2010, using 1997 as the base year. Achieving these targets will not only enable Hong Kong to meet its air quality objectives but also significantly improve the air quality of the PRD and relieve the regional smog problem.

7. Electricity generation is the biggest source of air pollution in Hong Kong. In 2005, it accounted for 91% of the SO_2 and about half of the NO_X and RSP emissions. To achieve the 2010 emissions reduction targets and sustained improvement in our air quality, the power companies must substantially reduce their emissions.

8. We have asked the power companies to accelerate the timing of emission reduction projects, increase the use of ultra-low sulphur coal and use natural gas for power generation as much as possible. Since August 2005, we have imposed emission caps on all the power stations of China Light & Power (CLP) and Hong Kong Electric (HEC) upon renewal of the Specified Process Licences (SPLs) issued under the Air Pollution Control Ordinance with a view

to reducing the emissions to the practicable minimum. These caps will be progressively tightened up in the future SPL renewals to ensure that the 2010 emission reduction targets are achieved. In his Policy Address 2006-2007, the Chief Executive stressed that we should not allow these firm targets to be compromised in any way. We have also made clear that the need to protect our environment is the focus of the post-2008 Schemes of Control in the negotiations with the power companies. The permitted rate of return will be linked to their achievement of emission caps.

9. To achieve the 2010 emission reduction targets, the power companies will need to take additional emission reduction measures. Possible technical options for consideration include accelerating the timing of emissions reduction projects, increasing the use of ultra-low sulphur coal, using more natural gas for power generation, reducing sales to the Mainland and emissions trading.

10. The latest progress on emissions reduction achieved by the power sector is as follows :-

(a) on retrofit projects, Environmental Permits were granted to the HKE for its flue gas desulphurisation (FGD) system in April 2006 and the CLP for its FGD system and selective catalytic reduction retrofit projects in November 2006;

(b) on the wider use of natural gas, the first gas-fired generation unit (L9) of HKE was officially commissioned in October 2006. Currently, about 30% of electricity generated by the CLP is from natural gas. The CLP submitted an Environmental Impact Assessment (EIA) report for its proposed liquefied natural gas (LNG) receiving terminal to EPD in October 2006 .The EIA Report was exhibited under the EIA Ordinance for the public to comment from 27 December 2006 to 25 January 2007. The report was endorsed by the Advisory Council on the Environment (ACE) with conditions in mid February 2007. EPD will consider the comments submitted by the public and ACE when deciding on the EIA report; and

(c) on the use of clean coal, the CLP continued to reduce their emissions by increasing the use of Envirocoal with an ultra-low sulphur content of 0.1%. By 2007, Envirocoal will account for about one-third of CLP's coal portfolio and reduce the average sulphur content from the level of 0.46% in 2004 to about 0.3%. This will enable the Castle Peak Power Station to cut SO_2 emissions by one third.

11. Emissions trading, which is a market-based tool aiming to achieve

emissions reduction cost-effectively while providing flexibility to the power companies in the selection of reduction strategies and management of reduction plans, is an additional option for CLP and HEC to help achieve their emissions caps. EPD and GDEPB will jointly set up the Emissions Trading Management Panel to assist in the management of emissions trading matters under the Pilot Scheme and to facilitate participation by power companies on both sides on a voluntary basis.

Emission requirements for power plants in Guangdong and in HKSAR and the latter's compliance rate

12. The current emission requirements for power plants in HKSAR and in Guangdong's PRD Economic Zone are shown at Annex II. The GDEPB advised that all large-scale thermal power plants in the PRD Economic Zone had complied with the national emission requirements in 2006.

Other measures, apart from the Pilot Scheme, which HKSARG has considered to improve the regional air quality

13. To achieve the emissions reduction targets agreed between Hong Kong and Guangdong, a PRD Regional Air Quality Management Plan was drawn up in December 2003. Both sides are progressively implementing the various enhanced control measures in the Management Plan. The measures being undertaken and their latest progress are at Annexes III and IV.

