

**For discussion
On 19 September 2016**

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

Assessment Methodology

PURPOSE

This paper summarises the assessments in the last Air Quality Objectives (AQO) review, proposes the assessment approach and available assessment tools to be adopted for in this review, and highlights the key items to be discussed and advised by the Air Science and Health (ASH) Sub-group.

ASSESSMENT IN THE LAST REVIEW

2. The last AQO Review was commissioned by the Environmental Protection Department (EPD) in 2007, and after a comprehensive study as well as public consultation, the Administration adopted the current AQO on 1 January 2014. The assessments in the study of last AQO review are summarised in the following paragraphs.

Emission Projection for Hong Kong

3. For achieving the AQO, a list of emission reduction measures had been identified for consideration based on the emission reduction potential, practicability, pollution reduction potential and cost benefit. Those measures were further refined and grouped into three emission scenarios according to the potential implementation time frames corresponding to their practicability, maturity of technologies and readiness of the affected sectors in accepting the proposed measures, etc.

4. In estimating the projected emissions after implementation of the proposed emission reduction measures, reference had been made to

available information on the effectiveness of the various measures, the application experience of other places and the relevant local factors, etc.

Emissions Projection for the Pearl River Delta (PRD) Region

5. The projection of PRD emissions was made with the assumptions that the Guangdong Province would continue to align itself with the best practices in the world to curb emissions from its power, transport and industrial sectors in tandem with its economic growth. The primary references used in this study include the control strategies stated in the Pearl River Delta Environmental Planning Outline (2004-2020) and the National Plans such as “The white paper on PRC energy status and policy”, “Medium and Long Term development of Renewable Energy”, “Pan PRD Energy Co-operation-11th 5-year plan”, “Medium and Long Term development of nuclear Energy 2003 - 2020”, etc.

Air Quality Prediction

6. The Pollutants in the Atmosphere and their Transport over Hong Kong (PATH) model was used to predict the future ambient air quality for the three emission scenarios. The predicted air pollutant concentrations were compared with the proposed AQOs for estimating the level of territory-wide compliance.

Cost Benefit Analysis (CBA)

7. CBA had been conducted to provide a systematic framework for assessing and presenting the territory-wide impacts of the proposed policy interventions in monetary terms. This was to assess whether the society as a whole would secure greater cost savings from air quality improvements than the additional costs that would be imposed by the policy.

8. The benefits of the control strategy were estimated based on the cost savings of a direct nature (principally short and long term health related cost savings, including the reduced costs of illness and reduced premature mortality, and savings in electricity cost) and indirect nature (principally impacts on the productivity of the workforce and costs of maintenance and repair to buildings and structures arising from material

damage caused by the air pollutants, and some lesser items).

PROPOSED ASSESSEMENT METHODOLOGY AND TOOLS FOR THIS REIVEW

9. Assessment methodology applied in the last AQO review is proposed to be adopted in the current review with updated information and assessment tools.

Emission Projection for Hong Kong

10. Emission reduction measures proposed by other sub-groups will be refined and grouped into a manageable number of emission scenarios according to the potential implementation time frames.

Emissions Projection for China and the Pearl River Delta (PRD) Region

11. The projection of China emissions shall consider the emission reduction targets proposed in China's 13th 5-year plan (2016-2020). The projection of PRD emissions shall consider the emission reduction targets proposed by Guangdong Provincial Government's 13th 5-year plan (2016-2020) for environmental protection.

Air Quality Assessment

12. The latest version of PATH model "PATH-2016" released in January 2016 shall be used for simulating ambient air pollutant concentrations and quantifying the changes in pollutant concentrations under different emission scenarios.

Health and Economic Impact Assessment

13. The implementation cost of each proposed emission reduction measure shall be estimated based on available market information. The principal costs to be included will be the costs of introducing and implementing the proposed measure, the cost of the policy instruments that the strategy option for pollution control would generate in Hong Kong society, and any other incidental costs on the society as a consequence of implementation.

14. EPD commissioned the School of Public Health and Primary Care of the Chinese University of Hong Kong (CUHK) to develop a tool for assessing the health and economic impacts of air pollution in Hong Kong using the best available data on air pollution, health statistics, and health care costs. This tool is proposed to be used for the health and economic impact assessment of the present review. The approach/methodology of this tool would be introduced by Prof. T.W. WONG (as representative of CUHK) in the meeting.

ADVICE SOUGHT

15. Members are invited to comment and advice on the following items.

- (a) Emission Scenarios – the number of scenarios to be considered in the review to cover the various implementation time tables of the additional control measures.
- (b) Emission Estimation –the type of information to be provided by other Sub-groups for quantifying emission reduction potential for the proposed additional control measures.
- (c) Assessment Tool –the type of air quality model, and health and economic impact assessment tools to be used in the review.

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