



33/F, Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong
香港灣仔告士打道 5 號稅務大樓 33 樓

ACE Paper 1/2020
For discussion on 6 January 2020

Proposal for Updating the Air Quality Objectives

PURPOSE

This paper reports on the key findings of the public consultation on the review of the Air Quality Objectives (AQOs) and seeks Members' views on the final recommendations and way forward to update the AQOs.

BACKGROUND

2. Hong Kong's prevailing AQOs cover 12 objectives for seven key air pollutants according to different averaging times. Among the 12 AQOs, six of them have already adopted the ultimate targets of the World Health Organisation (WHO) Air Quality Guidelines (AQGs).

3. In pursuant to section 7A of the Air Pollution Control Ordinance (Cap 311) (APCO), we completed a review of the AQOs and submitted a report (via ACE Paper 1/2019) to this Council in February 2019. We briefed Members on the review findings and our recommendations in March 2019. Members generally supported the findings and the proposed tightening of the AQOs of sulphur dioxide (SO₂) and fine particulate matters (FSP or PM_{2.5}), as set out below:

- (a) the 24-hour AQO of SO₂ be tightened from Interim Target-1 (IT-1) level (125µg/m³) of the WHO AQGs to Interim Target-2 (IT-2) level (50µg/m³) with the current number of exceedance allowed (three) remains unchanged;
- (b) the annual AQO of FSP/PM_{2.5} be tightened from IT-1 (35µg/m³) to IT-2 (25µg/m³); and
- (c) the 24-hour AQO of FSP/PM_{2.5} be tightened from IT-1 (75µg/m³) to IT-2 (50µg/m³) with the number of exceedances allowed adjusted from the current nine to 35.

Please also refer to **Annex A** for details.

PUBLIC CONSULTATION

Background

4. A 3-month public consultation was launched between July and October 2019 to solicit public views on the review findings and the proposed tightening of the AQOs set out in paragraph 3 above. To enhance public understanding of the proposal and facilitate the public consultation, we prepared a public consultation document and a leaflet to outline the review process and to highlight the key new air quality improvement measures; findings of air quality assessments; health and economic impact assessment results; and rationales for the proposed tightening of the AQOs. In addition, we set up a dedicated public consultation website (www.aqoreview.hk) and designed a collection form for the public to submit their views online or by email, fax or post (in **Annex B**).

5. The public consultation was publicised through various electronic media including five Chinese and English electronic newspapers, the dedicated public consultation website, the consultation webpages on the Environmental Protection Department (EPD) website and the GovHK portal, as well as the Big Waster pages in social media. Posters were also displayed at some 680 public venues such as sports grounds, public libraries, green facilities (e.g. the visitors' centres of the T·PARK and the Community Green Stations) and public housing estates.

6. During the consultation, we have hosted four consultation forums¹ for stakeholders and the public, and attended four discussion sessions held by professional institutions (the Hong Kong Institution of Engineers and the Hong Kong Institute of Qualified Environmental Professionals), a business chamber (the Hong Kong General Chamber of Commerce) and a concern group. There were about 400 participants.

Major Findings of the Public Consultation

7. We received a total of 282 submissions during the consultation period. Most of the submissions (246 submissions or almost 90%) were made by filling out the EPD's views collection form, while the rest were submitted by separate email, fax or post, etc. About 80% of the submissions were from individuals, about 10% were from organisations including environmental and concern groups, business chambers and political parties, and the remaining submissions had no indication of whether they were from individuals or organisations. Detailed breakdowns of the submissions are shown in **Annex C**.

¹ The stakeholders included environmental groups, professional institutions, commercial and industrial organisations, tertiary institutions, transport trade, political parties, women's and youth groups, think tanks, etc. Legislative Council members, the Heung Yee Kuk and the 18 District Council Secretariats were also separately notified of the public consultation. A total of around 600 invitations were sent.

8. The major views towards the proposed tightening of the AQOs are summarized below.

- (1) Most of the respondents agreed that we should follow the recommendations of the WHO AQGs to continuously explore new air quality improvement measures and strike a balance with the development of society with a view to progressively tightening the AQOs to the ultimate targets of the WHO AQGs;
- (2) The public did not raise any objection to the proposed tightening of the 24-hour AQO of SO₂ and annual AQO of PM_{2.5}; and
- (3) Slightly more than half of the respondents understood or had no comment on the proposed tightening of AQOs (including the 24-hour AQO of PM_{2.5}). There were responses which supported explicitly the adjustment of the number of exceedances allowed to 35, coupled with the tightening of the concentration level of the 24-hour AQO of PM_{2.5}. Also, about one-fourth of the submissions opposed or had reservation to the proposed adjustment of the number of exceedances allowed to 35.

