

AIR QUALITY OBJECTIVES (AQO) REVIEW WORKING GROUP
AIR SCIENCE AND HEALTH SUB-GROUP
EMISSION REDUCTION ESTIMATION AND AIR QUALITY MODELING TASK FORCE

Digest of the 1st meeting

held on 21 December 2016 at 10:00 a.m.

in Room 4723, 47/F., Revenue Tower, 5 Gloucester Road, Wanchai

Present:

Mr. MOK Wai-chuen	Assistant Director of Environmental Protection (Air Policy), (EPD)
Mr. Terence TSANG	Principal Environmental Protection Officer (Air Science), EPD
Mr. Dave HO	Principal Environmental Protection Officer (Mobile Source), EPD
Mr. Brian LAU	Principal Environmental Protection Officer (Air Policy), EPD
Mr. Edmund CHAN	Senior Engineer 6, (KLN), CEDD
Dr. Kenneth LEUNG	Senior Environmental Protection Officer (Air Science) 4, EPD
Ms. Josephine HO	Acting Senior Environmental Protection Officer (Air Policy) 1, EPD
Mr. Roy TSANG	Environmental Protection Officer (Air Science) 42, EPD
Dr. Jackie NG	Assistant Environmental Protection Officer (Air Policy) 12, EPD
Mr. Ping KONG	Consultant's representative, AECOM Asia Co. Ltd.
Mr. Karl AN	Consultant's representative, AECOM Asia Co. Ltd.
Prof. Jimmy FUNG	Consultant's representative, HKUST
Dr. Nicky LAM	
Ir LO Pak Cheong	
Mr. LOONG Tsz Wai	

Absent with Apologies:

Prof. WANG Tao
Dr. NING Zhi
Dr. Steve YIM
Prof. Alexis LAU

Purpose of the meeting

The Air Science and Health Sub-group (ASH Sub-group) agreed at its meeting on 9 December 2016 to form this Task Force namely “Emission Reduction Estimation and Air Quality Modelling Task Force” to discuss in details technical issues such as the tools, approaches and assessment methods relating to air dispersion modelling and emission reduction estimation for evaluating the scope of tightening the AQOs afforded by implementing practicable air quality improvement measures identified by the other Sub-groups. The recommendations of this Task Force would be reported to the ASH Sub-group for endorsement.

2. The purpose of this meeting was for Members to agree on the work plan of this Task Force.

Discussions at the meeting

3. **Mr. Dave Ho and Mr. Brian Lau** briefed the Task Force Members on the progress made in the Road Transportation Sub-group, Marine Transportation Sub-group and Energy & Power Generation Sub-group. The **Consultant’s representative** also presented their approach and methodology in quantifying the emission reduction potential for the air quality improvement measures put forward by the other Sub-groups.

4. The Meeting has highlighted the following important points:
 - for measures of which the emission reduction potentials were not quantifiable and/or would have little implication on tightening the AQOs, qualitative analysis would be conducted;
 - secondary impacts or knock-on effects of some of the improvement measures (e.g. use of electric vehicles will reduce roadside emissions but may increase emissions from power plants) should be assessed;
 - the estimated emission reduction potential for measures should be reported back to the ASH Sub-group and the corresponding Sub-groups; and
 - the Consultant should justify the determination of the activity data associated with the emission factors in quantifying pollutant(s) emitted as to facilitate the discussion in the coming Task Force meetings.

Date of the Next Meeting

5. The next meeting would be held in January/early February 2017, subject to the confirmation by the secretariat. The meeting was adjourned at 11:00 am.

AIR QUALITY OBJECTIVES (AQO) REVIEW WORKING GROUP
AIR SCIENCE AND HEALTH SUB-GROUP
EMISSION REDUCTION ESTIMATION AND AIR QUALITY MODELING TASK FORCE

Digest of the 2nd meeting
held on 7 February 2017 at 2:00 p.m.
in Conference Room, 33/F, Revenue Tower, 5 Gloucester Road, Wanchai

Present:

Mr. Terence TSANG	Principal Environmental Protection Officer (Air Science), EPD
Mr. Edmund CHAN	Senior Engineer 6, (KLN), CEDD
Dr. Kenneth LEUNG	Senior Environmental Protection Officer (Air Science) 4, EPD
Ms. Josephine HO	Acting Senior Environmental Protection Officer (Air Policy) 1, EPD
Dr. Jackie NG	Assistant Environmental Protection Officer (Air Policy) 12, EPD
Ms Queenie CHAU	Assistant Environmental Protection Officer (Air Policy) 14, EPD
Mr. Freeman CHEUNG	Consultant's representative, AECOM Asia Co. Ltd.
Mr. Karl AN	Consultant's representative, AECOM Asia Co. Ltd.
Prof. Jimmy FUNG	Consultant's representative, HKUST
Dr. Jimmy CHAN	Consultant's representative, HKUST
Dr. YAO Teng	Consultant's representative, HKUST
Ms. HUANG Yeqi	Consultant's representative, HKUST
Ms. ZHANG Yiqi	Consultant's representative, HKUST
Dr. Nicky LAM	
Ir LO Pak Cheong	
Mr. LOONG Tsz Wai	
Prof. WANG Tao	
Dr. NING Zhi	
Dr. Steve YIM	
Prof. Alexis LAU	

Discussions at the meeting

Agenda 1 - The control measures discussed/confirmed by other subgroups

The Consultant's representative briefed Members on the list of proposed measures put forward by other Sub-groups. The emission reduction potential of the “short-term”, “medium-term” and “long-term” measures would be estimated. The Consultant expressed that the reduction potential of most of the measures could be quantified except *Measure II-A-1 Review the tunnel toll policy and level (due to lack of information on the detailed arrangements and traffic distribution)*, *Measures II-B-4 Establish a maintenance information database of vehicle tailpipe emission system & II-B-5 Raise awareness on the importance of vehicle maintenance and repair (both due to uncertainties for quantifying the expected benefits)* which are proposed by Road Transportation sub-group. Consultant would like to seek Members' view on whether these three measures should be analyzed qualitatively.

2. Members had the following views and suggestions:

- the emission reduction potential of Measure A1 would be quantified provided that the traffic distribution data after toll adjustment could be made available to the Consultant within the coming two to three months;
- the emission reduction potential of Measures B4 & B5 should be quantified as to educate public the importance of vehicle maintenance;
- addition to the tailpipe exhausts, evaporative emission (e.g. VOC) should also be considered in the identification of air improvement measures and the associated emission reduction;
- a database should be set up for the inspection results of the commercial vehicles; and
- the usage of lower Sulphur content fuel might increase the marine fuel consumption and which should be taken into consideration in assessing the emission reduction potential.

3. In response to Members' comments, the Administration would look into the marine fuel consumption profile of the vessels which switch to use cleaner content fuel. The Administration reiterated that secondary impacts of the improvement measures (e.g. use of onshore power supply for local vessels would reduce marine emissions but might increase emissions from power plants) should be assessed to provide a complete analysis in current AQO review.

Agenda 2 - The approach and information required for quantifying the potential control measures

4. **The Consultant's representative** presented the proposed methodology of adopting Automatic Identification System (AIS) approach to estimate the spatial distribution of marine emission and demonstrated the steps of emission reduction quantification for ***Measure I-A-4 Ocean-going vessels (OGVs) at berth to use marine diesel with lower fuel sulphur content, e.g. not exceeding 0.1% and Measure I-A-5 Local vessels to use electricity from the power grid while at berth*** which were proposed by Marine Transportation Sub-group.

5. The Administration noted Member's suggestion on verifying the AIS data with the radar data obtained from Marine Department

Agenda 3 - Air quality modelling methodology

6. Consultant presented the proposed methodology for air quality modelling and the adopted base year (2015) emission inventory dataset.

7. The Meeting had the following views:

- agreed with Consultants' proposal on adopting 2015 emission inventory of Hong Kong, Pearl River Delta region and outside Pearl River Delta region; and
- updates would be made for the emission inventory of Pearl Delta River region (PRD) provided by Prof. Allen Zhang of The South China University of Technology based on the new emission reduction targets for 2020 which would be announced in the first quarter of 2017.

Date of the Next Meeting

8. The next meeting would be held in late March 2017, subject to the confirmation by the secretariat. The meeting was adjourned at 3:30 pm.

