

COUNCIL FOR SUSTAINABLE DEVELOPMENT

Review of Air Quality Objectives

PURPOSE

This paper informs Members of the proposals to update the Air Quality Objectives (the AQOs) and the proposed emission control measures for attaining the proposed AQOs, for which a public consultation is being conducted from 23 July 2009 to 30 November 2009 based on the consultation document at **Annex A**.

BACKGROUND

Existing AQOs

2. In Hong Kong, the AQOs are set out in a Technical Memorandum issued under section 7 of the Air Pollution Control Ordinance (APCO) (Chapter 311) for promoting the conservation and the best use of air in the public interest. The APCO also requires the Authority (i.e. the Director of Environmental Protection) to aim to achieve the AQOs as soon as is reasonably practicable and thereafter to maintain the quality so achieved. The AQOs stipulate concentration targets for selected air pollutants, which serve as the references to the Authority in deciding on the levels of emissions permitted for specified process licences granted under the APCO and assessing whether the air quality impact of designated projects is acceptable for approval under the Environmental Impact Assessment Ordinance (EIAO) (Chapter 499). The AQOs also provide the key references for determining the Air Pollution Index.

3. The current AQOs, which cover seven major air pollutants, were established in 1987 without any update thereafter. In recent years, the World Health Organisation (WHO) and a number of overseas countries/economies such as the United States, the European Union and Australia have updated their air quality guidelines or standards in the light of new scientific evidence and data on health effects of air pollution. **Annex B** gives a comparison between Hong Kong's existing AQOs, the air quality standards being adopted by

advanced countries and the latest Air Quality Guidelines (AQGs) issued by WHO. Our AQOs are lagging behind those being pursued by the more developed countries in at least two aspects –

- (a) we allow for much higher concentration levels of key pollutants; and
- (b) we do not provide for the assessment of fine particulate matters (PM_{2.5}) which has been scientifically proven to have greater adverse impact on human health than respirable suspended particulates (PM₁₀).

THE PROPOSAL

4. In response to the release of the WHO AQGs and strong public demand to review the appropriateness of the current AQOs, we commissioned a consultancy study in June 2007 to recommend a new set of AQOs for Hong Kong and an air quality management strategy to achieve the new AQOs. The Final Report of the Study is now available at the Environmental Protection Department's website [www.epd.gov.hk].

5. In light of the objectives of the WHO AQGs and the practices of other advanced countries/economies in revising their air quality standards, we propose to apply the following guiding principles in setting the new AQOs –

- Protection of public health
- Benchmarking against WHO Guidelines
- A staged approach for updating the AQOs

6. Taking into account these principles, the air quality standards being pursued in other countries and the local situations, the Review of AQOs (the Review) recommends that –

- (a) the WHO AQGs should be deemed as a long-term policy goal, the pursuit of which will be considered with reference to the international practices, the latest technological developments and local circumstances;
- (b) a progressive, forward-looking approach with an explicit reference to protection of public health as a key parameter on the one hand, and to be commensurate with social and economic development as other important parameters on the other, should be adopted in revising the AQOs;

- (c) as the first step, the AQOs should be updated with reference to the WHO AQGs and Interim Targets (ITs). Specifically, the proposed new AQOs are as follows –
- (i) adopting the concentration targets set out under WHO AQGs for sulphur dioxide (SO₂; 10-minute), nitrogen dioxide (NO₂; 1-hour and annual); carbon monoxide (CO; 1-hour and 8-hour) and lead (Pb; annual);
 - (ii) adopting the concentration targets set out under WHO IT2 for PM₁₀ (24-hour and annual); and
 - (iii) adopting the concentration targets set out under WHO IT1 for SO₂ (24-hour) and PM 2.5 (24-hour and annual), and the IT for ozone (8-hour).

A comparison of the proposed new AQOs with WHO AQGs, our current AQOs and those of other international cities is at **Annex C**.

7. The Review recommends the proposed emission control measures at **Annex D** be taken forward for further consideration. To attain the proposed new AQOs, the Review has identified under the Phase I stage a host of 19 emission control measures which can be grouped into four main categories. The first category is emission capping and control, notably increasing the ratio of natural gas in local electricity generation to 50% and early retirement of aged and heavily polluting vehicles. The second category comprises transport management measures such as the establishment of low emission zones and bus route rationalization. The third category is related to infrastructure development and planning, such as expanding rail network to reduce the use of vehicles. The fourth category includes energy efficiency enhancement measures, such as mandatory implementation of Building Energy Codes. These proposed Phase I control measures are considered technically feasible and more ready for implementation over the short to medium term.

8. As the Guangdong side continues to align itself with the best practices in the world to curb emissions in tandem with its economic growth, the consultant's modelling results show that implementation of the proposed Phase I control measures could help deliver the proposed new AQOs with allowance of certain exceedences in line with international practices.

9. To deliver progressively the long-term target of achieving the ultimate WHO AQGs, the Review recommends establishing a review mechanism for

updating the AQOs in no less than five years so as to ascertain the extent to which the new AQOs have been achieved, as well as the need and practicality of further tightening the AQOs.

COSTS AND BENEFITS

10. In the study, the consultant has undertaken a cost-benefit analysis to provide an indication of the relative cost effectiveness of the proposed emission control measures. As the proposed measures are at a conceptual stage, the estimates on costs and benefits are subject to a great deal of uncertainties and variations depending on the timing and details of implementation. According to the estimates of the consultant, implementation of the proposed Phase I emission control measures would bring about an anticipated benefit of \$1,228 million per year mainly due to improvement of public health and savings in energy costs, which are significantly higher than the estimated annualized cost of about \$596 million to be incurred by the society. The consultant also estimates that some 4,200 hospital admissions would be avoided. The average life expectancy of the population would be increased by about one month or around 7,400 life years saved per year. Findings of the cost-benefit analysis however should not be taken as the only criterion for consideration of the priority of the proposed emission control measures as other factors such as emission reduction potential, acceptance by the stakeholders are relevant considerations as well.

PUBLIC CONSULTATION

11. We are now conducting a full-scale public consultation exercise from 23 July 2009 to 30 November 2009 to ascertain the public's acceptance of the recommendations of the Review and the associated implications. In the course of the consultation, we will solicit the views of the community via a public forum and meetings with the stakeholders, industry and business groups, professional bodies, political parties and the District Councils. Early implementation of the proposed air quality improvement measures would bring us closer to the proposed new AQOs and deliver cleaner air. On the other hand, the proposed emission control measures involve various degree of complexity, and their implementation is subject to the extent of support of the stakeholders. During the consultation period, the public would be asked to express their views on the pace of taking the proposed measures to implementation in order to deliver improvements in air quality and the price they are willing to pay for the measures including the higher electricity tariff, bus fares as well as adjustments in the way of life.

ADVICE SOUGHT

12. Members are invited to offer their views on the proposals of the Review in the public consultation document at **Annex A**.

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