9. Details of the findings and analysis are in **Annex D**.

FINAL RECOMMENDATIONS

10. After considering all the views gathered from the public consultation and our policy direction to continuously explore new air quality improvement measures and strike a balance with the development of society, with a view to progressively tightening the AQOs to the ultimate targets of the WHO AQGs, we recommend to proceed by following the original proposal that we have consulted Members in March 2019.

11. As regards the proposed tightening of the 24-hour AQO of PM_{2.5} and adjusting the number of allowable exceedances to 35, as explained in the last meeting, we have to take into account exceedances due to uncontrollable factors when setting short-term (e.g. 24-hour) AQOs in accordance with the WHO AQGs. As for Hong Kong, uncontrollable factors affecting concentrations of particulate matters (including PM_{2.5}) include unfavourable meteorological conditions or regional air pollution influence. Based on EPD's air quality monitoring data between 2011 and 2017, the ambient air quality monitoring network recorded 17 exceedances under the prevailing 24-hour AQO of PM_{2.5} vis-a-vis 30 exceedances under the recommended new AQO, indicating that the proposed AQO is scientifically more stringent than the prevailing one.

12. We consulted the Panel on Environmental Affairs of the Legislative Council at its meeting on 16 December 2019 on the outcome of the public consultation and our final recommendations to tighten AQOs. A few Legislative Council members

reiterated their dissatisfactions with the setting of the allowable number of exceedances of the 24-hour AQO of PM_{2.5} to 35 and not tightening the AQOs of respirable suspended particulates (RSP or PM₁₀) and ozone in tandem. We reiterated that the 2025 air quality assessment results of the review indicated that there would be no scope for tightening the AQOs of ozone and PM₁₀ to a more stringent level². As for the 24-hour AQO of PM_{2.5}, it would be more pragmatic to tighten the 24-hour AQO of PM_{2.5} to the next WHO IT-2 level by adjusting the allowable exceedances to 35 times rather than maintaining the current AQO (i.e., WHO IT-1 with 9 allowable exceedances) given that the proposed new level is of more stringent standard and tallies with the principle of progressively tightening the AQOs for attaining the AQGs as the ultimate goal. We also explained that under the on-going 5-year review cycle, the Government would embark on the next AQOs review (for the review period 2019-2023) in 2020 to review possible scopes for further tightening the AQOs.

13. Against the above and our objective to protect public health and follow the principle of progressively tightening the AQOs thus improving air quality on a sustainable basis, we recommend to tighten the AQOs in accordance with the review recommendations set out in paragraph 3 (a) – (c) above.

WAY FORWARD

14. Subject to the support of this Council, we are going to introduce an amendment bill to the Legislative Council for the implementation of the new AQOs.

ADVICE SOUGHT

15. Members are invited to comment on the final recommendations of updating the AQOs and the way forward set out in paragraphs 10 to 14 above.

**Environment Bureau /
Environmental Protection Department
December 2019**

² The regional background concentrations of PM₁₀ and ozone are relatively high, the 2025 air quality assessment show that concentrations of these pollutants in most parts of Hong Kong in 2025 will still exceed the next higher WHO IT level.

Annex A

**Hong Kong Air Quality Objectives (AQOs) vs.
World Health Organization (WHO) Air Quality Guidelines (AQGs)**

Pollutants	Averaging Time	WHO AQGs ($\mu\text{g}/\text{m}^3$)				No. of Exceedances Allowed in Hong Kong's Prevailing AQOs	
		IT-1 ^[1]	IT-2 ^[1]	IT-3 ^[1]	Ultimate Target		
Sulphur Dioxide (SO ₂)	10-minute	-	-	-	500	3	
	24-hour	125	<u>50</u>	-	20	3	
Respirable Suspended Particulates (RSP/PM ₁₀)	Annual	70	50	30	20	Not applicable	
	24-hour	150	100	75	50	9	
Fine Suspended Particulates (FSP/PM _{2.5})	Annual	35	<u>25</u>	15	10	Not applicable	
	24-hour	75	<u>50</u>	37.5	25	9	<u>35</u>
Nitrogen Dioxide (NO ₂)	Annual	-	-	-	40	Not applicable	
	1-hour	-	-	-	200	18	
Ozone (O ₃)	8-hour	160	-	-	100	9	
Carbon Monoxide (CO)	1-hour	-	-	-	30,000	0	
	8-hour	-	-	-	10,000	0	
Lead (Pb)	Annual	-	-	-	0.5	Not applicable	

