

Executive Summary – Report on the Mid-term Review of the Pearl River Delta Regional Air Quality Management Plan

1. In April 2002, the Hong Kong Special Administrative Region (HKSAR) Government and the Guangdong Provincial Government reached a consensus to reduce, on a best endeavour basis, the anthropogenic emissions of sulphur dioxide (SO₂), nitrogen oxides (NO_x), respirable suspended particulates (PM₁₀) [also known as RSP] and volatile organic compounds (VOC) by 40%, 20%, 55% and 55% respectively in the Pearl River Delta (PRD) Region (i.e. covering the PRD Economic Zone in Guangdong and the HKSAR) by 2010, using 1997 as the base year. The consensus was reached with reference to the then forecast on the growth rates of the economy, population, electricity consumption and vehicle mileage in the PRD region by 150%, 20%, 130% and 190% respectively in 2010, using 1997 as the base year. Subsequently, governments of both sides issued a Joint Statement agreeing to take forward emission reduction measures to achieve the above reduction targets with a view to significantly improving the air quality and tackling the smog problem in the PRD Region.
2. The PRD Regional Air Quality Management Plan (the “Management Plan”) comprising a programme of abatement and control measures were drawn up by the Hong Kong-Guangdong Joint Working Group on Sustainable Development and Environmental Protection (JWGSDEP) in December 2003. The Special Panel on PRD Air Quality Management and Monitoring (the “Special Panel”) will review the implementation progress and effectiveness of the Management Plan from time to time, and will report the progress to the Expert Group under the JWGSDEP every year. Where necessary, it would propose updates to the Management Plan for consideration by the JWGSDEP.
3. With the rapid economic developments in the Region, the forecast growth in various areas might well have exceeded the estimates made in 2002. The two sides therefore launched the Mid-term Review of the PRD Regional Air Quality Management Plan (the “Mid-term Review”) in November 2006 to jointly examine the forecasts on the regional pollutant emission trends, assess the effectiveness of existing emission reduction measures and, where necessary, formulate additional control measures to further reduce emissions in order to fully achieve the mutually agreed reduction targets by 2010.
4. The Mid-term Review was carried out by the Special Panel and their findings were

reported to the JWGSDEP.

Estimations of Pollutant Emissions

5. In line with international practice, both sides have jointly compiled a handbook on the methodology and protocols for the preparation of air emission inventory (the “Handbook”) applicable to both sides. By adopting this Handbook as the objective basis of emission estimation, and the use of available local emission factors and data, the Mid-term Review provided a scientifically sound estimation on the emissions of various pollutants in the Region, having regard to findings of studies and experience gained from emission estimation in other areas.
6. To reflect more accurately the actual emission situation then, the 1997 emissions were recalculated under the Mid-term Review in accordance with the methodologies enshrined in the Handbook. The Mid-term Review further estimated the pollutant emissions in 2003¹ prior to the implementation of the Management Plan, and then provided projections on the 2010 emissions in light of the effectiveness of emission reduction measures adopted by both sides as well as the latest developments in the Region.

Findings of the Mid-term Review

7. According to the findings of the Mid-term Review, the economy, population, electricity consumption and vehicle mileage of the HKSAR will increase by 72%, 11%, 43% and 8% respectively in 2010, using 1997 as the base year. It is anticipated that implementation of the existing preventive and control measures will significantly reduce the emissions of SO₂, NO_x, PM₁₀ and VOC in 2010 to 30,000 tonnes, 90,000 tonnes, 5,000 tonnes and 30,000 tonnes respectively, representing a reduction of 54%, 25%, 58% and 55% respectively compared to the 1997 levels. The emission reduction targets will hence be achieved.
8. As for the PRD Economic Zone, findings of the Mid-term Review indicate that the economy, population, electricity consumption and vehicle mileage in the area will increase by 509%, 56%, 158% and 319% respectively in 2010 compared to the 1997 levels, which far exceed the assumptions in 2002. Notwithstanding the various abatement and control measures implemented by the Guangdong Provincial

¹ To examine the applicability of the Handbook and ascertain the emissions prior to implementation of the Management Plan, the 2003 emissions were estimated in the Mid-term Review. Data in 2003 for the entire Region are more comprehensive than those of subsequent years when the Mid-term Review was carried out, 2003 is also a year midway between 1997 and 2010.

Government in recent years, which have resulted in emission reductions in various pollutants, it is anticipated that the rapid economic developments in the area will result in an increase in the emissions of SO₂, NO_x, PM₁₀, and VOC to 480,000 tonnes, 570,000 tonnes, 210,000 tonnes and 230,000 tonnes respectively in 2010.

9. To further strengthen control on air pollutant emissions so as to achieve the reduction targets, it is proposed that, apart from the existing measures, additional control measures should be introduced to target at various emission sources in the Region, including NO_x removal (de-NO_x) for newly built power plants, tightening emission standards of air pollutant emissions for local boilers, enhancing cleaner production requirement for VOC-containing products, setting limits on the VOC contents of consumer products, tightening control on emissions from local vessels, etc. With the implementation of the above additional control measures, it is estimated that the emissions of SO₂, NO_x, PM₁₀ and VOC in the PRD Economic Zone will decrease to 430,000 tonnes, 500,000 tonnes, 210,000 tonnes and 180,000 tonnes respectively in 2010, representing a reduction of 41%, 20%, 60% and 56% respectively compared to the 1997 levels, so that the emission reduction targets will be achieved.

10. For the entire PRD Region, if the additional control measures recommended in the Mid-term Review are implemented in the PRD Economic Zone, it is anticipated that the total emissions of SO₂, NO_x, PM₁₀ and VOC in the Region by 2010 will decrease to 460,000 tonnes, 600,000 tonnes, 210,000 tonnes and 210,000 tonnes respectively, representing a reduction of 42%, 21%, 60% and 55% respectively compared to the 1997 levels. The joint emission reduction targets will then be achieved.

Table 1: Emission Levels of the PRD Region in 2010 (after implementation of the Additional Control Measures in PRD Economic Zone)

Pollutant	Region	1997 Emission ('000 tonne)	2010 Emission ('000 tonne)	2010 Emission Reduction Rate	2010 Emission Reduction Target
SO ₂	HKSAR	65.9	30.2	-54%	-40%
	PRD Economic Zone	732.5	431.3	-41%	
	PRD Region	798.3	461.6	-42%	
NO _x	HKSAR	123.3	92.8	-25%	-20%
	PRD Economic Zone	632.9	503.6	-20%	
	PRD Region	756.2	596.5	-21%	
PM ₁₀	HKSAR	11.4	4.7	-58%	-55%
	PRD Economic Zone	519.5	207.5	-60%	
	PRD Region	530.9	212.2	-60%	
VOC	HKSAR	68.9	31.0	-55%	-55%
	PRD Economic Zone	400.9	178.2	-56%	
	PRD Region	469.8	209.2	-55%	

Note: Figures shown in the tables in this report may not tally with the sums or total percentages due to rounding off.