Environmental Protection Department
March 2007

Annex I

Details of Some Overseas Emissions Trading Schemes

Scheme	US Acid Rain Program	European Union Emission Trading Scheme	Clean Development Mechanism under Kyoto Protocol
Start	1995	2005	2005
Geographical Reach	Continental US	European Union	Global
Pollutant for Trading	Sulphur dioxide	Carbon dioxide	Six greenhouse gases (CO_2, CH_4, N_2O, PFCs, HFCs, SF_6)
Target Group	Fossil-fuel burning power plants	Large industrial and energy intensive installations	A wide range of activities
Number of Sources	~ 3000 units	~ 10,000 units	~ 400 registered projects
Market Volume	In 2005, around 10 million tonnes of SO_2 were transferred among economically unrelated organizations. The market price is currently US$500 per tonne.	In 2005, 362 million tonnes of CO_2 were traded for a sum of €7.2 billion (approximately €20/tonne)	Formally registered projects yield 700 million tones CO_2-equivalent in reductions. The market is predicted to have a size of US$2.65 billion for 2005.
Benefits	1) By 2005, SO_2 emission has been reduced by 40% reduced using 1980 as base year. 2) The capital cost of abatement equipment dropped significantly. For example cost of a scrubber, a standard SO_2 removal device, dropped from US$249 per kW in 1995 to US$100 per kW in 2000	The averaged annual cap of 1.83 billion tonnes of CO_2 between 2005 and 2007 is basically achieved in 2005 at 1.79 billion tonnes.	Successfully promote technology transfer and financial support to assist the developing countries in cutting down emissions.

Annex II

Emission requirements for Power Plants in Hong Kong and in PRD Economic Zone

Pollutant	Unit Type	Permitted Pollutant Emission Limits				
		PRD Economic Zone			HKSAR (2007)	
		Phase[#]	Year 2007 concentration (mg/m^3)[@]	Year 2010 concentration (mg/m^3)[@]	concentration (mg/m^3)[@]	cap (tonnes/ yr)
Sulphur Dioxide	Coal-fired	Phase I	2100	1200	191[(4)]-2100	73,500
		Phase II	2100 1200 [(3)]	400 1200 [(3)]		
		Phase III	400	400		
	Oil-fired	Phase I	2100	1200	110-290	
		Phase II	2100 1200 [(3)]	400 1200 [(3)]		
		Phase III	400	400		
	Gas-fired	-	No national standard for the time being, but the actual level should be low	No national standard for the time being, but the actual level should be low	5-10	
Nitrogen Oxides	Coal-fired	Phase I	1100-1500	1100-1500	411[(5)] -1500	47,400
		Phase II	650-1300	650-1300		
		Phase III	450-1100	450-1100		
	Oil-fired	Phase I	650	650	150-185	
		Phase II	400	400		
		Phase III	200	200		
	Gas-fired	Phase III	Oil-fired: 150 Gas-fired:80	Oil-fired:150 Gas-fired:80	Gas-fired: 90	
Particulates	Coal-fired	Phase I	300[(1)] 600[(2)]	200	50-125	2,230
		Phase II	200[(1)] 500[(2)]	50 100[(3)]		
		Phase III	50 100[(3)]	50 100[(3)]		
	Oil-fired	Phase I	200	100	10-12	
		Phase II	100	50		
		Phase III	50	50		
	Gas-fired		No national standard for the time being, but the actual level should be low	No national standard for the time being, but the actual level should be low	5	

- i) For generating units completed for operation before 1 January 1997 or projects involving newly-built thermal power plants, extension or alteration of the thermal power plants with the environmental impact assessment report (EIA report) approved before 1 January 1997, Phase I Target will be adopted.

ii) For projects involving newly-built thermal power plants, extension or alteration of the thermal power plant with the EIA report approved between 1 January 1997 and 31 December 2003, if construction work has not yet commenced on 1 January 2004 and one year has elapsed after the date of approval, Phase III Target will be adopted. For other projects, Phase II Target will be adopted.

iii) For projects involving newly-built thermal power plants, extension or alteration of thermal power plants with the EIA report approved after 1 January 2004, Phase III Target will be adopted.

@- Reference conditions: 273 K (temperature) & 101 kPa (pressure)

(1)- Generating units which is installed in developed and planned districts at county-level cities or above shall comply with this standard

(2)- Generating units which is installed outside developed and planned districts at county-level cities or above shall comply with this standard

(3)- Units with desulphurization system of which the environmental impact assessment report has been approved before 1 January 2004 need to implement this standard.

(4)- Removal efficiency of desulphurization system should be at or above 90%

(5)- Removal efficiency of low NOx burner should be at or above 60%

Annex III

Pearl River Delta Regional Air Quality Management Plan
Enhanced Control Measures of the HKSAR

