

For Information  
August 2009

**LEGISLATIVE COUNCIL  
PANEL ON ENVIRONMENTAL AFFAIRS**

**Progress of Measures  
under Pearl River Delta Regional Air Quality Management Plan  
to Achieve 2010 Emission Reduction Targets**

**Purpose**

This paper reports on the latest progress of implementation of measures, including those under the Pearl River Delta Regional Air Quality Management Plan (Management Plan), to improve air quality and meet the 2010 emission reduction targets.

**Background**

2. To improve regional air quality, the Hong Kong Special Administrative Region (SAR) Government reached a consensus with the Guangdong Provincial Government in April 2002 to reduce, on a best endeavour basis, the emissions of four major air pollutants, namely sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), respirable suspended particulates (RSP) and volatile organic compounds (VOC) by 40%, 20%, 55% and 55% respectively in the Pearl River Delta (PRD) Region by 2010, using 1997 as the base year. Achieving these targets will significantly help to improve the air quality of the Region and relieve the regional smog problem.

3. Since September 2005, we have been providing six-monthly reports to the Panel on Environmental Affairs (EA Panel) on the progress of meeting the 2010 emission reduction targets. We last reported to the EA Panel in January 2009. This is the eighth progress report.

**Progress of Emission Reduction**

4. We are making good progress in the implementation of local emission reduction measures. Except for SO<sub>2</sub> whose emission level has increased by 3% (down from the height of 45% above the 1997 figure in 2004, and 12% above the 1997 figure in 2006) due to a rise in the use of coal in power generation in recent years, the emission levels of all other pollutants have dropped when compared with those in 1997. Details are as follows –

	<b>Emission Level in 1997 (Tonnes)</b>	<b>Change in Emission Level during 1997-2007</b>	<b>Emission Reduction Target for 2010</b>
SO <sub>2</sub>	66 200	+3%	-40%
NO <sub>x</sub>	124 000	-21%	-20%
RSP	11 500	-51%	-55%
VOC	68 800	-42%	-55%

5. The two local power companies are on track for retrofitting their coal-fired power generation units with flue gas desulphurization (FGD) facilities in stages. We expect that the SO<sub>2</sub> emissions from the power sector will continue to drop in the run up to 2010.

## **Latest Measures to Control Emissions from Major Sources**

### ***Transport Sector***

6. To further step up the local efforts in controlling emissions from the transport sector, we are rolling out the following initiatives –

- (a) we have consulted the EA Panel in May 2009 on a proposal to stipulate the specifications for pure motor vehicle biodiesel and the requirements for motor vehicle biodiesel blended with diesel in the Air Pollution Control (Motor Vehicle Fuel) Regulation (Chapter 311L). We plan to introduce the enabling legislation into the Legislative Council (LegCo) this year;
- (b) we are making preparation to further tighten the statutory standards of motor vehicle diesel and unleaded petrol to the Euro V standards;
- (c) we are developing a proposal to strengthen the control of emissions from petrol and liquefied petroleum gas (LPG) vehicles, including the use of roadside remote sensing equipment and dynamometers for emission testing. We plan to consult the stakeholders later this year;
- (d) after careful consideration of the views of the stakeholders, we have fine tuned the arrangements for taking forward the proposed statutory ban on idling vehicles with running engines. We have consulted the transport trades and the EA Panel on the revised proposal in January and February 2009. We are drafting the enabling legislation with an aim to introduce it into LegCo this year;

- (e) we are examining the feasibility of setting up a pilot “low emission zone” at one or more busy corridors to restrict franchised buses with high exhaust emissions from entering the zone, which will help to evaluate the effectiveness of the measure in improving roadside air quality. We expect to complete the study in 2010;
- (f) we are drawing up a proposal to control the emissions of off-road mobile sources operating within the airport and container terminals. We plan to consult the relevant trades this year; and
- (g) we will launch a trial of domestic ferries using ultra low sulphur diesel (ULSD) shortly. Subject to its findings, we would draw up a scheme to encourage ferry operators to switch to using ULSD.

7. In addition to the above, we have been implementing the following incentive schemes to promote a wider use of more environment-friendly vehicles –

- (a) on the \$3.2 billion one-off grant scheme to encourage car owners to replace their pre-Euro and Euro I diesel commercial vehicles with the Euro IV models, we have extended the deadline for owners of pre-Euro diesel commercial vehicles to apply for the grant from September 2008 to March 2010 (which is the same as that for the Euro I models). As at the end of June 2009, we have approved about 11 800 applications. Since the introduction of the scheme, the number of on-road pre-Euro and Euro I diesel commercial vehicles has been reduced from about 58 500 to 40 500;
- (b) since April 2007, we have been providing a 30% reduction in First Registration Tax (FRT), subject to a cap of \$50,000 per vehicle, to encourage the use of more environment-friendly private vehicles. As at the end of June 2009, we have approved about 8 100 applications; and
- (c) since April 2008, we have reduced the FRT of environment-friendly commercial vehicles to encourage early take-up of these vehicles, which are currently pitched at the Euro V standards. As at the end of June 2009, we have approved about 290 applications.

