

**Confirmed Minutes of the 217th Meeting of
the Advisory Council on the Environment (ACE)
held on 3 October 2016 at 2:30 pm**

Present:

Prof Paul LAM, SBS, JP (Chairman)
Prof CHAU Kwai-cheong, BBS, JP (Deputy Chairman)
Ir Cary CHAN
Prof FUNG Tung
Dr Billy HAU
Dr HUNG Wing-tat, MH
Dr Michael LAU
Prof Albert LEE
Ir Prof Irene LO
Mr Anthony LOCK
Ir MA Lee-tak, SBS
Miss Yolanda NG, MH
Prof Nora TAM, BBS, JP
Dr Eric TSANG
Prof Jonathan WONG, MH, JP
Mr Luther WONG, JP
Mr Stanley WONG, SBS, JP
Mrs Alice CHEUNG, JP (Secretary)

Absent with Apologies:

Prof John NG
Dr Carrie WILLIS, SBS, JP
Ir Conrad WONG, BBS, JP
Ms Pansy YAU

In Attendance:

Mr Donald TONG	Permanent Secretary for the Environment / Director of Environmental Protection
Mr Wilson CHAN	Assistant Director of Planning / Technical Services, Planning Department (PlanD)
Dr Winnie Kwok	Assistant Director (Conservation) (Acting), Agriculture, Fisheries and Conservation Department (AFCD)
Miss Heidi LIU	Principal Information Officer, Environmental Protection Department (EPD)
Ms Becky LAM	Chief Executive Officer (CBD), EPD

Miss Dora CHU Executive Officer (CBD) 1, EPD
Miss Apple Leung Executive Officer (CBD) 2, EPD
Mr Alan CHUNG Executive Manager (CBD), EPD

In Attendance for Item 3:

Mr WONG Chuen-fai Principal Environmental Protection Officer (Strategic Assessment), EPD

In Attendance for Item 4:

Mr W C MOK Assistant Director (Air Policy), EPD
Mr LAU Man-pang Principal Environmental Protection Officer (Air Policy), EPD

Action

The Chairman welcomed Mr Donald Tong, the new Permanent Secretary for the Environment / Director of Environmental Protection to the meeting. He informed Members that apologies of absence had been received from Prof John Ng, Dr Carrie Willis, Ir Conrad Wong and Ms Pansy Yau.

Item 1 : Confirmation of the draft minutes of the 216th meeting held on 5 September 2016

2. The draft minutes were confirmed subject to the proposed amendments from a Member in paragraph 46 of the draft.

Item 2 : Matters arising

3. Pursuant to the discussion of the item on “Expansion of Hong Kong International Airport into a Three-Runway System - Report on the Effectiveness of SkyPier Plan on Chinese White Dolphins” in the meeting on 5 September 2016, the Airport Authority Hong Kong (AAHK) was requested to provide initial responses to the supplementary information requested by Members by 21 October 2016.

Secretariat

[Post meeting notes: AAHK provided an update on the implementation of the Coral Translocation Plan which was circulated to Members for reference on 5 October 2016.]

Item 3 : Report of the 133rd Environmental Impact Assessment Subcommittee (EIASC) Meeting

(ACE Paper 13/2016)

4. The Chairperson of EIASC reported on the EIA reports that were discussed at the 133rd EIASC meeting on 12 September 2016. Having regard to the findings of the EIA reports, EIASC recommended the full Council to endorse the EIA report on the “Police Facilities in Kong Nga Po” with 4 conditions and 3 recommendations, and the EIA report on the “Elevated Pedestrian Corridor in Yuen Long Town Connecting with Long Ping Station” with 3 recommendations.

5. With no further comments from Members, the Chairman concluded that the meeting agreed to recommend the Director of Environmental Protection (DEP) to endorse the EIA reports with the conditions and recommendations as set out in paragraph 12 of the ACE Paper 13/2016.

Item 4 : Review of the Fifth Technical Memorandum for Allocation of Emission Allowances for Power Plants

(ACE Paper 14/2016)

6. The Chairman informed that the paper sought Members’ views on the proposal to further reduce emission allowances for power plants in 2021 by way of issuing a new Technical Memorandum (TM) under the Air Pollution Control Ordinance (APCO) (Cap. 311). The discussion would be divided into the Presentation cum Question-and-Answer Session and the Internal Discussion Session.

7. A Member declared that he was a member of the Conservancy Association, which had collaborated with the Hongkong Electric Company Limited (HEC) on various projects. Members agreed that the Member could stay on and participate in the discussion.

[The presentation team joined the meeting at this juncture.]