Measures	Implementation Programme	Progress (Up to 30.11.2006)
Encourage the replacement of diesel light buses with ones using clean fuel (already commenced)	Since 2002, the Government has offered incentives to diesel light bus owners to encourage replacement of diesel light buses with liquefied petroleum gas (LPG) or electric ones.	The incentive scheme was introduced in August 2002 and completed by 31 December 2005. Up to end of October 2006, there were a total of 2 436 public LPG light buses, 151 private LPG light buses and one electric light bus. Between January 2006 and the end of October 2006, around 80% of the newly registered public light buses were LPG models.
Require the retrofitting of particulate removal devices on pre-Euro diesel vehicles (already commenced)	Since 2002, financial assistance has been provided for retrofitting pre-Euro heavy diesel vehicles with particulate removal devices.	Financial assistance was provided in phases from December 2002 to December 2005 to retrofit pre-Euro heavy diesel vehicles with catalytic converters. All together, about 36 500 eligible vehicles were installed with catalytic converters. Since April 2006, all pre-Euro heavy diesel vehicles (including franchised buses), except long-idling ones were required to be installed with approved emission reduction devices. Legislative amendments will be introduced to require emission reduction devices to be installed on pre-Euro heavy diesel vehicles under long idling situations (including lorries with cranes mounted, concrete mixers, pressure tankers and gully emptiers) with effect from April 2007.
Encourage vehicle owners to replace pre-Euro and Euro I commercial diesel vehicles with Euro IV models	(New item included in December 2006) A financial incentive scheme will be introduced in the second quarter of 2007	Preparation work underway
Encourage members of the public to use environmentally friendly private vehicles	(New item included in December 2006) With effect from 1 April 2007, a 30% reduction in the First Registration Tax will be offered, subject to a cap of $50,000 per vehicle	Preparation work underway

Measures	Implementation Programme	Progress (Up to 30.11.2006)
Enhance the vapour recovery systems in petrol filling stations	To introduce legislation requiring the recovery of petrol vapour emitted during vehicle refueling at petrol filling stations was in 2003/04.	The Regulation came into effect on 31 March 2005.
Tighten motor fuel standard	Motor fuel standard will be tightened to Euro IV standard by 2005 (motor diesel standard has already been tightened to Euro IV standard since 2002).	Euro IV petrol standard came into effect on 1 January 2005.
Tighten tailpipe emission standard	To adopt Euro IV standard for tailpipe emissions from 2006.	Euro IV tailpipe emission standard was introduced on 1 January and 1 October2006 respectively for light-duty vehicles not exceeding 2.5 tonnes and heavy-duty vehicles exceeding 3.5 tonnes.
	(New item included in December 2005) To be in line with EU in adopting Euro V motor vehicles standard for tailpipe emissions.	Planned to be in line with EU to adopt Euro V standard for tailpipe emissions.
Reduce VOC emissions from the printing process, paints and consumer products	To introduce legislation in 2004 or 2005 to require labeling of VOC content in VOC products.	During the public consultation held in September 2004 and subsequent discussions with stakeholders, members of the trade generally agreed to advance Phase II measures and impose limits and technical requirements on the VOC content of VOC products at an earlier date. The Government tabled the legislation at LegCo in November 2006, which started the enactment of the regulation on controlling VOC-containing products. It is expected that all VOC-containing products under control will be subject to the statutory limits in phases with effect from April 2007 onwards. Emission control devices must be properly installed on lithographic heatset printing machines starting from 1 January 2009, to meet the new legislative requirements.
	Legislation will then be introduced in phases to reduce the use of products with high VOC contents and to impose emission standards for the printing process.	
Reduce emissions from power stations	Effective and flexible mechanisms (which may	The Government approved the emissions reduction options set out in the financial plans of the two

Measures	Implementation Programme	Progress (Up to 30.11.2006)
	include emissions trading) will be set up to control the total emissions of SO_2, NOx and RSP from power stations to achieve respective reduction targets by 2010.	power companies in June 2005. CLP Power Hong Kong Limited will provide desulphurization and de-NOx systems for four of its coal-fired generating units each of 677MW. Hong Kong Electric Co. Ltd. will provide low-NOx burners and desulphurization systems for two of its coal-fired generating units each of 350MW. CLP has been increasing the use of ultra low sulphur coal and is seeking to increase natural gas supply through the development of liquefied natural gas reception facilities. HEC has formally commissioned its first natural gas generation unit of 335MW in October 2006. The first commercial scale wind turbine power generation unit of 800kW was also commissioned in Hong Kong in February 2006.
	(New item included in December 2005) Control total emissions from power plants.	Emission caps have been included in the SPLs granted to CLP's Castle Peak Power Station and Black Point Power Station as well as HEC's Lamma Power Station. Emission caps will gradually be tightened, with a view to reducing emissions to the practical minimum and achieving the 2010 reduction targets.