AIR QUALITY OBJECTIVES (AQO) REVIEW WORKING GROUP
AIR SCIENCE AND HEALTH SUB-GROUP
HEALTH & ECONOMIC IMPACT ASSESSMENT TASK FORCE

Digest of the 1st meeting

held on 23 December 2016 at 3:30 p.m.

in Room 4723, 47/F., Revenue Tower, 5 Gloucester Road, Wanchai

Present:

Mr. MOK Wai-chuen	Assistant Director of Environmental Protection (Air Policy), (EPD)
Mr. Terence TSANG	Principal Environmental Protection Officer (Air Science), EPD
Dr. Eddy NG	Principal Medical & Health Officer (Non-Communicable Disease)
Mr. NG Kai-wing	Senior Environmental Protection Officer (Air Science) 2, EPD
Dr. Kenneth LEUNG	Senior Environmental Protection Officer (Air Science) 4, EPD
Ms. Josephine HO	Acting Senior Environmental Protection Officer (Air Policy) 1, EPD
Mr. Roy TSANG	Environmental Protection Officer (Air Science) 42, EPD
Ms. Queenie CHAU	Assistant Environmental Protection Officer (Air Policy) 14, EPD
Mr. Freeman CHEUNG	Consultant's representative, AECOM Asia Co. Ltd.
Mr. Ping KONG	Consultant's representative, AECOM Asia Co. Ltd.
Mr. Karl AN	Consultant's representative, AECOM Asia Co. Ltd.
Prof. TW WONG	Consultant's representative, CUHK
Prof. WANG Tao	Task force member
Dr. Nicky LAM	Task force member
Ir LO Pak Cheong	Task force member
Mr. LOONG Tsz Wai	Task force member
Dr. Loletta SO	Task force member
Dr. Roland LEUNG	Task force member
Prof. TIAN Linwei	Task force member

Absent with Apologies:

Prof. Peter BRIMBLECOMBE	Task force member
Prof. Alexis LAU	Task force member

Purpose of the meeting

The Air Science and Health Sub-group (ASH Sub-group) agreed at its meeting on 9 December 2016 to form this Task Force namely “Health & Economic Impact Assessment Task Force” to discuss technical issues such as the tools, approaches and assessment methods for estimating the health and economic benefits of implementing air quality improvement measures identified by the other Sub-groups. The recommendations of this Task Force would be reported to the ASH Sub-group for endorsement.

6. The purpose of this meeting was for Members to agree on the scope of work of this Task Force and the approach for the HEIA.

Discussions at the meeting

7. The Administration briefed Members about episode of high particulate matters (PM) and ozone (O₃) levels in Hong Kong in 2015.

8. The Consultant’s representative presented their proposed approach and methodology for the HEIA of this AQO review.

9. The Meeting has highlighted the following important points:

- (a) the HEIA in this AQO review should make reference to the assessment tool developed under the study “Developing an Instrument for Assessing the Health and Economic Impacts of Air Pollution in Hong Kong” conducted by CUHK for EPD with refinements on the subject air pollutants, health data and other parameters (as necessary) for estimating the health and economic benefits of implementing various air pollution control measures, using the best available health and air pollution data;
- (b) the scientific principle, international practices, local characteristics, interaction and correlation among different air pollutants as well as the relative uncertainties should be taken into consideration in deciding the concerned parameters and assessment approach;
- (c) for public interest, asthma and chronic obstructive pulmonary diseases (COPD) should be singled out from the respiratory disease, as far as the relevant health data and required level of details are available, for separately quantifying the associated morbidities attributable to air

pollution;

- (d) the short-term impact of O3 on mortality and the data required for the analysis were discussed extensively. Consultant would further review the relevant information and propose in the next task force meeting if this would be included in the assessment;
- (e) the assumptions, limitations and uncertainties of the HEIA methodology should be reviewed in further details and be documented in the assessment report; and
- (f) recommendations for enhancing the current data collection systems should be provided with a view to supporting the assessment in future AQO reviews.

10. The Consultant should be responsible for data acquisition, and the Subgroup/Task Force Members from relevant authorities would facilitate the acquisition process.

11. The Consultant should prepare the following items in advance of the next task force meeting for Members' consideration and comment:

- (a) a methodology paper of the HEIA covering the detailed approach and the items as discussed in the Meeting; and
- (b) a list of health data required for conducting the HEIA.

Date of the Next Meeting

12. The next meeting would be held in February 2017, subject to the confirmation of the secretariat. The meeting was adjourned at 5:45 pm.

