Council for Sustainable Development's Report on Better Air Quality Engagement Process – Government's Response

Introduction

Hong Kong's air quality is a concern widely shared by our community. The Government is determined to do its utmost to improve the air quality and has placed this issue on top of its policy agenda.

2. While the Government will continue to take the lead to combat air pollution, support from all sectors of the community as well as cooperation with the Mainland authorities are necessary to achieve this challenging goal. To take part in this effort, the Council for Sustainable Development (the Council) conducted the "Better Air Quality Engagement Process" from June to October 2007. The focus of the exercise is to gather the public's views on the following three selected topics –

(a) high air pollution days;

(b) road pricing; and

(c) demand side management.

3. The Council released its report in February 2008 and put forward a list of recommendations to improve air quality. The recommendations touch upon a wide range of issues, including adoption of roadside air pollution measurements as the target for improvement, adoption of a colour-coded system to denote high air pollution days and disseminate information to the public to enable them to take appropriate actions to reduce emissions from the transport and industrial sectors, measures to promote demand side management to reduce energy consumption, enactment of legislation to reduce emissions of volatile organic compound (VOC), pursuit of dialogue with the Guangdong authorities to tackle cross-boundary emissions as well as research on air pollution and its health implications.

Government's Response

4. The Government is thankful to the Council for conducting the public engagement process and putting together this detailed report. The Council's analysis and recommendations will serve as useful references for the formulation of further measures to improve Hong Kong's air quality. Indeed,

the Government has already taken on board many of the Council's recommendations. Our response to each of the Council's recommendations is at **Annex A**. Some salient points are highlighted below.

Latest Progress in Improving Hong Kong's Air Quality

5. The Government fully agrees with the Council that Hong Kong must clean up its air. Since the 1990s, we have been implementing a wide range of measures to reduce emissions from different local sources, especially the power sector[1] and the road transport sector[2].

6. At the same time, we have been closely cooperating with the Mainland authorities to tackle the regional air quality and smog problem. Most notably, we reached a consensus with the Guangdong Provincial Government in April 2002 to reduce the emissions of four major air pollutants, namely sulphur dioxide (SO_2), nitrogen oxides (NOx), respirable suspended particulates (RSP) and VOC by 40%, 20%, 55% and 55% respectively in the Pearl River Delta (PRD) Region by 2010, using 1997 as the base year. With this consensus forming the cornerstone of our collaboration, the two sides have taken a holistic approach to draw up the PRD Regional Air Quality Management Plan (the Management Plan) which sets out a host of comprehensive measures to achieve the 2010 emission reduction targets. **Annex B** provides further details on the major on-going initiatives to improve regional air quality.

7. Our efforts in improving the air quality have yielded some positive results –

(a) over the period of 1990 to 2006, the emission levels of SO_2, NOx, RSP and VOC in Hong Kong have significantly dropped by 32% to 53% (**Table 1**); and

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[1] To reduce emissions from public electricity generation, which is the largest local emission source, we have banned all new coal-fired power plants and required all new generating units to be powered by natural gas since 1997. We have also imposed emission caps on all power plants since 2005 and are progressively tightening them during licence renewals. Earlier this year, we have secured the passage of an amendment bill to stipulate the emission caps for 2010 and beyond in the law, and allow local power plants to engage in emission trading as an alternative means for meeting the emission caps. Other major initiatives are listed in paragraph 19 below.

[2] Vehicle emissions are the major source of roadside air pollution, although roadside air quality is also affected by regional background air pollution. To reduce emissions from road transport, we have adopted the most stringent emission standards for vehicles and fuels, in tandem with the European Union (EU), and mandated all pre-Euro diesel vehicles to be retrofitted with particulate traps or catalytic converters by April 2007. In addition, we have launched a number of incentive schemes to encourage a wider use of cleaner vehicles and fuels. These include incentive schemes to encourage the early replacement of diesel taxis and light buses with those running on liquefied petroleum gas (LPG), a $3.2 billion one-off grant scheme to encourage owners to replace their pre-Euro and Euro I diesel commercial vehicles with Euro IV models, reducing in First Registration Tax to encourage the use of more environment-friendly private and commercial vehicles, and waiving the duty on Euro V diesel, which has virtually no sulphur. Other major initiatives are listed in paragraphs 16 to 18 below.

(b) over the period of 1999 to 2006, the emission levels of SO_2, NOx and RSP from road transport sources have dropped by 21 to 63%, leading to a reduction of 13% to 30% in the levels of SO_2, NOx and RSP concentration recorded at the roadside (**Table 2**)[3].