Annex IV

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

Measures	Implementation Programme	Progress (Up to 30.11.2006)
Use cleaner energy	To reduce gradually the energy consumption per 10000 Yuan GDP. To establish by 2010 a diversified energy production and supply system that is safe, stable, economical, efficient and clean.	The 500KV grid for transmitting electricity from the western provinces was completed on schedule. The Guangdong Liquefied Natural Gas (LNG) Project is being constructed according to plan. The construction of a number of major electric power sources and clean energy programmes is being speeded up. To reduce reliance on more polluting fuel like coal and oil, Guangdong is developing two new natural gas projects apart from the Guangdong LNG Project – (a) CNOOC Zhuhai Natural Gas Pipeline Project, with a capacity of about 1.19 million tonnes/year, has utilized natural gas from the South China Sea since February 2006; and (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. Zhongshan Hengmen Power Plant and Zhuhai Hongwan Power Plant have been converted to use natural gas as fuel since February 2006.
	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 6 million tonnes/year and finish construction of a number of natural gas power plants.	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/year. Among the four newly built natural gas power plants, the ones in Huizhou and Shenzhen East have generating units commissioned in September and November 2006. Other generating units will be commissioned in phases later this year. Residents in Shenzhen, Guangzhou, Dongguan and Foshan can

Measures	Implementation Programme	Progress (Up to 30.11.2006)
		also use natural gas supplied through pipeline network.
	To improve by 2005 the 500KV dual circuit annular core transmission grid to ensure transmission of electricity from western provinces.	The 5 AC and 3 DC main transmission channels from western provinces have been completed.
	(New item included in December 2006) 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.	Being implemented
	(New item included in December 2006) To gradually enlarge the scale of electricity transmission from western provinces to Guangdong	
Control the sulphur content of fuel	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).	Being implemented. 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 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 300MW to account for over 70% of the total installed capacity in the region in 2005, which is 35% higher than that in 2000.	All regular coal-fired and oil-fired small thermal power generating units with capacities equal or below 50MW is expected to be phased out by end 2007. About 240 generating units with a total capacity of 2 500 MW are involved.
	To install flue gas desulphurization systems at the power plants in	Flue gas desulphurization systems have already been installed (including works

Measures	Implementation Programme	Progress (Up to 30.11.2006)
	Shajiao, Huangpu, Taishan and Zhuhai by 2005.	pending official check and acceptance) for generating units with a capacity of around 11,000 MW, thereby reducing the annual SO_2 emission by more than 160,000 tonnes. In addition, generating units of around 4,000 MW are being retrofitted with this system.
	To require all oil-fired and coal-fired generating units of capacity above 125MW to be equipped with flue gas desulphurization systems by 2007.	
	(New item included in December 2005) To require all coal-fired and oil-fired power plants to adopt low-NOx combustion technologies in case of alteration or expansion.	Low-NO_X combustion technologies have already been required at all units in case of alteration or expansion.
	(New item included in December 2006) To promote the installation of low-NOx combustion device at existing coal-fired and oil-fired power plants.	
	(New item included in December 2006) To require all power plants under construction, alteration or expansion to install desulphurization equipment, particulate removal devices and automatic continuous emissions monitoring system.	
	(New item included in December 2006) 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.	
	(New item included in December 2006) To materialize the subsidization policy for thermal power plants to	From 1 July 2006, power plants with desulphurization system receive an extra RMB 1.5 cents per unit when the electricity is sold to the power grid.

Measures	Implementation Programme	Progress (Up to 30.11.2006)
	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.	
	(New item included in December 2006) To establish a province-wide quota administration system for total emissions of sulphur dioxide and to study the emissions trading mechanism of sulphur dioxide.	
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 restaurants the operation of which would seriously affect public production must be installed with devices to purify cooking fumes.
	To continue phasing out various production technologies and installations that have caused serious pollution by emitting sulphur dioxide, 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. 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 prohibited. Programmes are being implemented to phase out high energy consuming and highly polluting cement plants, production lines of vertical kilns, dry hollow kilns,

Measures	Implementation Programme	Progress (Up to 30.11.2006)
		Lepol kilns and wet process kilns. 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.
	(New item included in December 2005) To actively study the technologies for controlling emission of nitrogen oxides from stationary sources such as power plant boilers, industrial boilers and restaurant boiling water furnaces.	Emission of nitrogen oxides from stationary sources such as electricity station boilers, industrial boilers and restaurant boiling water furnaces will be under control in 2010.
	(New item included in December 2006) 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.	
	(New item included in December 2006) 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 porjects have to meet the advanced standard on cleaner production in the country.	
	(New item included in December 2006) Initiate vapour recovery at petrol filling stations, tanker trucks and oil depots	<u>Shenzhen</u> – To begin survey and investigation and formulate working plan for implementation in phases a pilot scheme at selected locations before the end of 2006.