Presentation cum Question-and-Answer Session (Open Session)

8. By way of a powerpoint presentation, Mr W C Mok briefed Members on the legal framework and the best practical means (BPM) adopted in the review of the Fifth TM for allocation of emission allowances for power plants, and sought

Members' support on the proposal to further tighten the emission allowances for the three specified pollutants, i.e. sulphur dioxide (SO₂), nitrogen oxides (NO_x) and respirable suspended particulates (RSP or PM₁₀) by way of issuing a new TM (i.e. the Sixth TM) starting from 1 January 2021 under the APCO.

[A Member joined the meeting at this juncture.]

9. Regarding the Chairman's enquiry on the level of electricity consumption, Mr W C Mok advised that the local electricity demand had been increasing at about 1% per year. Owing to the potential impacts of the "Energy Saving Plan for Hong Kong's Built Environment 2015~2025+" (Energy Saving Plan) released in 2015 and other Energy Efficiency and Conservation initiatives, the local electricity demand was forecasted to increase by around 4.8% between 2015 and 2021 instead of 6%. Thus, the electricity demand for Hong Kong Island in 2021 was projected to decrease by 2.4% for Hongkong Electric Company Limited (HEC) and 1.4% for China Light and Power Hong Kong Limited (CLP) as compared to that of 2020 when setting the Fifth TM.

Tightening of the emission allowances

10. A Member expressed support for tightening the emission allowances by way of issuing the Sixth TM. He considered that the setting of the emission allowances should commensurate with the emission reduction targets set out in the "Clean Air Plan for Hong Kong".

11. In response, Mr W C Mok explained that when setting the emission reduction targets in 2012 with the Guangdong (GD) Government, EPD had considered the emission reduction potential of all major local emission sources including power plants, motor vehicles and marine vessels. As the emission reduction potential could change in the run up to 2020, the emission reduction targets for 2020 were presented in a range (i.e. a lower bound and an upper bound) instead of a definite target. For power plants, the Fifth TM, which commenced in 2020, would contribute to the attainment of the 2020 emission reduction target. Mr Mok further explained that EPD was undertaking a mid-term review with GD to assess the attainment of the emission reduction targets for 2015 and work out specific emission reduction targets for 2020. In the review, the potential further emission reductions of other key sectors such as motor vehicles and marine vessels (including the establishment of a domestic emission control area in PRD waters in 2019) on top of the emission level in 2015 would be taken into account for setting

the 2020 emission reduction targets.

12. A Member suggested that comprehensive data on the emissions from different sources should be provided so that Members could have a clearer picture of whether the emission targets could be met in 2020 and beyond. Given that the emission allowances were currently allocated in respect of the BPM for emission reduction, he further suggested that the Government should consider imposing fixed emission target for power companies. The Member opined that power companies should commit to exploring new technologies or other methods to meet the emission targets.

13. Mr W C Mok said that it was necessary to maintain a reliable and safe electricity supply. That was why the United States and European countries adopted the approach of regulating power plant emissions based on best available technology, i.e., BPM, instead of imposing emission reduction targets without considering the practicability to do so. As the TM was reviewed every two years at least, this offered an opportunity to review the practicability to adopt new emission technologies that had become practicable since the preceding TM review. For existing coal-fired generating units, the power companies had already undertaken extensive retrofits to reduce their emissions to fulfill previous TM under BPM requirements. Further retrofit was not practicable owing to technical and spatial constraints, and hence the key to further reduce their emissions was to revamp the fuel mix for power generation.

14. Observing that the two power companies were allocated different emission allowances, a Member was concerned whether equity was an issue to the two power companies. Mr W C Mok explained that the power companies were subject to the same BPM scrutiny. The different allocations of emission allowances were results reflecting their different make-up of coal-fired units and gas-fired units.

15. Addressing a Member's observation that the Sixth TM did not require the two power companies to take further measures to reduce emissions, Mr W C Mok explained that BPM and fuel mix were the measures to cut emissions. During the review period between the Fifth and the Sixth TM, no new gas-fired unit would be constructed to increase the use of natural gas for power generation. The power plants would have to continue upholding the performance of their equipment (including emission control devices), use of low-emission coal, and intake of renewable energy (RE). The TM would be reviewed next year to take account of

any new gas-fired units.

Health Benefits

16. A Member suggested that source apportionment should be undertaken such that the air quality improvements and health benefits brought about by the emission reduction of power plants could be estimated. This could enable the clear demonstration of the relationship between the setting of emission allowances and the benefits, and justify the investments made.

17. Mr W C Mok explained that unlike vehicle emissions which had a dominating effect on roadside air quality, emissions from power plants created more of a regional impact because of their tall stacks. To assess the impact on the region, one would have to take account of other power plants in the Pearl River Delta (PRD) Region. Between 2006 and 2015, the regional air quality monitoring network in the PRD Region registered a reduction of 34% for RSP and 72% for SO₂, attesting to the effectiveness of the effort to improve roadside air quality. As EPD was reviewing the Air Quality Objectives (AQO), he proposed that information be provided to the Council on the progress of the improvement measures and the estimated health benefits, upon completion of the AQO review.