### ***Power Sector***

8. Power generation is the main source of emissions in Hong Kong. To deliver the 2010 emission reduction targets, we have imposed emission caps on all power plants and are progressively tightening them during licence renewals. We further brought the Air Pollution Control (Amendment) Ordinance 2008 through LegCo in July 2008 to give statutory effects to the emission caps for power plants in 2010 and

beyond. The amendments also provide for the local power plants to engage in emission trading amongst themselves or with their counterparts in the PRD Region as a means to meet the emission caps.

9. To encourage Hongkong Electric (HEC) and CLP Power to take more proactive steps to reduce emissions and sustain strict compliance with the environmental requirements, we have set out a number of incentives and penalty arrangements in the new Scheme of Control Agreements signed with them in January 2008. These arrangements include –

- (a) linking the permitted rate of return of the two power companies to their environmental performance. A higher rate of return will be provided for rewarding better than required performance in reducing emissions and improving air quality. Likewise, the new arrangements provide for financial disincentives in terms of a lower rate of return for emitting more pollutants than permissible; and
- (b) providing a higher rate of return to the power companies for their investment in renewable energy facilities and offering them a bonus in permitted return depending on the extent of renewable energy usage in their electricity generation.

10. Other major progress in reducing emissions from the power sector include the following –

- (a) in August 2008, the Hong Kong SAR Government signed a Memorandum of Understanding with the National Energy Administration to ensure a stable and long-term supply of nuclear electricity and natural gas from three different sources, namely offshore gas, piped gas and liquefied natural gas. At present, 28% of electricity generated by power plants in Hong Kong is gas-fired. To improve air quality and address the challenges posed by global warming, we will actively explore ways to gradually increase the use of clean energy by, for example, increasing the proportion of natural gas for local electricity generation to 50%. As part of our review of the Air Quality Objectives (AQOs), we are consulting the public on this as well as other measures to improve air quality;
- (b) on promotion of renewable energy, both HEC and CLP Power are conducting Environmental Impact Assessment studies for developing commercial scale off-shore wind farms in Hong Kong waters; and

- (c) both HEC and CLP Power are making good progress in retrofitting their power generation units with FGD facilities. The retrofit projects are expected to complete in phases between 2009 and 2011.

### *Other Sources*

11. At the same time, we have been implementing the following major initiatives progressively to control emissions from other sources –

- (a) we introduced the Air Pollution Control (Fuel Restriction) (Amendment) Regulation, which came into effect in October 2008, to mandate the use of ULSD in industrial and commercial processes. This will reduce about 2 480 tonnes of SO<sub>2</sub> emission per year, or about 3.7% of the total local SO<sub>2</sub> emission in 2007<sup>1</sup>; and
- (b) we are bringing an amendment regulation through LegCo to extend the control of the Air Pollution Control (Volatile Organic Compounds) Regulation (Chapter 311W) to other products with high VOC contents, including adhesives, sealants, vehicle refinishing paints, marine vessel paints and pleasure craft paints, to limit their VOC contents in phases from January 2010; and
- (c) we will move a resolution under the Ozone Layer Protection Ordinance (Chapter 403) to ban the import of all products using hydrochlorofluorocarbons (HCFCs) in phases from January 2010. This will help to further reduce the local consumption of HCFCs, thereby contributing to the efforts of the international community in expediting the recovery of the ozone layer.

### *Review of AQOs*

12. In response to the release of the Air Quality Guidelines by the World Health Organization in October 2006, we commissioned a comprehensive consultancy study in June 2007 to review Hong Kong's AQOs and develop a long-term air quality management strategy. The study has recently been completed. We launched a four-month public consultation on 23 July 2009 to solicit the views of the community on the proposed new AQOs and the proposed emission control measures. We will fully consider the views collected before deciding on the way forward.

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<sup>1</sup> Based on an annual consumption of about 378 million litres of industrial diesel in Hong Kong.

## *Promotion of Energy Efficiency*

13. Apart from controlling emissions at source, another effective way of reducing emissions is through enhancing energy efficiency and promoting energy conservation. In this regard –