Table 1: Changes in Emission Levels during 1990 to 2006

Pollutant	Change in Emission Level during 1990 to 2006		
	1990 (Tonnes)	2006 (Tonnes)	% Change
SO_2	138 000	73 900	-46%
NOx	188 000	94 800	-50%
RSP	12 500	5 860	-53%
VOC	61 000	41 200	-32%

Table 2: Changes in Roadside Pollutant Levels during 1999 to 2006

Pollutant	Change in Roadside Pollutant Level during 1999 to 2006		
	1999 (Microgramme per Cubic Metre)	2006 (Microgramme per Cubic Metre)	% Change
SO_2	27	19	-30%
NOx	452	364	-19%
RSP	91	79	-13%

Review of Air Quality Objectives (AQOs)

8. The Government shares the view of the Council that a comprehensive and integrated approach is required to further improve Hong Kong's air quality. In particular, it is necessary to review our AQOs in light of the latest air quality standards adopted by other jurisdictions, including the new Air Quality Guidelines (AQGs) released by the World Health Organization (WHO), as well as the new scientific evidence and data on the health effects of air pollution. To this end and for the development of a long-term air quality management strategy, we have commissioned a consultancy study in June 2007 to recommend a set of new AQOs that will help protect the health of the public from the effect of air pollution. The study will look into whether it is necessary to have different objectives for roadside air quality. It will also help to develop a long term air quality management strategy to achieve the proposed AQOs.

[3] Roadside data are only available from 1999 onwards after we set up the Causeway Bay and Central roadside monitoring stations.

9. While the study, which will make reference to WHO's AQGs, is still underway and would not be completed until the end of this year, the initial findings of the study have pointed to the need for Hong Kong to tighten its AQOs. We have specifically asked the consultant to look into the Council's recommendations in developing proposals for delivering the new AQOs.

High Air Pollution Days

10. The Council recommends that in addition to revising Hong Kong's AQOs, the Government should adopt roadside air pollution measurements as the target for improvement. The Government's strategy has been geared towards reducing emissions at source to improve both ambient and roadside air quality. Setting emission reduction targets for key air pollutants is an internationally adopted approach in air quality management. Achieving these targets will certainly have positive impact on roadside air pollution measurements. As part of the AQOs Review, we have asked the consultant to study whether the future AQOs should make separate provisions for assessing ambient and roadside air quality.

11. The Council also recommends the Government to adopt a colour-coded system to denote high air pollution days. It should also disseminate information to the public in a timely manner, discourage activities that generate air pollutants and advise organizers to postpone outdoor activities involving schools and vulnerable groups on such days.

12. To monitor Hong Kong's air quality and release timely information to the public, we have been operating the Air Quality Monitoring Network since the 1980s and the Air Pollution Index (API) System since 1995. Under the current system –

(a) complex air quality data are translated into a simple index and a color code which could be better understood by members of the community (**Annex C**);

(b) the latest API and API forecast for the next 24 hours are publicly announced on a hourly basis; and

(c) advice on health aspects will also be provided to the public on high API days.

13. We accept that the current system should have scope for further improvement. We have therefore engaged a team of leading academics from local tertiary institutes to review the API System. The objective is to develop a new health-based API System which will provide timely advice to the community on the effect of air pollution on public health. We expect to

complete the review by the end of this year. Subject to the recommendations, we would then revise the API System and look into what activities should be avoided on high air pollution days.

Road Pricing

14. The Council recommends the Government to implement road pricing in congested areas, together with other transport related strategies, to improve roadside air quality.

15. As the Council points out, road pricing by itself will not combat roadside air pollution. The initial findings of the AQOs Review have reconfirmed that road pricing would have positive impact on roadside air quality at the locality where it is in place. However, it may divert traffic to other areas and may not be effective in bringing overall improvement to ambient air quality. The preliminary finding of the AQOs Review is that it is difficult to justify the introduction of road pricing on pure environmental grounds. Whether or not road pricing should be introduced in Hong Kong would mainly need to be considered from the perspective of traffic management. In this connection, the availability of alternative routes with adequate capacity to divert traffic from the charging zone would be a key to effective implementation of a road pricing scheme. Nevertheless, in case road pricing is to be pursued to serve its principal objective, which is to relieve traffic congestion, the potential environmental benefits would add to the arguments for its implementation. Government will continue to keep the case for introducing road pricing under review.

16. The Council further recommends imposing selective vehicle restrictions on high air pollution days. We are studying the feasibility of setting up a pilot "low emission zone" in an area with high traffic flow to restrict the entry of pre-Euro and Euro I franchised buses into the zone. The objectives are to evaluate the practicability of introducing "low emission zone" in Hong Kong, its effectiveness in improving roadside air quality, its impact on the overall road traffic network, public transport services and passengers, as well as the level of public acceptance.