18. Mr W C Mok further explained that the Hong Kong Air Pollutant Emission Inventory provided breakdowns of emissions from major sources and could help identify key emission sources that should be targeted for improving air quality. He also advised that EPD had also conducted emission source apportionments for understanding the sources of particulates.

19. Considering that the Air Quality Health Index (AQHI) was able to provide information on health risks posed by air pollution, a Member said that there should be ways to directly or indirectly assess the health benefits of emission reductions from power plants. Mr W C Mok reiterated that such information could be provided in the report on the findings of the AQO review.

Emission cap on PM_{2.5}

20. Considering that PM_{2.5} had a higher toxicity than PM₁₀, a Member enquired about the feasibility of setting an emission cap for PM_{2.5} for power plants. Mr W C Mok explained that the particulate removal control devices in power plants such as electrostatic precipitators and wet scrubbers could also reduce PM_{2.5}

emission. The major obstacle to setting an emission cap for PM_{2.5} was the lack of a reliable method to measure its concentration in a wet stack caused by the adoption of wet scrubbers to remove SO₂. For this reason, the United States and member states of the European Union had not capped the PM_{2.5} emission of their coal-fired power plants. EPD would also keep in view the development of PM_{2.5} measurement method.

Regional Influence

21. A Member enquired whether regional influence had a dominating effect over local emissions, which would place Hong Kong in a passive position when dealing with air pollution. Mr W C Mok explained that the significance of regional influence was pollutant-specific. Among air pollutants, ozone and particulates had a strong effect on local air quality. A local university had found that over 60% of particulates measured in Hong Kong were attributable to regional influence. Another study of a local university had found that locally generated ozone was on a decreasing trend while regional ozone level was on the increase, leading to an overall increase in ambient ozone levels in Hong Kong. He further explained that roadside NO₂ was mainly converted from the NO_x emissions of vehicles. However, a higher ozone level could promote the formation of NO₂. Nevertheless, despite the increasing trend of ozone, the roadside NO₂ had been reduced by 20% as compared with the peak in 2011 in the past five years because of the enhanced efforts in reducing vehicle emissions, such as the phasing out of pre-Euro IV diesel commercial vehicles, strengthening emission control of LPG and petrol vehicles. He also expected that the joint efforts with GD to reduce emissions in the PRD Region could help further improve regional air quality.

Carbon Emissions

22. A Member also expressed support for tightening the emission allowances. With regard to the United States' Clean Power Act which regulated greenhouse gases including carbon dioxide (CO₂), he questioned whether the Government had any plans to include the regulation of carbon emissions in the existing legal framework with a view to meeting the objectives of the Paris Agreement. Mr W C Mok said that the lack of proven effective technology to reduce carbon emissions, apart from revamping the fuel mix to use less carbon intensive fuel (e.g. natural gas) and enhancing energy efficiency, rendered the setting of an emission cap for CO₂ infeasible. He said that attempts had been made overseas to capture CO₂ for storage in deep underground cavern. However, the geological formation

in Hong Kong (i.e. lack of deep underground cavern) was not suitable for the application of such control. Furthermore, the process was energy-intensive, which could offset its control effectiveness. He added that EPD would continue to monitor the development of carbon control technology.

Power intake from Daya Bay Nuclear Power Station

23. A Member questioned about the progress of the Mainland in reducing emissions and whether a similar mechanism had been adopted to review the effectiveness of the relevant measures. With an increasing electricity demand in the Mainland, the Member was concerned that the availability of 80% nuclear energy imported from the Daya Bay Nuclear Power Station (DBNPS) could not be sustained. Mr W C Mok explained that while the Mainland might have a different regulatory system, regional emission reduction targets for NO_x and VOCs had been established for Hong Kong and the PRD Region up to 2020, and definite emission reduction targets, based on the emission reduction ranges agreed in 2012, would be set during the mid-term review. While emission reduction results for 2015 would not be available until the completion of the mid-term review, he observed that the Mainland was making good progress in reducing their emissions. Mr Mok suggested reporting to Members on the attainment of the emission reduction targets for 2015 after the completion of the mid-term review by end of the first quarter of 2017.

24. Regarding nuclear energy import from Daya Bay, Mr Lau Man-pang said that CLP had liaised with DBNPS for increasing the import level from 70% to 80% between 2014 and 2018, and would endeavour to maintain importing 80% of nuclear output from DBNPS after 2018. A Member considered that the possibility of increasing the import level of nuclear energy from DBNPS should be explored.