- (a) we are preparing a legislative proposal for mandatory implementation of the Building Energy Codes to improve energy efficiency in new and existing buildings. We aim to introduce the legislation into LegCo this year;
- (b) we have reserved \$150 million and \$300 million under the Environment and Conservation Fund to subsidize qualified building owners in carrying out energy-cum-carbon audits and energy efficiency projects respectively. The Schemes have been opened for application since April 2009;
- (c) we have adopted a comprehensive target-based green performance framework for government buildings and set targets in various environmental aspects to promote environmental protection and energy conservation. We will also promote the use of energy efficient designs and technologies by means of demonstration projects;
- (d) we plan to develop a district cooling system at the Kai Tak Development to supply chilled water to buildings in the region for centralised air-conditioning;
- (e) we introduced a mandatory Energy Efficiency Labelling Scheme through the Energy Efficiency (Labelling of Products) Ordinance (Chapter 598), which came into effect in May 2008, to encourage the use of energy-efficient products. The initial phase of the Scheme covers three types of product, namely room air conditioners, refrigerating appliances and compact fluorescent lamps. We will propose amendments to the Ordinance this year to cover more products under the second phase of the Scheme;
- (f) we are conducting a study on phasing out incandescent light bulbs and replacing them with more energy efficient lighting products. The study will look into the case for introducing a statutory restriction on the sale of incandescent light bulbs; and
- (g) we are conducting consultancy studies on energy wastage arising from the excessive use of external lighting and will assess the feasibility of regulating external lighting by legislation.

## **Co-operation with Guangdong Province and Mainland**

14. To achieve the 2010 emission reduction targets, the Guangdong Provincial Government is also working in earnest to implement the control measures under the Management Plan. The emission reduction measures on the Mainland side focus on power plants, vehicles and industrial processes.

15. Starting from July 2009, all newly registered vehicles in the Province must comply with the National III vehicle emission standards (which are on a par with the Euro III standards). In addition, the Guangdong Provincial Government introduced the Measures for Prevention and Control of Air Pollution in the PRD Region of Guangdong Province in March 2009. Key initiatives under the Measures include –

### *Controlling Emissions from Power Generation*

- (a) banning the development of new coal-fired or oil-fired power plants in the PRD Region;
- (b) promoting adoption of desulphurization, dust removal, denitrification or low NO<sub>x</sub> combustion technologies at coal-fired or oil-fired power plants;
- (c) offering better sales terms (e.g. higher rates and grid connection priority) to power plants that are equipped with FGD and denitrification systems;

### *Controlling Emissions from Road Transport*

- (d) supplying National III standard motor fuels to all cities in the PRD Region by the end of this year (in addition to Shenzhen, Guangzhou, Dongguan, Zhuhai and Zhongshan);

### *Controlling Emissions from Industrial Sector*

- (e) designating fuel use restriction areas as required, and banning installation of new coal-fired and oil-fired boilers within the restricted areas;
- (f) encouraging the use of clean energy at industrial boilers and kilns;
- (g) promoting adoption of desulphurization, dust removal, denitrification or low NO<sub>x</sub> combustion technologies at industrial boilers and kilns;

### *Controlling Emissions from Other Sources*

- (h) implementing comprehensive vapour recovery system at petrol filling stations, oil depots and tanker trucks at major PRD cities;

- (i) phasing out paint and coating products with high VOC content, and encouraging the production and sale of low VOC content products, including pesticide sprayers, cleansers, adhesives, hair styling gels, etc.;
- (j) requiring industries (including vehicle manufacturing and repairs, petrochemical processing, furniture production, shoe production, printing, electronic product manufacturing and garment dry cleaning) to control fugitive VOC emissions in accordance with the relevant technical standards and specifications;
- (k) prohibiting the use of waste asphalt, felt, rubber, plastics, leather and other materials as fuel to avoid emissions of toxic smoke or feter during combustion, and prohibiting open burning practice for recovery of metal;
- (l) requiring implementation of dust control measures when storing and stockpiling industrial and construction materials;
- (m) requiring implementation of dust control measures at construction sites;
- (n) requiring catering establishments to use clean energy such as electricity, natural gas and LPG; and
- (o) prescribing the discharge limits and methods in respect of oily fume, smoke and particulate emissions from catering operators in urban areas.

16. In April 2009, Hong Kong and Guangdong jointly announced the full year report on the monitoring results of the PRD Regional Air Quality Monitoring Network for 2008. Notwithstanding the continuing economic growth in the PRD Region last year, the average annual concentration levels of SO<sub>2</sub> and RSP have dropped by 19% and 11% respectively as compared with the 2007 levels. These reductions were attributable to the implementation of enhanced emission reduction measures (e.g. completion of installation of desulphurization systems at thermal power plants) and strengthening the control on vehicle emissions in the PRD Economic Zone. We expect that the monitoring results for the first half of this year will be available in October 2009.

17. We have also been working closely with the Economic and Trade Commission of Guangdong Province to further promote the five-year Cleaner Production Partnership Programme to encourage and facilitate Hong Kong-owned factories operating in the PRD Region to adopt cleaner production technologies and practices, with a view to reducing emissions and enhancing energy efficiency. In the first half of this year, we have further organized seminars and workshops with the local authorities of Guangzhou, Zhuhai and Zhaoqing to promote the Programme. So far, over 200 applications have been approved under the Programme.



18. The Hong Kong SAR Government and the Guangdong Provincial Government are committed to meeting the 2010 emission reduction targets and will continue to implement the emission reduction measures under the Management Plan.

**Environment Bureau / Environmental Protection Department**  
**August 2009**