17. Meanwhile, we are continuing to direct our efforts to reduce vehicular emissions at source. Taking account of the Council's recommendations, we are taking actions to –

(a) review the effectiveness of the current one-off grant scheme in encouraging vehicle owners to replace their pre-Euro and Euro I diesel commercial vehicles with new ones meeting the prevailing statutory vehicle emission standards. Meanwhile, we have extended the application period for pre-Euro diesel commercial

vehicles from end September 2008 to end March 2010 (that is, the deadline with be the same as that for Euro I diesel commercial vehicles). We will also consider other measures, such as raising the vehicle licence fees of old vehicles upon the expiry of the extended deadline, to provide an added impetus to vehicle owners to replace their old vehicles with cleaner ones;

(b) look into possible ways that may facilitate franchised bus companies to replace their older buses earlier and deploy more cleaner buses to busy urban corridors;

(c) explore cleaner fuel options for vehicles. Regarding the suggestion to switch diesel light vans and light goods vehicles into using LPG, the Government already commissioned a consultancy study to look into this possibility in 2001. The study concluded that Hong Kong's LPG infrastructure had to be significantly expanded in order to provide adequate LPG supply to cover vehicles other than taxis and light buses. Due to the dense population in our urban area, it is not easy to find suitable sites to construct additional LPG filling facilities while meeting the safety requirements. Nevertheless, in order to expand the LPG infrastructure, we have introduced a standing policy to include LPG filling facility requirement in new land sale plans or renewal of petrol filling stations, subject to safety requirements being met. We would keep this option under review in the light of the progress in our efforts to expand the LPG infrastructure;

(d) provide pedestrianized zones and implement traffic calming measures (such as reducing the width of carriageways to provide wider footpaths for pedestrians and installing speed tables to raise the level of carriageways to reduce vehicular speed) in busy districts whenever feasible. Since March 2000, the Government has already implemented pedestrianization schemes in over 35 streets and completed traffic calming measures in seven districts;

(e) continue to rationalize the franchised bus network to reduce the number of buses, bus trips and bus stoppings, whenever feasible. Indeed, from 1999 to 2007, we have already withdrawn a total of 109 franchised buses from the roads[4], and reduced some 5 700 bus trips per day and 4 800 bus stoppings per peak hour at busy corridors; and

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4 The total number of franchised buses in 1999 and 2007 were 5 998 and 5 889 respectively.

(f) continue to collaborate with the Guangdong Provincial Government to narrow the difference in the motor fuel standards between Hong Kong and the PRD Region so as to minimize the impact of cross-boundary emissions caused by vehicles using Mainland fuel. Guangdong has been progressively supplying the National III motor fuels (which are on a par with the Euro III fuels) to the PRD Region since January this year, and will expand the supply network to cover all cities in the region by the year end. It is also examining the possibility of advancing introduction of the National IV motor fuels by 2010.

18. Apart from the above, we are also working on –

(a) banning idling vehicles with running engines. After completion of the public consultation on the proposal in March this year, we are considering all the views received for working out a final proposal for submission to the Legislative Council (LegCo) by the year end. Our target is to implement the ban in 2009;

(b) further strengthening the control of emissions from petrol and LPG vehicles, including the use of roadside remote sensing equipment and dynamometers for emission testing. Our plan is to consult the stakeholders later this year;

(c) further tightening the statutory specifications of motor vehicle diesel and unleaded petrol to the Euro V standards in 2009; and

(d) promoting development of the biodiesel market by spelling out the specifications for pure biodiesel and biodiesel blended with motor vehicle diesel in the law so as to ensure fuel quality, boost users' confidence and help control its impact on the environment. We are conducting a consultation for preparing the enabling legislation for implementation in 2009.

Demand Side Management

19. The Council recommends the Government to embed demand side management practices in the community so as to reduce energy consumption. We fully agree with the Council that reducing energy consumption and promoting energy efficiency are effective means to slash emissions. In this respect, apart from organizing publicity and promotional activities on a continuous basis to raise the public's awareness about energy efficiency and conservation, we have taken a host of measures to promote demand side management. These include –

(a) providing incentives for the power companies to improve their environmental performance. Under the new post-2008 Scheme of Control Agreements (SCAs), the permitted rate of return of the power companies will be linked to their environmental performance. It also provides financial incentives to encourage the power companies to adopt more usage of renewable energy and perform energy audits for their customers. Furthermore, the power companies have agreed to set up a loan fund to provide loans to non-Government customers to implement energy saving initiatives identified in the energy audits, plus an education fund for energy efficiency and promotional activities;

