

**For discussion
on 20 February 2017**

**Air Quality Objectives Review Working Group
Air Science and Health Sub-group**

PURPOSE

This paper updates Air Science and Health (ASH) Sub-group Members on the progress and discussions of the (i) Emission Reduction Estimation & Air Quality Modelling and (ii) Health & Economic Impact Assessment Task Forces.

BACKGROUND

2. The ASH Sub-group agreed at the 3rd meeting on 9 December 2016 to form two Task Forces namely “Emission Reduction Estimation & Air Quality Modelling” and “Health & Economic Impact Assessment” to enable more focused and in-depth discussion on the technical issues such as the tools, approach and assessment methods for evaluating the scope of tightening the AQOs. Interested Members of the sub-group were invited to participate in these two task forces. Consents arrived at or recommendations by the Task Forces would be reported back to the ASH Sub-group for steer and endorsement.

PROGRESS

3. Since the formation of the two task forces, the updated list of control measures put forward by other Sub-groups, emission estimation approach, air modelling and health & economic impact assessment methodologies have been discussed, and in-principle consents have been made. The deliberations of the task forces are summarized in the ensuing paragraphs, and the meeting digests are in Annex A.

Emission Reduction Estimation & Air Quality Modelling (EAQ)Task Force

4. The updated list of proposed measures (the List), which put forward and assessed by other Sub-groups, has been reviewed (Annex B). The Task Force agreed the followings:

- the emission reduction potential of the “short-term”, “medium-term” and “long-term” measures should be estimated;
- secondary impacts or knock-on effects of some improvement measures (e.g. use of electric vehicles and on-shore power for local vessels that may increase emissions from power plants) should also be assessed to provide a complete assessment; and
- qualitative analysis would be conducted for measures of which the emission reduction potentials could not be quantified.

5. The Task Force discussed the approach for emission reduction estimation of some measures in the List. The Consultant 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 are proposed by Marine Transportation Sub-group. Suggestions on data verification and the change in fuel consumption profile due to the use of cleaner fuel would be taken into consideration.

6. Measures II-A-1 Review the tunnel toll policy, II-B-4 Establish a maintenance information database of vehicle tailpipe emission system, and II-B-5 Raise awareness on the importance of vehicle maintenance and repair were briefly discussed. It was agreed the emission reduction potential of those measures should be quantified as far as the required data and information could be made available within the timeframe of this assessment. The Consultant should identify the relevant data/information and seek inputs from the relevant sub-groups if necessary.

7. The Task Force agreed the proposed methodology for air quality modelling and the base year (2015) emission inventory dataset for Hong Kong, Pearl River Delta (PRD) region and outside PRD region (Annex C). Estimation would be made for the 2020 emission inventory of PRD region based on the confirmed emission reduction targets of the corresponding year.

8. The Task Force has also recommended some control measures for the measure subgroups' consideration.

Health & Economic Impact Assessment (HEIA) Task Force

9. The HEIA methodology has been discussed in the Task Force meetings, 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) which are in line with 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 based on the change of averaged daily concentration of 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 diseases, 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 in the final report with a view to supporting the assessment in future AQO reviews.

10. The HEIA methodology paper would be refined according to the comments received from Task Force, and then be circulated to Sub-group Members for further review and endorsement.

ADVICE SOUGHT

11. Members are invited to comment on the contents in this paper.

Environment Bureau / Environmental Protection Department
February 2017