Notes:

[1] IT – WHO's interim targets

xx Prevailing AQOs are indicated in green cells

xx Proposed new AQOs and allowable number of exceedances are indicated in orange cells

**The Review of Air Quality Objectives Public Consultation
Views Collection Form**

AIR QUALITY OBJECTIVES REVIEW - PUBLIC CONSULTATION VIEWS COLLECTION FORM	
Question 1	Hong Kong's air quality has been improving in recent years. Are you aware of the improvements in air quality and visibility?
	<input type="checkbox"/> Aware <input type="checkbox"/> Slightly aware <input type="checkbox"/> Not aware
Question 2	The WHO AQGs recommend governments of different places to continuously explore new air quality improvement measures and balance the development of the society, with a view to progressively tightening the air quality standards to achieve the WHO AQGs levels. Do you agree with this approach?
	<input type="checkbox"/> Agree <input type="checkbox"/> Partly agree <input type="checkbox"/> Not agree
Question 3	What are your views on the proposed tightening of the AQOs for fine suspended particulates (PM_{2.5}) and sulphur dioxide (SO₂) as recommended in this review?
	<input type="checkbox"/> Understood <input type="checkbox"/> No comment <input type="checkbox"/> Others
	Please specify : _____ _____ _____
Question 4	In your opinion, what kind of work should be paid attention to and covered in the next review of the AQOs?
	<input type="checkbox"/> Same as the current review <input type="checkbox"/> No comment <input type="checkbox"/> Others
	Please specify : _____ _____ _____
General Information	This is a <input type="checkbox"/> corporate response (representing the views of a group or an organization) <input type="checkbox"/> individual response (representing the views of an individual) by _____ <div style="text-align: center;">(name of person or organisation)</div> at _____ and _____ <div style="display: flex; justify-content: space-around;"> (telephone) (e-mail) </div>

Note: If space is insufficient, please attach additional sheet(s).

Statistical Analysis of Written Submissions

Table 1 Breakdown of views by submission format

Responses	Format		Total
	Views Collection Form	Other Format	
Individual	211	21	232
Corporate	17	15	32
Others ¹	18	0	18
Total	246	36	282

Note:

1. The submissions did not specify whether the views represented an individual or a corporate.

Table 2 Breakdown of corporate submissions

Group	Number of Submissions
Business Chambers/Business Groups	4
Environmental Groups	5
Concern Groups	5
Political Parties	2
Professional Institutions	3
Educational Institutions	3
Trade (e.g. public utilities, construction industry, marine transportation related industries)	7
Others	3
Total	32

**The Review of Air Quality Objectives
Public Consultation Findings**

Findings of the views collection forms

The views collection form for the public consultation set out four questions. Based on a total of 282 submissions received during the consultation, the views on these questions are analysed as follows.

Question 1: Hong Kong's air quality has been improving in recent years. Are you aware of the improvements in air quality and visibility?

2. Although the ambient and roadside concentrations of PM₁₀, PM_{2.5}, SO₂ and nitrogen dioxide (NO₂) have been significantly reduced by 28% to 54% from 2013 to 2018, among the 246 views collection forms received, slightly less than half of the respondents indicated that they were aware or slightly aware of the improvements in air quality and visibility in recent years. The remainder reported no awareness of such at all. This outcome may be related to the unabated ozone concentration in recent years, which led to the occasional surge of the Air Quality Health Index to high levels, thus giving the public an impression that there has been no improvement in air quality.

Question 2: The WHO AQGs recommend governments of different places to continuously explore new air quality improvement measures and balance the development of the society, with a view to progressively tightening the air quality standards to achieve the WHO AQGs levels. Do you agree with this approach?

3. Among the 246 views collection forms received, near 90% of the responses agreed that the Government should progressively tighten the AQOs to the ultimate targets of the WHO AQGs. Only about 10% of the submissions disagreed with the progressive tightening of the AQOs. A few respondents considered that the Government should implement more measures to improve air quality, with a view to adopting the ultimate targets of the WHO AQGs as our AQOs immediately, or by 2030.