The use of renewable energy

25. Two Members sought information with regard to the progress of developing offshore wind farms as proposed by the two power companies. Mr W C Mok said that the Environment Bureau (ENB) was responsible for such projects EPD and he would refer the request to them after the meeting.

26. A Member considered that the development of wind farms should be technically feasible. The main concern of power companies towards the

construction of the wind farms might be associated with the need for an upward adjustment of electricity tariff. She said the Government should set out its views or stance over this issue.

27. A Member asked whether there was any incentive for the power companies to supply renewable energy (RE), bearing in mind its generation could further reduce the emission allowances. Mr W C Mok pointed out that the Scheme of Control Agreements between the Government and the power companies already allowed a higher rate of return for the use of RE as an incentive.

28. On top of providing a higher rate of return to power companies for RE intake, a Member considered that the Government should impose mandatory RE requirements on the power companies. Mr W C Mok explained that the amount of energy obtained from RE sources could vary with the strength and duration of the wind for wind energy; the heat content of waste, etc. It was thus impossible to mandate a certain amount of RE that a power company had to use. Furthermore, the room for the development of RE facilities was limited in Hong Kong. It would also be a constraint in the use of RE.

[Post-meeting note: The two power companies are still conducting feasibility study for their offshore wind farms projects. They are collecting wind and wave data for optimizing the design of their offshore wind farms proposals. When the two power companies complete the relevant studies and submit their formal project proposals, the Environment Bureau will assess the project details according to the established mechanism.]

In order to encourage the use of renewable energy, the existing SCA provides the power companies with a higher rate of return (RoR) of 11% as compared to 9.99% for other non-renewable energy assets. Apart from the higher RoR, the SCA also provides the power companies with additional return for generating certain proportion of electricity from renewable energy in the form of renewable energy incentive.]

Influence of global warming

29. In reply to a Member's enquiry on the reason for not factoring in the influence of global warming when setting the emission allowances, Mr W C Mok explained that the setting of emission allowances had taken into account the forecast local consumption of electricity. The power companies had also

expressed concern that the electricity demand would surge with the increased need for air-conditioning under the influence of global warming. While power companies might invoke the special event provision under such circumstances, Mr Mok assured Members that EPD would not adjust the emission caps under the special event mechanism unless the incidents were clearly proven to be beyond the control of power companies and that they had made their best endeavour to reduce emissions as far as possible.

30. Mr Donald Tong said that meeting the objectives of the Paris Agreement was one of the considerations when deliberating the fuel mix with the power companies. He stressed the importance of maintaining a safe and stable electricity supply in Hong Kong and assured Members that the contract between CLP and DBNPS would last till 2034 regardless of the local electricity demand of the Mainland. On top of the offshore wind farms, Mr Tong said that EPD had been introducing other green facilities including the T-Park and the integrated waste-to-energy plant which would be commissioned in 2023.

31. The Chairman concluded that Members were supportive of the proposed Sixth TM and thanked the representatives of EPD for their presentation.

[The presentation team left the meeting at this juncture.]

Internal Discussion Session

32. While a Member was disappointed that the power companies were not required to adopt further measures in the Sixth TM, she agreed that measures such as implementing mandatory requirements for the use of low-emission coal and RE was infeasible based on the explanations provided by the EPD representatives.

33. A Member considered that the Government should incorporate RE into the fuel mix in its long term strategy planning with a view to achieving a greater level of energy security and self-sufficiency. He added that measures such as increasing the electricity tariff, launching a Government subsidy scheme or cutting profits of the two power suppliers should be considered with the aim to promoting the use of RE to meet future energy demands.

34. Mr Donald Tong said that HEC was working to build another new gas-fired unit for operation in 2022, and EPD had already commenced liaising with the two power companies on the fuel mix for the Seventh TM. Owing to CLP's

use of nuclear energy, the replacement programmes of coal-fired plants by new gas-fired plants for the two power companies did show variance. He assured Members that the Government recognized the importance in providing reliable and safe energy supply, and there would be continuous efforts in meeting the objectives of the Paris Agreement and replacing coal-fired units by gas-fired units in the long run.

35. Mrs Alice Cheung supplemented that as Section 26G (4) of the APCO had strictly required for the emission allowances in the TM to take effect at least four years before the commencement of the emission year, it was anticipated that the Seventh TM could factor in the new gas-fired unit constructed by HEC.

Item 5: Any other business

36. The Chairman reminded Members that a site visit to the Hung Shui Kiu New Development Area was arranged on 6 October 2016.

Item 6: Date of next meeting

37. The next ACE meeting was scheduled on 14 November 2016 (Monday). Members would be advised on the agenda in due course.

**ACE Secretariat
November 2016**