Measures	Implementation Programme	Progress (Up to 30.11.2006)
Reduce the emission of VOC from paints	To replace by 2003 paints using VOCs with xylene as the main solvent.	Work completed.
Reduce tailpipe emissions from motor vehicles	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.	Phase I of Shenzhen-Shenping Express was completed in 2005. The whole expressway is expected to be commissioned in 2006. 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.
	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.	<u>Shenzhen</u> - 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. - In accordance with "The scheme of providing financial subsidy to replace public transport vehicles with Euro III emissions standards in the City of Shenzhen in advance of the schedule", the work to encourage public transport enterprises to replace public transport vehicles with National III Emissions Standards has been actively pursued. As at October, there are 5 671 public transport vehicles complying with National III emissions standards, 4 423 of which are newly added vehicles or vehicles replaced with those complying with National III emissions standards. The remaining 1 248 vehicles have been replaced with engines complying with National III emissions standards. - The replacement of in-service public transport vehicles with National III emissions standards will be completed by the end of 2006 ahead of schedule. <u>Guangzhou</u>

Measures	Implementation Programme	Progress (Up to 30.11.2006)
		- Active promotion of LPG public buses and taxis. By the end of 2005, all modification and replacement programmes had been completed for state-owned public transport companies. By the end of 2006, all public buses and taxis are expected to use LPG. - As at November 2006, there are 6 400 LPG-driven public buses in Guangzhou, which accounts for 80% of all public buses in the city. With the exception of a small number of vehicles the service of which is due to expire, most of the 16 000 taxis in the city have by and large completed the LPG modification. - There are 26 LPG refilling stations in the city at the present and two more will be added by the end of the year, boosting the total to 28.
	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 region will meet tailpipe emission standards by 2005.	National II emission standards have been adopted since 1 July 2005. A recommended catalogue of motor vehicles complying with National III emission standards has been introduced in 1 July 2005, to encourage and support sale, import, purchase and use of motor vehicles on the catalogue Striving to adopt National III emission standards by end-2006. <u>Guangzhou</u> - The requirement for all newly registered vehicles to comply with the National III emission standards has been advanced to 1 September 2006. - Improvement is being made to the measures on roadside inspection and random check of vehicles with excessive emissions. <u>Shenzhen</u> - All newly registered public transport vehicles are required to comply with National III emission standards.

Measures	Implementation Programme	Progress (Up to 30.11.2006)
		- A reporting and joint investigation system for smoky vehicles is established. - 30 000 roadside inspections would be carried out by end-2006.
	(New item included in December 2005) To study the feasibility of advancing the implementation of National IV emission standards for light-duty vehicles by 2010. To study the feasibility of advancing the implementation of National V emission standards for heavy-duty vehicles by 2010.	Preparatory work is being conducted.
	(New item included in December 2005) To strengthen management on regular inspections of in-use motor vehicles to make sure that the required environmental performance is met.	The in-use motor vehicles inspection / maintenance system is progressively implemented and improved. Non-compliance motor vehicles are prohibited from using the roads. <u>Shenzhen</u> - A system of inspection / maintenance is introduced. <u>Guangzhou</u> - To implement the in-use vehicles emission standards and to introduce the cycle test for motor vehicles by phases by 2007. - To establish a database for motor vehicles emissions control management for strengthening controls on motor vehicle testing industry. - To implement a phase out programme for highly polluting motor vehicles.
	(New item included in December 2006) 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	<u>Shenzhen</u> – A labeling system on the environmental categorization of motor vehicles is introduced. <u>Guangzhou</u> – A labeling system on the environmental

Measures	Implementation Programme	Progress (Up to 30.11.2006)
	according to the ambient air quality.	categorization of motor vehicles will be introduced in 2007.
	(New item included in December 2006) To vigorously promote the sale of motor vehicle fuel complying with National III standard in the province.	Guangdong Province has already announced the local National III standards for motor fuel in August 2006. The extension and reconstruction project of Guangzhou Sub-company, Sinopec was commissioned in 9 September 2006. The company is now capable of producing motor fuel complying with National III standard. Guangzhou – Motor fuel complying with National III standard is now provided in 41 petrol filling stations within the city, and such fuel supply will extend to all petrol filling stations in the city in 2007. Shenzhen – Motor diesel with sulphur content below 500 ppm is introduced and all public transport vehicles are required to use such type of diesel.
	(New item included in December 2006) To study ways to control the growth of motorcycles in key cities.	Guangzhou – Motorcycles are prohibited from using certain road sections in the urban areas. Starting from 1 January 2007, all motorcycles will be banned from the urban areas.