(b) introducing a mandatory Energy Efficiency Labelling Scheme (EELS) to encourage the use of energy-efficient products. The initial phase of this scheme covers three types of products, namely room air conditioners, refrigerating appliances and compact fluorescent lamps. We will start to plan for the coverage of the second phase of the scheme later this year;

(c) consulting the public on the proposal to introduce mandatory implementation of the Building Energy Codes for certain new and existing buildings so as to improve their energy efficiency. We have just completed the consultation. The vast majority of the views received support the proposal and we are now preparing the enabling legislation with a view to introducing it into the LegCo in 2009; and

(d) leading by example through reducing electricity consumption within Government (our total normalized electricity consumption in 2006/07 has reduced by about 7% as compared with 2002/03).

Other recommendations

20. The Government agrees with the Council that we must also further control emissions from other sources –

(a) regarding the other transport systems, we share the Council's views that it is crucial to tackle emissions from the marine sector. Indeed, Hong Kong has been fulfilling its obligations under the relevant international convention which regulates the emissions of harmful substances and the quality of fuel oil used on board and shipboard incineration. The Government has also taken the lead to use ultra-low sulphur diesel (ULSD) in all of its vessels since 2001. We have set up an inter-departmental working group to

examine ways to reduce emissions from the marine sector, including formulating a proposal for a trial to test the technical feasibility of fuelling our domestic ferries by ULSD. Subject to the outcome of the trial, we would draw up a scheme to encourage ferry operators to switch to using this cleaner fuel;

(b) to reduce VOC emissions, we have been enforcing a new legislation since April 2007 to impose statutory limits on the VOC contents of architectural paints, printing inks and six broad categories of specified consumer products. We plan to extend the regulation to other products, including non-architectural coatings, adhesives and sealants. We are consulting the stakeholders on the proposal with a view to introducing further control by 2010;

(c) to cut emissions from commercial and industrial processes, we have mandated the use of ULSD starting from October this year, making Hong Kong one of the very few places in the world which require the use of ULSD across all industrial and commercial processes; and

(d) to further control cross-boundary air pollution, we will continue to collaborate with Guangdong in implementing the additional measures recommended in the Mid-term Review Report of the Management Plan. The two governments will also initiate discussions about the post-2010 emission reduction arrangements, including the future emission reduction targets.

21. The memorandum of understanding (MoU) signed between the National Energy Administration and the Hong Kong SAR Government in August this year provides a guarantee on the continuous supply of nuclear electricity and natural gas to Hong Kong in the coming two decades. Under the MoU, the future level of gas supply to Hong Kong will be over and above the current level. Hong Kong can benefit from improved air quality by increasing the use of clean energy and reducing the emission of power plants.

22. At the same time, we must keep enhancing our understanding about the implications of air pollution on the health of the community. Over the past ten years, we commissioned eight studies on the health impact of air pollution, the majority of which were conducted by renowned experts from local tertiary institutes. We will continue to commission medical professionals to carry out relevant health studies whenever necessary and release the findings to the public. In addition, the risk posed by air pollution on human health will form an important basis for reviewing the AQOs and API System.

23. Last but not the least, the AQOs Review will recommend a comprehensive air quality management strategy for achieving the new AQOs. The strategy will cover, apart from the abatement measures set out above, how the emissions from the local power plants, which are the largest emitter of air pollutants in Hong Kong, could be further reduced. Specifically, it will look into the costs/benefits and feasibility of adjusting the fuel mix in favour of the use of cleaner fuels (such as liquefied natural gas) for power generation. We expect to complete this extensive exercise by the end of this year, and then launch a public engagement process within 2009 so as to finalize the actions required for achieving the new AQOs and the long-term air quality management strategy.

Conclusion

24. The Government welcomes and shares the overall assessment of the Council that a holistic and comprehensive approach is required to combat air pollution. We are committed to putting Hong Kong on a path towards achieving the 2010 emission reduction targets agreed with the Guangdong Provincial Government. But then we also fully recognize the need to take further steps to clean our air beyond the 2010 targets. The AQOs Review aims just to do that. It will not only seek to recommend a set of new AQOs for Hong Kong but also a comprehensive air quality management strategy required for achieving the new AQOs. The Review, which is expected to complete by the end of this year, will take into account the Council's recommendations in formulating the air quality management strategy. There are huge challenges ahead if we are to meet the new AQOs in the future. We trust that with the concerted efforts of all members of the community, including those of the Council, we would be able to rise up to these challenges.

Environment Bureau
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