Question 3: What are your views on the proposed tightening of the AQOs for PM_{2.5} and SO₂ as recommended in this review?

4. Among the 246 views collection forms and 36 written submissions, 41% (115 submissions) understood the proposed tightening of the AQOs of PM_{2.5} and SO₂, while 12% (33 submissions) had no comment. The remaining 134 submissions (including 98 views collection forms received and 36 written submissions) offered other views, among which no response indicated any objection to the tightening of the 24-hour AQO of SO₂ and the annual AQO of PM_{2.5}. There were 70 submissions (about one-fourth of the 282 submissions) opposed or had reservation to the proposed tightening of the 24-hour AQO of PM_{2.5} to the Interim Target-2 level of the WHO AQGs while adjusting the number of exceedances allowed to 35. On the other, a few submissions were in support of this proposal. In addition, 48 submissions indicated that the proposed tightening of the AQOs was lax, or the Government should further tighten the AQOs, even to the ultimate targets of the WHO AQGs immediately. There were also views that the AQOs of other pollutants such as PM₁₀ and ozone should be tightened in tandem.

Question 4: In your opinion, what kind of work should be paid attention to and covered in the next review of the AQOs?

5. Among the 246 views collection forms, 33% (82 submissions) agreed that the Government should adopt the same approach in the next review, 13% (33 submissions) had no comment on the approach, and the remaining 131 submissions (53%), as well as the 36 written submissions had other views. Such views touched upon various areas and the common views are list below:

- The Government should accord priority to the protection of public health in updating the AQOs, instead of the practicability of implementing air quality improvement measures;
- Implementation of air quality improvement measures should base on cost effectiveness instead of merely practicability;
- The Government shall set a roadmap to attain the ultimate targets of the WHO AQGs;
- The composition of the AQOs Review Working Group should be extended to achieve a wider representation from health professions, vulnerable groups, community groups, professional institutions, etc.;
- The Government should set up a standing committee to oversee

the review; and

- The Government should increase the number of engagement/consultation sessions to collect further views from the public and stakeholders.

6. In addition, there were some views about increasing the number of air quality monitoring stations, stepping up public education and publicity on air quality improvement and the effectiveness of air quality improvement measures, as well as tapping opportunities from the Greater Bay Area (GBA) cooperation to tackle regional air pollution, etc. These views were not relevant to the approach of the next review.

Consultation Forums and Discussion Sessions

7. During the consultation, we have hosted four consultation forums for stakeholders and the public, and attended four discussion sessions held by professional institutions, a business chamber and a concern group. The key views are summarized in the ensuing paragraphs.

8. A professional institution and some environmental groups opined that adopting the Pearl River Delta (PRD) emission data of 2020 in the air quality assessment for 2025 had not taken into account the potential air quality improvement brought by the implementation of various emission reduction measures in the PRD region in the next few years. Hence, the air quality assessment for 2025 would be conservative. We explained at the forums and meetings that the 2020 emission projection in the PRD region was the only data confirmed by the Guangdong authority. To keep the credibility of the review, we must use officially confirmed data to assess the changes in air quality in 2025

9. A few environmental groups and concern groups queried whether the proposal of tightening the 24-hour AQO of PM_{2.5} from the present level of 75 µg/m³ to 50 µg/m³ while adjusting the number of exceedances allowed from 9 to 35 was more stringent than the present AQO. We clarified at the meetings that the setting of the number of allowable exceedances for the short-term AQO was based on the scientific air quality assessment results for 2025. To facilitate the public to compare the two AQOs, we quoted the historical air quality monitoring data. Between 2011 and 2017, the ambient air quality monitoring network recorded 17 exceedances under the prevailing 24-hour AQO of PM_{2.5} and 30 exceedances under the recommended new AQO, indicating

that the proposed new AQO is more stringent than the prevailing one.

10. Some participants of the consultation forums expressed concerns about the health impact arising from high NO₂ concentration at the roadside and the increase in ozone level. There were also views that the Government should enhance the PRD regional cooperation, as well as further improve the regional air quality at the GBA level.

11. A concern group raised concerns at different consultation forums about the air quality impact arising from an ongoing road works project with an environmental permit granted under the Environmental Impact Assessment Ordinance by the EPD, and requested the Government to step up air quality monitoring at nearby residential buildings.

-end-