AIR QUALITY OBJECTIVES (AQO) REVIEW WORKING GROUP
AIR SCIENCE AND HEALTH SUB-GROUP
HEALTH & ECONOMIC IMPACT ASSESSMENT TASK FORCE

Digest of the 2nd meeting
held on 7 February 2017 at 3:30 p.m.
in Conference Room, 33/F, Revenue Tower, 5 Gloucester Road, Wanchai

Present:

Mr. Terence TSANG	Principal Environmental Protection Officer (Air Science), EPD
Mr. Stephen KWOK	Assistant Secretary (Infrastructure Coordination)1, DEVB
Dr. Eddy NG	Principal Medical & Health Officer (Non-Communicable Disease), DoH
Dr. Kenneth LEUNG	Senior Environmental Protection Officer (Air Science) 4, EPD
Ms. Josephine HO	Acting Senior Environmental Protection Officer (Air Policy) 1, EPD
Dr. Jackie NG	Assistant Environmental Protection Officer (Air Policy) 12, EPD
Ms. Queenie CHAU	Assistant Environmental Protection Officer (Air Policy) 14, EPD
Ms. Sammy WONG	Assistant Environmental Protection Officer (Air Science) 23, EPD
Mr. Freeman CHEUNG	Consultant's representative, AECOM Asia Co. Ltd.
Mr. KONG Ping	Consultant's representative, AECOM Asia Co. Ltd.
Prof. TW WONG	Consultant's representative, CUHK
Prof. Jimmy FUNG	Consultant's representative, HKUST
Dr. YAO Teng	Consultant's representative, HKUST
Ms. HUANG Yeqi	Consultant's representative, HKUST
Ms. ZHANG Yiqi	Consultant's representative, HKUST
Dr. Nicky LAM	
Ir LO Pak Cheong	
Mr. LOONG Tsz Wai	
Prof. TIAN Linwei	
Prof. Alexis LAU	

Absent with Apologies:

Prof. Peter BRIMBLECOMBE

Dr. Roland LEUNG

Dr. Loletta SO

Prof. WANG Tao

Discussions at the meeting

Agenda 1 - The approach and methodology for Health and Economic Impact Assessment

Consultant prepared a HEIA the methodology paper to address Members' comments arising from the first Task Force meeting. Members discussed the updated methodology and the following consents have been made:

- the HEIA in this AQO review should make reference to the assessment tool developed under the study “Developing an Instrument for Assessing the Health and Economic Impacts of Air Pollution in Hong Kong” conducted by CUHK for EPD with refinements and best available health and air quality data;
- health and air quality data in 2015 will be adopted as the base year input for the HEIA, and the estimated target years (i.e. 2020 and 2025) air quality from the air quality assessment will be used for evaluating the corresponding health and economic benefits;
- the effects of short-term exposure of O₃ corresponding to daily all-cause mortality will be evaluated;
- the health impact of O₃ should be assessed base on the change of daily maximum 8-hour concentration averaged among all air quality monitoring stations, except roadside and background. The Consultant would also review the needs for estimating the worst scenario, for reference, using one or several monitoring stations with relatively higher O₃ concentration;
- asthma, chronic obstructive pulmonary diseases (COPD), pneumonia and influenza should be singled out from the respiratory disease, as far as the relevant health data and required level of details are available, for separately quantifying the associated morbidities attributable to air pollution;
- the morbidity impact from private hospitals would not be considered as their data and level of details are not comprehensive enough to be used for the health impact assessment; and
- recommendations for enhancing the current health database and recording mechanism should be provided with a view to supporting the assessment in future AQO reviews.

2. Members suggested the Consultant to provide further justifications on the request of proposed health data and the level of details e.g. the proposed age breakdown, necessity of data from 2005 to 2015 etc.) for the analysis in order to streamline the turnaround time for data acquisition process. The consultant was also reminded there will be cost implication and the data should be requested on a need basis in the context of this particular HEIA.

3. Members also agreed that if more time is required to obtain the health data from relevant authorities, HEIA may be extended and served as an Annex of the report for the Air Quality Objective Review.

4. The Consultant would refine the HEIA methodology paper according to the comments received and then circulate to Task Force/Sub-group Members for further review and endorsement.

Date of the Next Meeting

5. The next meeting would be held in June 2017, subject to the confirmation of the secretariat. The meeting was adjourned at 5: 00 pm.